

INTRODUCTION

Research suggests maladaptive parenting impacts children’s error processing mechanisms related to cognitive control and risk for anxiety <sup>[1]</sup>

- Error-related negativity (ERN): Deflection in brain wave, neural marker of cognitive control <sup>[2][3]</sup>
- ERN mediates harsh parenting and anxiety relationship in young children <sup>[1]</sup>

AIMS & HYPOTHESIS

**Test ERPs (ERN & Pe) mediating negative parenting and anxiety relationship in older children**

- Event related potentials (ERPs): brain activity generated when responding to stimulus <sup>[4]</sup>
- Error-positivity (Pe): Inflection in brain wave after ERN, neural marker of cognitive control and error processing mechanism <sup>[2][3]</sup>

**Hypothesized that both the ERN and Pe would mediate the relationship between negative parenting and anxiety**

METHODS

- Participants
- N = 146
  - Age: 8-13 years (M = 10.61; SD = 1.70)
- Materials
- Anxiety: child report Revised Child Anxiety and Depression Scale (RCADS <sup>[5]</sup>)
  - Parenting: child report Parent Perception Inventory (PPI <sup>[6]</sup>)
  - ERN & Pe: Go/No-Go task (Zoo <sup>[2]</sup>)



RESULTS

- Negative mom parenting related to a smaller late Pe
  - ( $\beta = -0.23, p < 0.05$ )
  - See *Figure 3*
- Indirect effects across all models were not significant
- No other effects were significant

DISCUSSION

- Aimed to test and expand upon previously found suggesting ERPs mediate harsh parenting-anxiety relationship <sup>[1]</sup>
- Using an older sample, findings indicate ERN does not mediate negative parenting-anxiety relationship (as previously found in young children <sup>[1]</sup>)
- Additional analyses indicate neither early nor late Pe mediate negative parenting-anxiety relationship for either parent (mom or dad)
- Results emphasize need to examine the effects of parenting and error processing on risk for anxiety more broadly across development

- Limitations
- Cross-sectional design not account for individual developmental differences
- Future Direction
- Replicate using larger age range and accounting for age
  - Test whether age moderates the relationship between harsh parenting and anxiety

Error-related ERPs DO NOT Mediate the Relationship Between Parenting & Anxiety in Older Children



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MAIN FINDINGS

Unlike younger children<sup>[1]</sup>, **older children’s error processing brain mechanisms (ERPs) DO NOT mediate negative parenting - anxiety relationship**

Older children who experience more negative maternal parenting showed **reduced error awareness** (indicated by  $\Delta$ late Pe)

REFERENCES

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Table 1 Bivariate Correlations between ERPs, Parenting, & Anxiety								
Variable	1	2	3	4	5	6	7	8
1. ΔERN FCz	--							
2. ΔEarly Pe CPz	-0.125	--						
3. ΔLate Pe CPz	0.006	<b>.327**</b>	--					
4. Positive Dad	-0.106	0.057	0.019	--				
5. Negative Dad	0.182	-0.082	-0.159	-0.058	--			
6. Positive Mom	-0.120	0.121	0.110	<b>.455**</b>	-0.020	--		
7. Negative Mom	-0.002	-0.156	<b>-.229*</b>	-0.073	<b>.512**</b>	<b>-.192*</b>	--	
8. Anxiety	0.041	0.031	0.071	0.049	0.018	-0.042	0.083	--
M	-8.804	8.762	3.860	3.560	2.062	3.910	2.042	0.725
SD	5.457	5.757	4.803	0.857	0.693	0.688	0.726	0.455

*Note . ΔERN FCz* ERN-CRN difference wave at site FCz, *ΔEarly Pe CPz* Error-Correct difference wave at site CPz, *ΔLate Pe CPz* Error-correct difference wave at site CPz, *Positive Dad* child report positive paternal parenting behavior, *Negative Dad* child report negative paternal parenting behavior, *Positive Mom* child report positive maternal parenting behavior, *Negative Mom* child report negative maternal parenting behavior, *Anxiety* child report anxiety totals

**\*\*** $p \leq 0.01$

**\*** $p \leq 0.05$

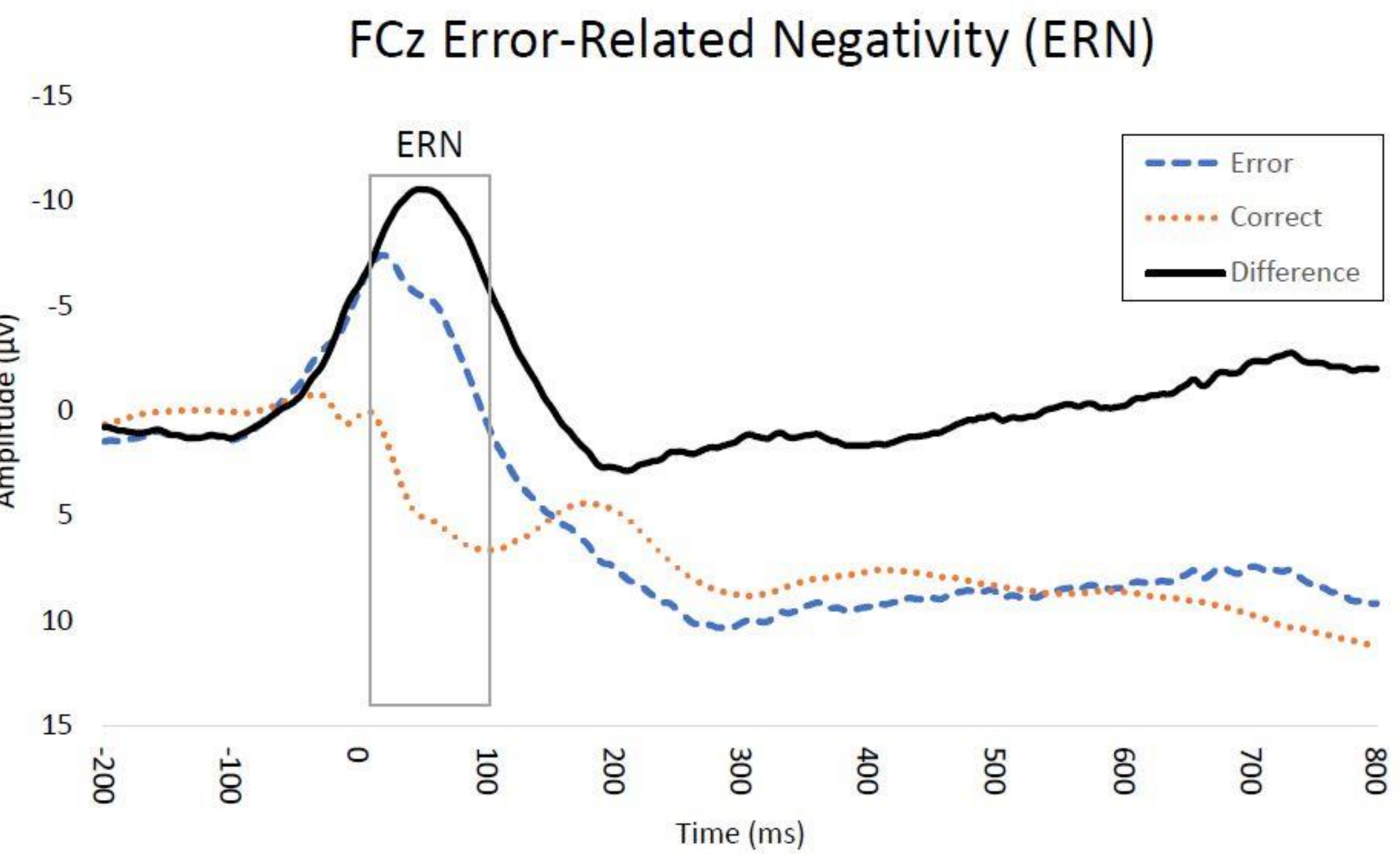


Fig 1. Grand average amplitude (N= 146) of ERN waveform at site FCz from -200 to 800 ms after stimulus

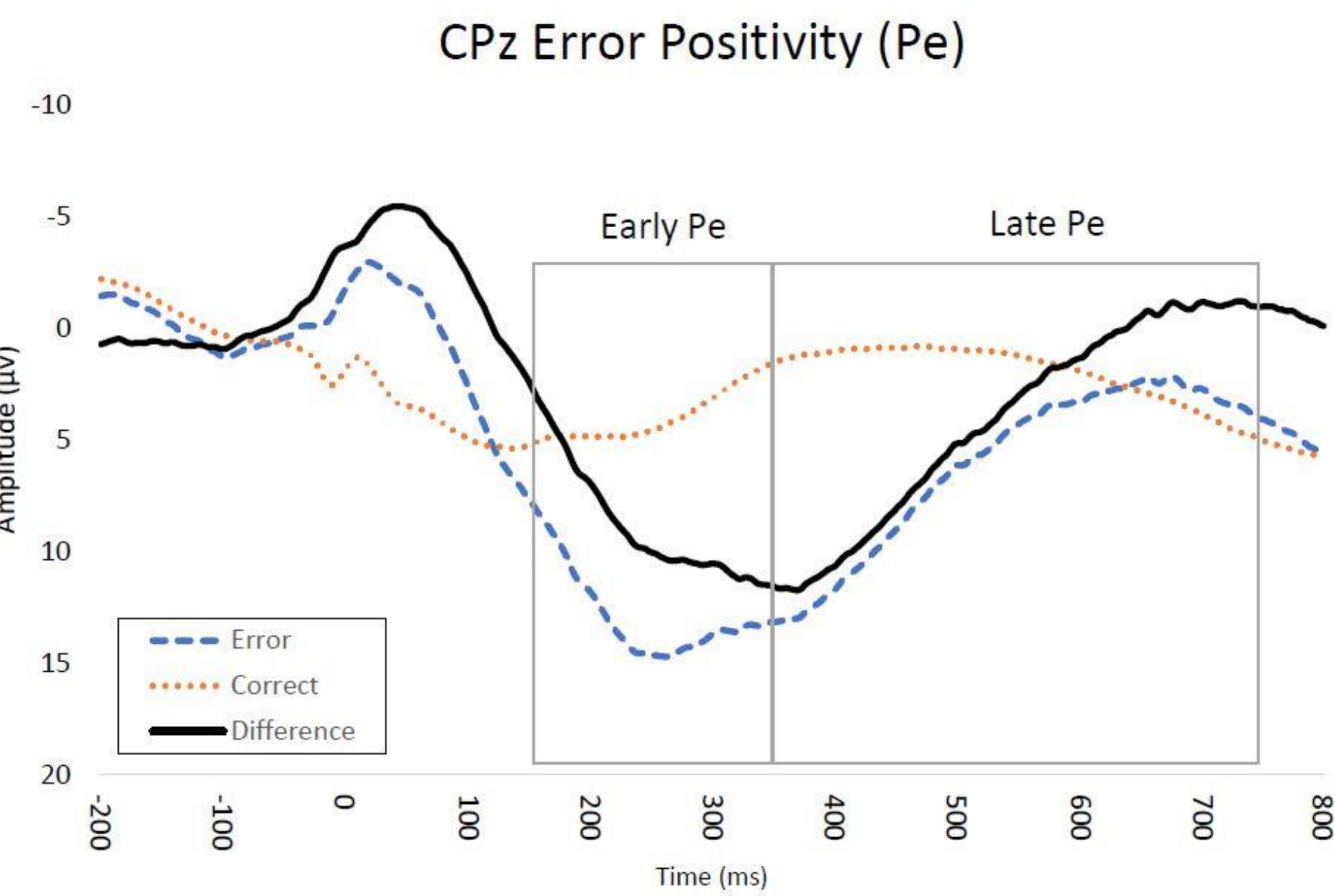


Fig 2. Grand average amplitude (N= 146) of Pe waveform at site CPz from -200 to 800 ms after stimulus

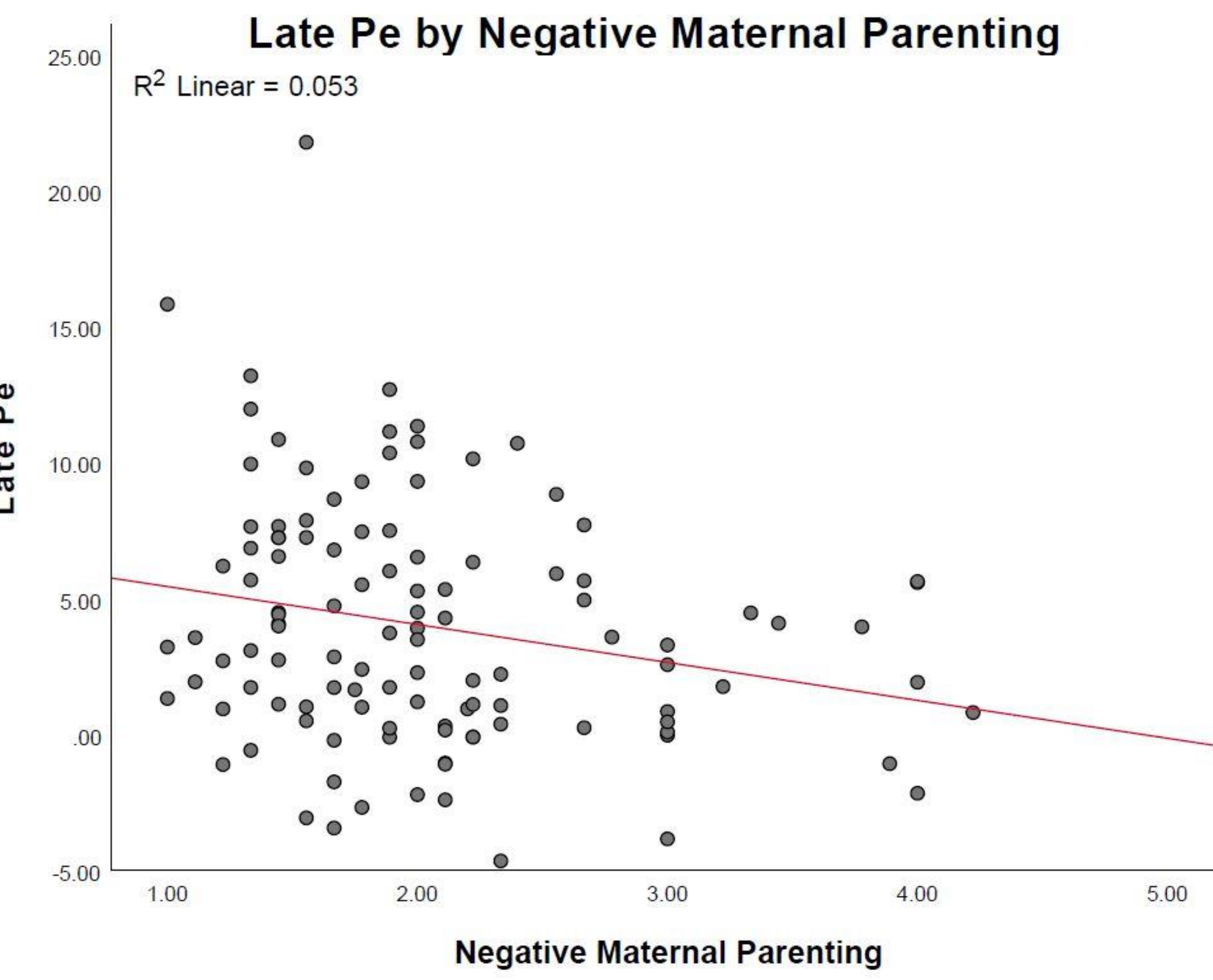


Fig 3. Scatter plot of relationship between  $\Delta$ late Pe amplitude and negative maternal parenting behavior