Developmental Timing of Interpersonal Violence and Startle Response Habituation: Associations with Biological Sex and Anxiety Symptoms

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BACKGROUND

- Interpersonal violence (IPV) exposure during development is associated with altered startle response later in life[1], and it is understood that sex differences may play a role in startle response[2]. However, few studies have investigated how timing of IPV and biological sex interact.
- **We examined how the timing of IPV modulates startle habituation patterns in a Black American population and how sex differences influence the relationship between physiological reactivity and self-reported anxiety.**

METHODS

Participants (n=82; 47 F) were recruited from a longitudinal birth cohort study in Detroit.

- **Procedures:** Participants were grouped based on self-reported timing of IPV exposure: **IPV before 14 years** or **IPV between 14 and 18 years.**
- **Wave 5 (age 32-34):** Participants completed a fear-potentiated startle task. Electromyogram **(EMG)** of eyeblink startle response to four trials of 106dB noise probe was recorded during the habituation phase. Anxiety symptoms were assessed using the **GAD-7**[3].

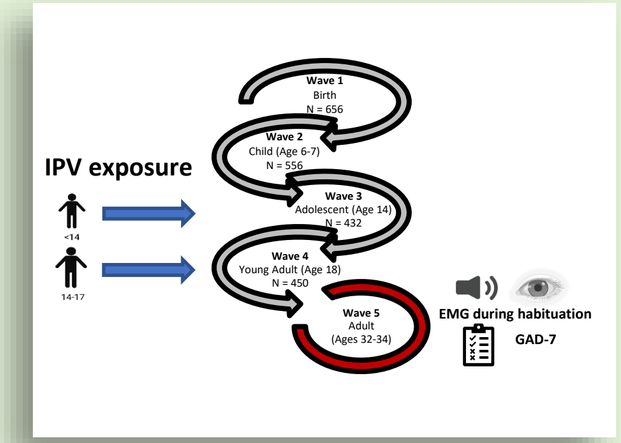

Figure 1: Study waves and data collection

RESULTS

- Startle responses decreased across habituation trials **(F=13.96, p<.001)**, with a significant interaction of IPV group and sex **(F=8.82, p=.004)**.
- Follow-up analyses within each sex showed that adolescent IPV exposure blunted startle responses compared to childhood IPV exposure in female participants **(F=7.19, p=.01),** but not in male participants.

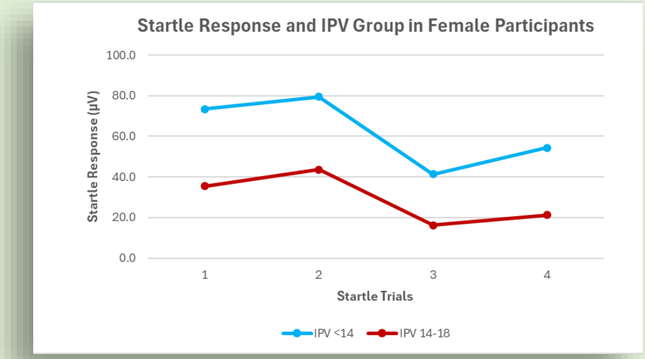

Figure 2: Startle response and IPV groups in female participants

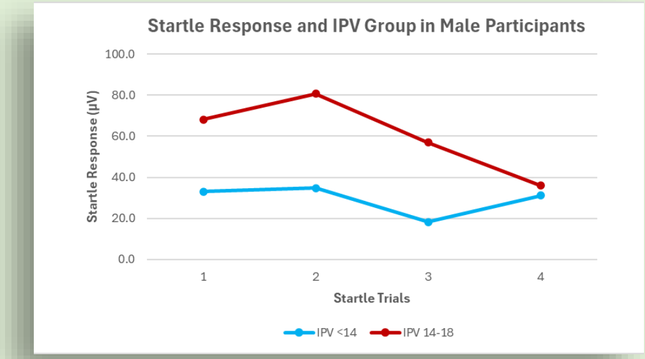

Figure 3: Startle response and IPV groups in male participants

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RESULTS

- When correlating between GAD-7 scores and average startle response there was a significant positive association in male participants and a negative association in female participants.

Sex	*Pearson r*	*p (2-tailed)*	*N*
Male	0.437*	0.014	31
Female	-0.307*	0.048	42

Table 1: Correlations between anxiety symptoms and startle response by sex

CONCLUSIONS

- These findings suggest that developmental timing of IPV exposure and biological sex may moderate startle responses and anxiety symptoms.
- Childhood and adolescent IPV timing may substantially **alter how people habituate to repeated sudden stimuli, with distinct patterns between female and male sexes, suggesting differential vulnerabilities to anxiety symptoms.**
- The results emphasize consideration of sex and timing-specific trauma when interpreting psychophysiology and developing treatments for anxiety and trauma-related disorders.

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