



ADVERSITY CONTRIBUTES TO POST-SURGICAL PAIN MEMORIES

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Background

Traditional ACEs Model^{1, 2, 4}

Abuse

- Physical
- Psychological
- Sexual

Household Dysfunction

- Substance use
- Mental illness
- Domestic violence
- Criminal behaviour in the household
- Parental divorce

Neglect

- Emotional
- Physical

Non-Traditional ACEs⁵

Family Disruption

- Foster care
- Death of a caregiver
- Separation from caregiver due to deportation or immigration

Systemic Barriers

- Neighborhood violence
- Youth justice involvement

Threats to Personal Safety

- Discrimination
- Intimate partner violence
- Harassment or bullying at school
- Serious medical procedure or life-threatening illness

Pain and trauma maintain each other⁴

- Youth who have experienced adversity are more likely to develop chronic pain and experience greater pain intensity and interference.⁶
- Pain serves as a reminder about past adversity.

A modifiable risk factor for negative pain outcomes is children's memory biases. **However, the role of adversity in pain memory biases has not been examined.**

The present study investigates the contributions of youth ACEs to pain memories.

Methods

Participants

100 youth aged 10 to 18 years old ($N = 100$, $M = 14.31$, $SD = 1.77$) undergoing major surgery (e.g., spine, orthopedic).

Measures

Pre-surgery

- Youth ACEs (Center for Youth Wellness ACEs Questionnaire)

Acute Recovery

- Pain intensity (0-10 rating scale) at rest and during movement

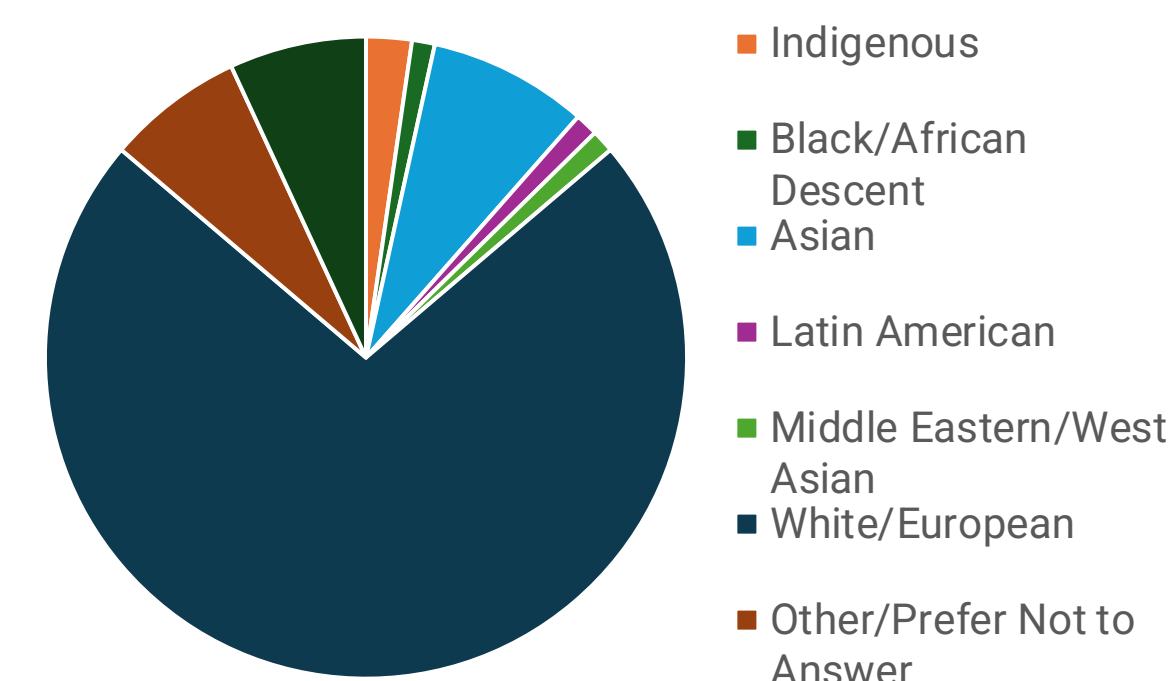
1-month Post-surgery

- Memory of pain intensity during acute recovery (0-10 rating scale)

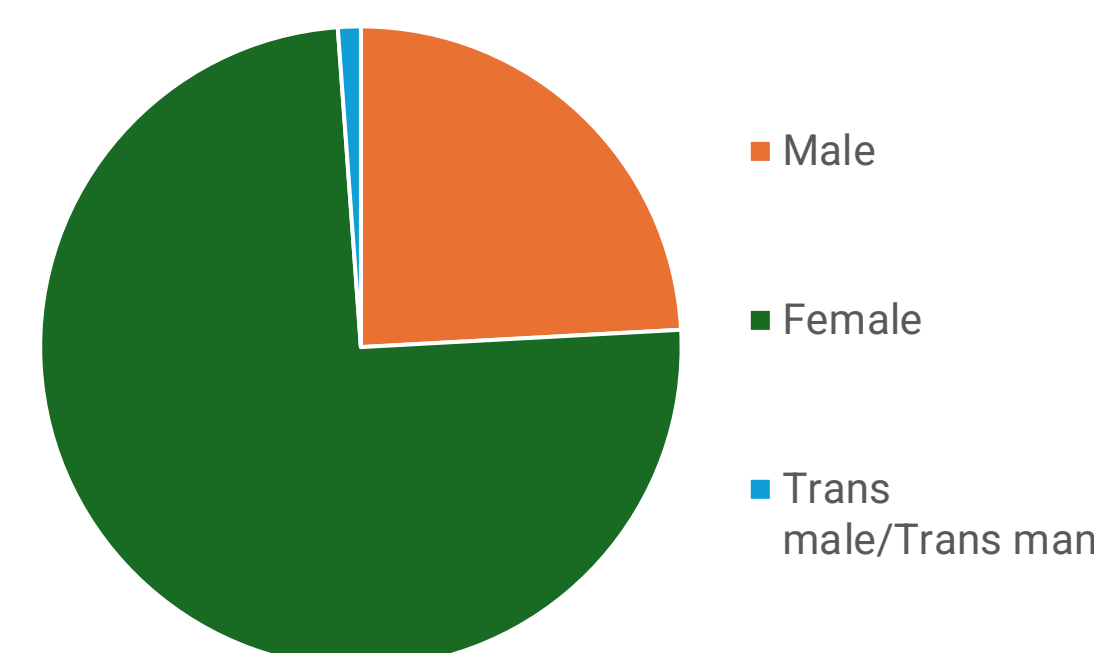
Results

Demographics

Race and Ethnicity



Gender



Pain Intensity Ratings During Acute Recovery

	<i>M</i>	<i>SD</i>
Pain at rest	6.0	1.9
Pain during movement	6.8	1.7

Memory of Pain intensity During Acute Recovery

	<i>M</i>	<i>SD</i>
Pain at rest	6.3	2.1
Pain during movement	7.3	2.1

Hierarchical Regression: ACEs Predicting Pain Memory

Predictor	<i>b</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	R^2	ΔR^2
After-surgery pain intensity during movement	.681	.117	.563	5.835	< .001		
Non-traditional ACEs	.529	.185	.276	2.861	.006	.386	.076*

Note. * $p < .05$

Discussion

After controlling for reported pain intensity at movement, **non-traditional ACEs accounted for 7.6% of variance in youth's memory of pain, $p = .006$.**

- Adversity shapes how children remember pain beyond the sensory experience itself
 - Children exposed to adversity may encode and recall pain more intensely than originally experienced
- Pain memory is a potentially modifiable target for intervention
 - Trauma-informed pediatric pain programs should aim to address negative memory biases to reduce long-term pain outcomes

Areas for Future Research

- Examination of the specific pathways (e.g., heightened threat appraisal, emotional dysregulation, hypervigilance, HPA axis activation) through which non-traditional ACEs influence pain memory,

Looking For More Information?

Please contact Alessandra Mangialardi (amangial@uoguelph.ca).

Scan the QR code to view the tables and references.

