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# Emotion Regulation and Positive Affect in the Context of Salivary Alpha-Amylase Response to Pain in Children with Cancer: Physiology, Self-Report, and Behavior

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# Emotion Regulation and Positive Affect in the Context of Salivary Alpha-Amylase Response to Pain in Children with Cancer: Physiology, Self-Report, and Behavior

## **Authors**

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# Emotion Regulation and Positive Affect in the Context of Salivary Alpha-Amylase Response to Pain in Children with Cancer: Physiology, Self-Report, and Behavior

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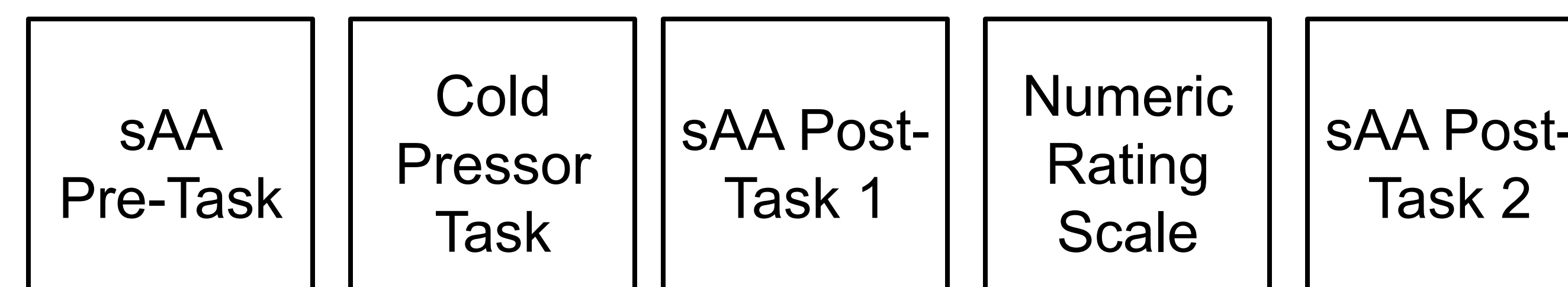
## Introduction

- Children with cancer are repeatedly exposed to aversive stimuli including painful medical procedures (Richardson et al., 2006).
- Emotional regulation techniques may prove useful during such experiences and contribute to pain resilience (Cohen et al., 2006).
- Distraction and reappraisal are commonly used emotion regulation techniques in interventions for pain management (Wolitzky et al., 2005; Bisignano et al., 2006).
- Reassurance is less commonly used in intervention work (Chorney et al., 2013).
- However parents regularly use reassurance with their children and this may be detrimental as it draws the child's attention towards their pain (Chorney et al., 2013).

### Primary Question

How do emotion regulation strategies (distraction, reappraisal, and reassurance) impact physiological, self-reported and behavioral pain responses in pediatric patients with cancer?

## Study Design



## Method

- 73 children (ages 6-18 years) undergoing treatment for cancer at Children's Hospital of Orange County (CHOC) participated in this study.
- Children were randomly assigned to one of three emotion regulation conditions: distraction (watched animal documentary), reappraisal (thought about how their participation will help other kids like them), or reassurance ("I'm really sorry you have to do this, I know how it feels").
- Cold Pressor Task (CPT)
  - Children placed their hand in a bucket of 7° C water.
  - Child removed their hand when they could no longer tolerate the pain.
- Main Outcomes
  - Physiological: Saliva samples were collected 15 minutes before CPT (pre-task), immediately after CPT (post-task 1), and 15 minutes after CPT (post-task 2). Saliva samples were assayed for alpha-amylase.
  - Self-reported pain: Children rated their pain using Numeric Rating Scale immediately upon hand removal.
  - Behavioral pain tolerance: Time of hand removal = pain tolerance

## Key Findings

- Children in the reassurance condition exhibited sAA levels that continued to rise post completion of the CPT as compared to children in the distraction condition ( $\beta = -1.68, p = .021$ ).
- Children in the reassurance condition as compared to children in the reappraisal condition had a marginally significantly greater increase in sAA levels that continued to rise post completion of the CPT ( $\beta = -1.24, p = .084$ ).
- No significant differences in self-reported pain severity ( $Wald \chi^2(2) = 2.47, p = .292$ ) or behavioral pain tolerance ( $Wald \chi^2(2) = 21.38, p = .502$ ) among the emotion regulation conditions.

## Discussion

- Certain emotion regulation strategies such as distraction and reappraisal may weaken the stress response to painful medical procedures in pediatric patients with cancer.
- Reassurance directs the child's attention towards the pain without providing a way to reinterpret it.
- In the context of acute pain, reassurance may actually increase distress.
- Distraction and reappraisal may give the child a sense of self-control over the situation.
- Subjective and behavioral indicators of pain may not always match the physiological response to pain.
  - It is necessary to assess all three outcomes

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### Emotion Regulation Strategies and Salivary Alpha-Amylase

