Do sensory differences in autism spectrum disorder help explain emotional dys-regulation and anxiety in children?

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Background & Rationale

- **Over 90%** of children with autism spectrum disorder (ASD) have "atypical" sensory processing[1]
- **Up to 84%** of children with ASD have anxiety symptoms,[2] and **as high as 54%** may have co-morbid anxiety[3]
- A recent survey found that co-morbid anxiety can lead to **lower quality of life**, independent of ASD symptom severity[4]
- **Emotion regulation**, defined as "the capacity to monitor, evaluate, and modify (increase or decrease) one's emotional state in order to achieve a goal" **manifests irregularly** in ASD individuals[5]
- This may be due to:
  - Inability to reprocess information[6]
  - Impaired executive functioning[7]
  - Lower social interest and social cognition[8]

Research Questions & Hypotheses

- **Research Question**: In what ways do emotion dysregulation and sensory sensitivity contribute to co-morbid anxiety in ASD?
- **Hypothesis**: Based on the previous literature, both emotion dysregulation[9] and sensory sensitivity[10] will be correlated with anxiety levels in ASD individuals
- **Null Hypothesis**: Emotion dysregulation and sensory sensitivity will not be correlated with anxiety levels in ASD individuals

Methods

- **31 ASD participants**
  - 25 Male, 6 Female
  - Age Range: 7-14
- **37 typically developing (TD) participants**
  - 19 Male, 18 Female
  - Age Range: 7-14

Tests Administered

EDI
(Emotion Dys-regulation Inventory)[11]

SSP
(Short Sensory Profile)[12]

SCARED
(Screen for Child Anxiety Related Disorders)[13]

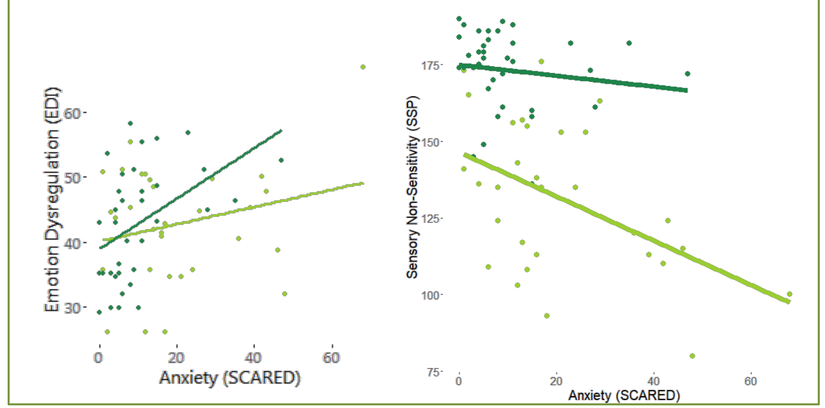
Sensory sensitivity, but not emotion dysregulation, is correlated with anxiety symptoms in autism spectrum disorder

SCAN ME

Results

- **Emotion dysregulation and anxiety** were not correlated in ASD participants (r = 0.2395214, p = 0.1944), but were in TD controls (r = 0.4555974, p = 0.004602).
- **Sensory sensitivity and anxiety** were correlated in ASD participants (r = -0.4763028, p = 0.007796), but not TD controls (r = -0.1383916, p = 0.414)
- Note that the r values are negative because a lower score on the SSP indicates higher sensitivity
- Together, sensory sensitivity, emotion dysregulation, and diagnosis account for **29% of variance** in anxiety levels (adjusted R^2 = 0.29, F(3, 63) = 9.798, p < 0.01)

Plots



Discussion, Analysis, & Limitations

- The finding that emotion dysregulation and anxiety were not correlated is surprising, as it is **inconsistent with past literature**
- It is possible that our **sample size was insufficient**, or that it was not representative of the larger ASD population due to the **male-to-female ratio**

Conclusions & Next Steps

- **Further research** should be conducted to determine whether sensory sensitivity causes co-morbid anxiety or vice versa, or whether there are underlying factors that cause both
- This data also indicates that treatments for co-morbid anxiety should **emphasize the sensory aspect** of the condition
- This can include:
  - Classroom Modifications[14]
  - Sensory Integration Training[15]
  - "Food Chaining"[16]
  - Developing Self-Stimulation Strategies[17]

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