RELATIONSHIP BETWEEN VARIANT CONNECTIVE TISSUE (HYPERMOBILITY) AND AUTISM SENSORY PROCESSING: ALEXITHYMIA AS A MEDIATOR

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Introduction

- **Autism** is a neurodevelopmental condition characterised by differences in sensory processing, social communication and restricted/repetitive behaviors.
- **Joint hypermobility** is a common connective tissue variant, reportedly overrepresented in Autism.
- **Alexithymia** is a personality construct characterised by altered emotional awareness which has notably high rates of overlap with autism spectrum disorder.

Aim

- Test whether hypermobility was associated with autistic traits
- Examine alexithymia as a mediator of this association

Method

- Forty-two people underwent eligibility assessment for a study of joint hypermobility and anxiety (ISRCTN17018615).
- Hypermobility was assessed using both the **Brighton Criteria for Joint Hypermobility Syndrome** (JHS; see figure 1) and 2017 **Hypermobile Ehlers Danlos Syndrome** (hEDS) Criteria.
- **Ritvo Autism Asperger Diagnostic Scale-Revised** (RAADS R: sensory/motor, language, social relatedness and circumscribed interest domains) to quantify autistic traits. No participant had a prior diagnosis of Autism.
- **Toronto Alexithymia Scale (TAS-20)** to measure alexithymia. The TAS-20 has three domains: difficulty describing feelings, difficulty identifying feelings and externally oriented thinking.

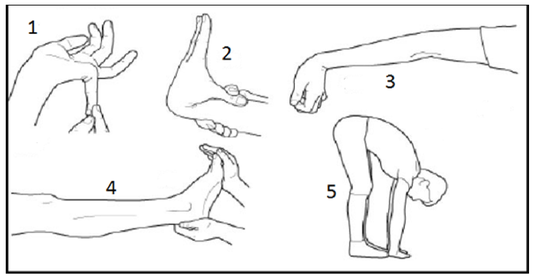

Figure 1: *Castori, M., Tinkle, B., Levy, H., Grahame, R., Malfait, F., & Hakim, A. (2017, March). A framework for the classification of joint hypermobility and related conditions. American Journal of Medical Genetics Part C: Seminars in Medical Genetics (Vol. 175, No. 1, pp. 148-157).*

Results

- All 42 participants met criteria for JHS, 26 participants also met criteria for hEDS
- 22/42 (52.4%) scored above threshold for suspected Autism. 26/42 in the sensory/motor domain; 22/42 in language domain; 22/42 in social relatedness domain; 17/42 in circumscribed interests domain
- No significant differences in RAADS-R scores depending on hypermobility diagnosis

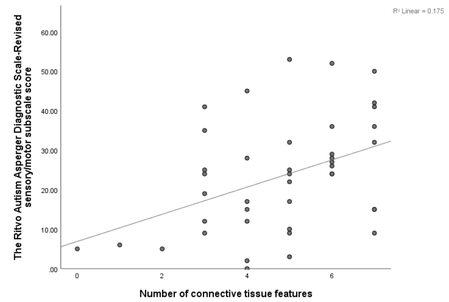

Figure 2: *Relationship between the number of connective tissue features and RAADS-R sensory/motor score*

- As shown in figure 2, the number of connective tissue features (hEDS Criterion 2A) correlated with RAADS-R sensory/motor score (r = 0.418, p = 0.006) but not social relatedness nor circumscribed interests sub-scores.

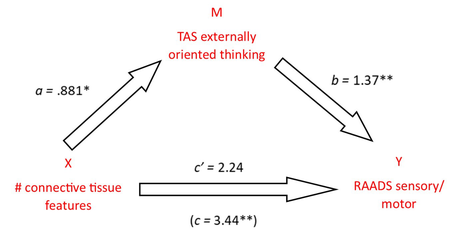

Figure 3: *Full mediation of the relationship between the number of connective tissue features and RAADs sensory/motor score by TAS-20 externally oriented thinking*. **Notes:** *p < .05, **p < .01; All presented effects are unstandardized.

- Full mediation of the relationship between the number of connective tissue features and RAADs sensory/motor score by TAS-20 externally oriented thinking was found using the method of Baron-Kenny (1986; see figure 3) and estimation of indirect effects (Hayes, 2018; bootstrapped confidence intervals (n = 5000, do not cross zero)). TAS-20 Difficulty identifying feelings and difficulty describing feelings domains did not mediate this relationship.

Conclusion

- These results add to evidence linking variant connective tissue to neurodevelopmental conditions (including Autism) and interestingly, specifically to sensory processing differences.
- The research provides a strong rationale for screening for neurodevelopmental conditions in people with hypermobility and motivates further to understand symptom expression in this group.
- The results also provide an insight into the processes underlying this relationship, which may be important for informing interventions for people with hypermobility and autistic traits.

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