

ACT's Focus on Research Conference 2023**Sensory Features and Anxiety in Autism: Implications for Families and Practitioners**

A two-day in-person and virtual conference hosted by ACT

Thursday, April 27, 2023

Friday, April 28, 2023

Exploring Sensory Processing Subtypes in Autism

Presented by Nichole Scheerer, PhD

Territorial Acknowledgement

As visitors on this land, ACT - Autism Community Training is grateful for the opportunity to work and learn on the ancestral and unceded territory of the Skwxwú7mesh (Squamish), xʷməθkʷəy̓əm (Musqueam) and səliłwətaʔt (Tsleil-Waututh) people who have lived in this area since before recorded time. These nations are hənqəmiṇəṇ and Skwxwú7mesh speaking peoples. The hənqəmiṇəṇ (Halkomelem) and Skwxwú7mesh (Squamish) languages are part of the Salish Language family, which dates back many millennia. We pay our respects to elders past, and to those present and emerging. As settlers to this land, we are committed to working towards reconciliation.

Simon Fraser University respectfully acknowledges the xʷməθkʷəy̓əm (Musqueam), Skwxwú7mesh Úxwumixw (Squamish), səliłwətaʔt (Tsleil-Waututh), qícəy̓ (Katzie), kʷikʷəłəm (Kwikwetlem), Qayqayt, Kwantlen, Semiahmoo and Tsawwassen peoples on whose unceded traditional territories their three campuses reside.

Event Schedule

All times are Pacific Daylight Time (PDT)

Day 1 – Thursday, April 27, 2023

8:15 am	–	9:00 am	Registration / Log on with Zoom Link
9:00 am	–	9:15 am	Introduction by Michelle Schmidt
9:15 am	–	10:15 am	Keynote Presentation by Connor Kerns, PhD
10:15 am	–	10:45 am	Break
10:45 am	–	12:00 pm	Panel: Experiences with Anxiety
12:00 pm	–	1:00 pm	Lunch
1:00 pm	–	3:10 pm	Research Presentations

Day 2 – Friday, April 28, 2023

8:15 am	–	9:00 am	Registration / Log on with Zoom Link
9:00 am	–	10:00 am	Keynote Presentation: Tiffany Woynarski, PhD
10:00 am	–	10:30 am	Break
10:30 am	–	11:45 am	Panel: Early Development & Sensory
11:45 am	–	12:45 pm	Lunch
12:45 pm	–	1:45 pm	Future in Research

Accessibility

ACT is committed to preventing, as well as identifying and removing barriers facing people interacting with our organization. Moving forward, ACT will make every effort to provide real time captioning as well as American Sign Language (ASL) interpreters for all our events.

Acknowledgements

We are grateful to Nichole, who will be presenting on research examining sensory processing subtypes – specific sensory differences that may cluster together within individuals. Nichole will discuss sensory differences, which have been shown to promote behaviors that challenge and cause distress in autistic individuals, as well as the relationship between sensory differences and anxiety. ACT is delighted to welcome Nichole to present on her research program and recent findings.

Over the years, those who have attended ACT events know that as we are a small not-for-profit organization, we depend on community collaboration and support to sustain our work. We deeply appreciate the many autistic individuals, parents and caregivers, professionals, and organizations across British Columbia who volunteer their time, donate funds, provide sponsorship, and help spread the word – especially during these challenging times.

Thank you also, to Still Interpreting Inc. for providing ASL Interpretation and Accurate Realtime Inc. for providing communication access realtime translation (CART) services.

ACT – Autism Community Training

120B-3823 Henning Dr. Burnaby, BC V5C 6P3

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Email: info@actcommunity.ca Website: www.actcommunity.ca

Support evidence-based resources – [Donate to ACT!](#)

Free Resources from ACT

[Autism Videos @ ACT \(AVA\)](#) – Over 80 quality online videos on diverse topics, including Toilet Training, Sleep, Mental Health, IEP's, Research, and much more – all available free, thanks to our sponsors!

[ACT's Autism & Intellectual Disability \(AID\) Search](#) – Keyword search over 2,000 records containing evidence-based, practical information resources in 36 languages sourced internationally, including B.C.-based community resources useful to families and community professionals.

[ACT in Chinese](#) and [ACT in Punjabi](#) – ACT has been able to both create and identify valuable resources for the Chinese-speaking and Punjabi-speaking communities in British Columbia.

[ACT's Autism Manual for B.C.](#) – A manual for parents and community professionals with 13 chapters, including New Diagnosis Process, Contracting with Professionals, B.C. Education System, Building a Community Group, and more!

[ACT's Event & Training Alerts](#) – Sign-up to keep in touch with our upcoming events and training opportunities.

[ACT's Facebook](#) – ACT carefully sources interesting, insightful stories to inform our community of over 9,000 followers.

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Exploring Sensory Processing Subtypes in Autism

Dr. Nichole Scheerer
Wilfrid Laurier University

I acknowledge the Anishinaabek, Haudenosaunee, Lūnaapéewak and Chonnonton Nations, whose traditional territories are where this presentation and much of this research was produced.

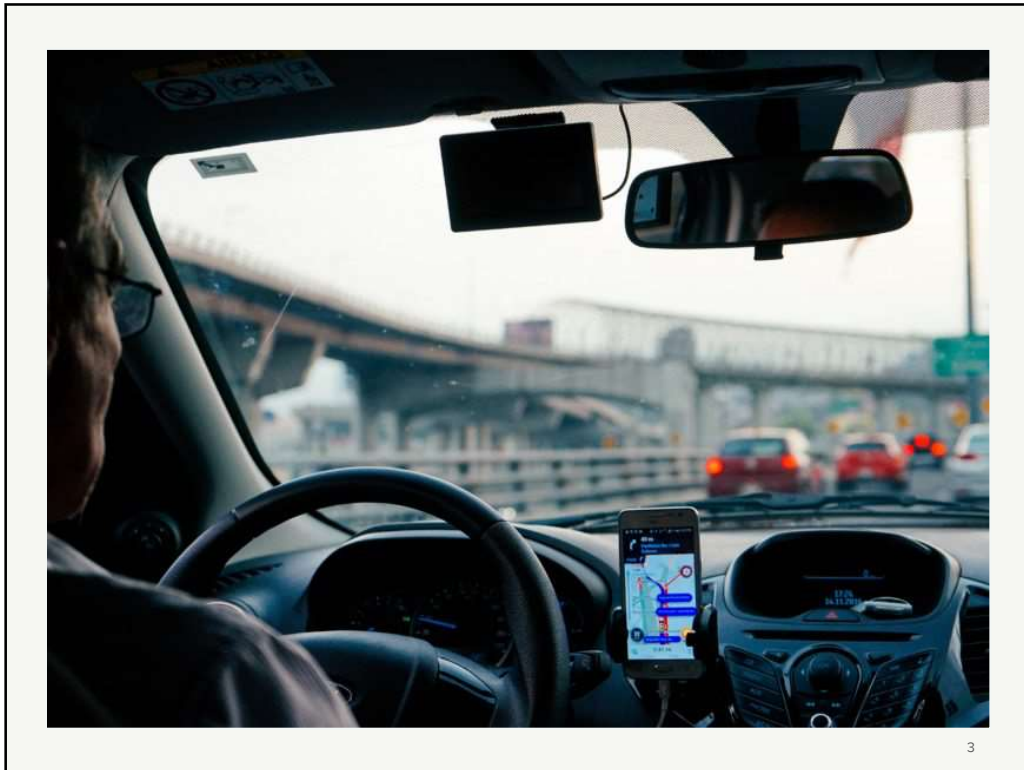
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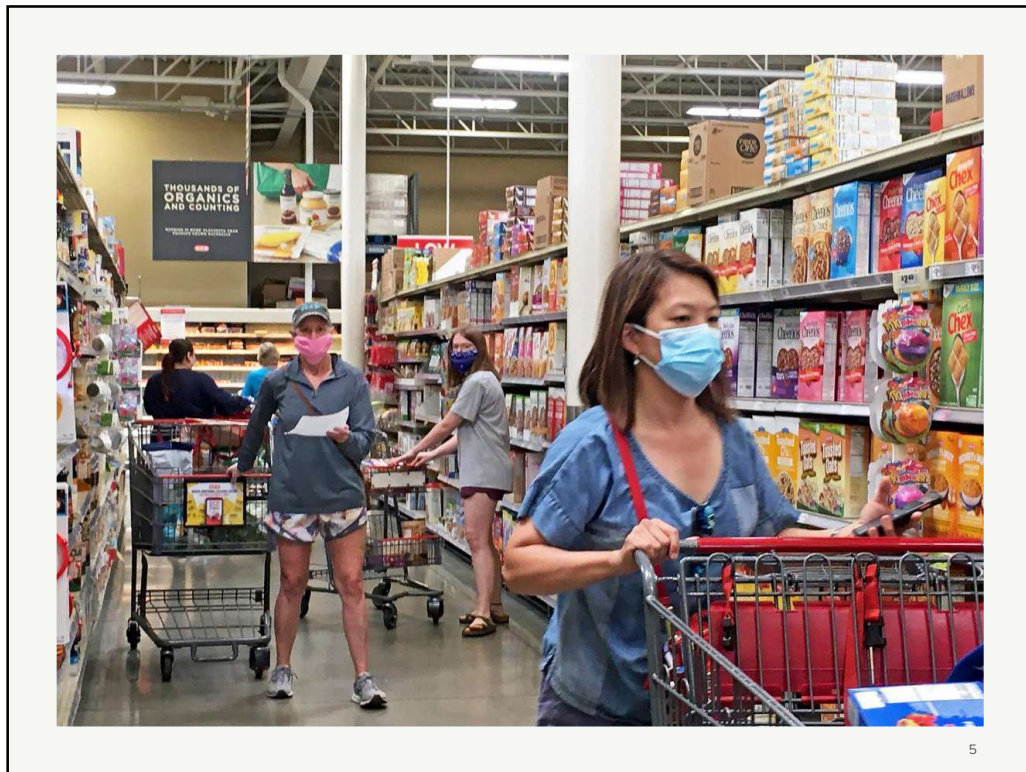
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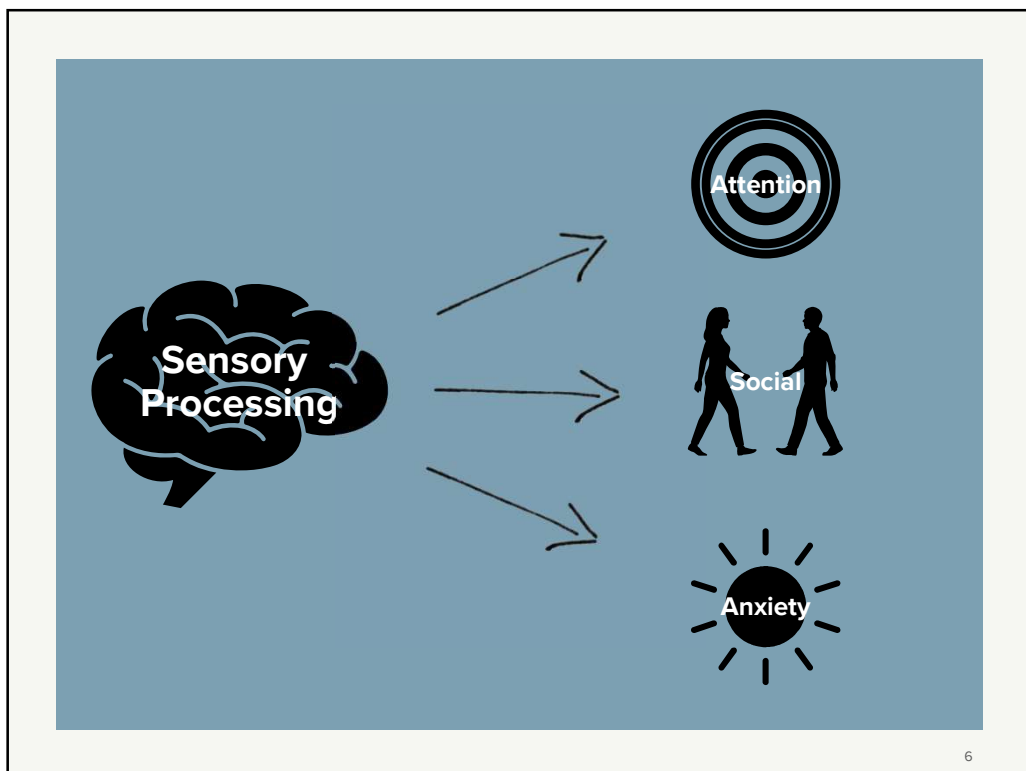
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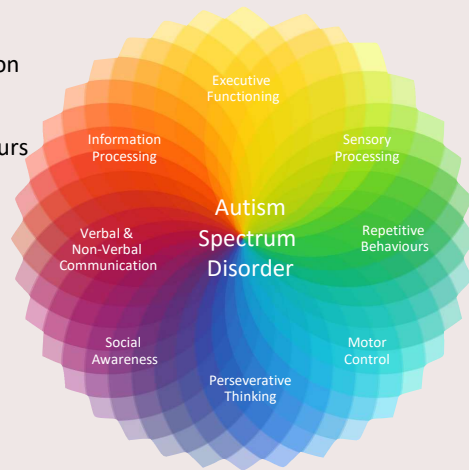
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Autism Spectrum Disorder (ASD)

- Social Communication & Interaction Differences
- Restricted and Repetitive Behaviours and Interests

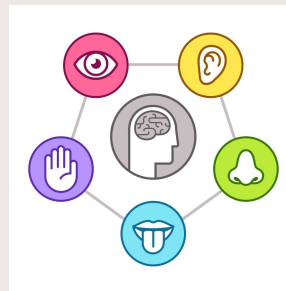


Note: I will be using identity-first language ("Autistic Person") given this is the expressed preference of autistic people. 7

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Autism Spectrum Disorder (ASD)

- Sensory Processing Differences
 - Hyper (increased) and hypo (decreased) sensitivity to sensory input
 - Most commonly auditory

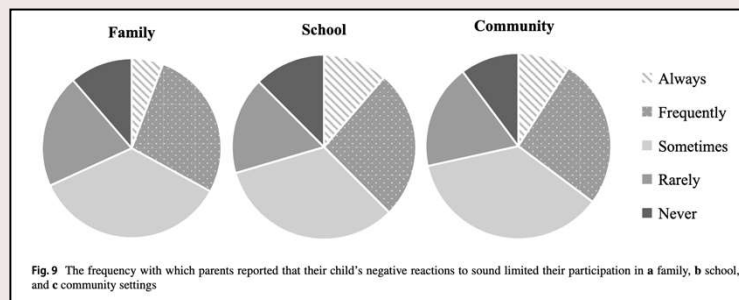


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Autism Spectrum Disorder (ASD)

- Sensory Processing Differences
- Limits participation in daily activities¹



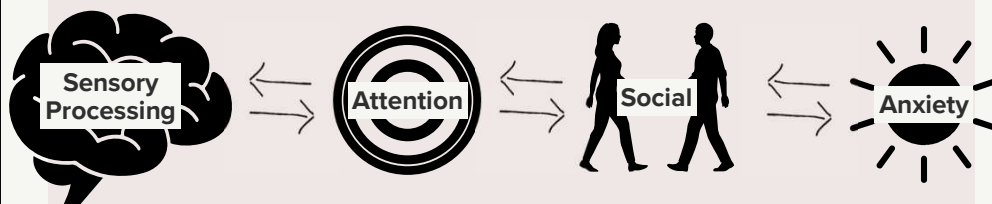
¹Scheerer, Boucher, Bahmei, Iarocci, Arzanpour, & Birmingham, 2021; Journal of Autism and Developmental Disorders

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Autism Spectrum Disorder (ASD)

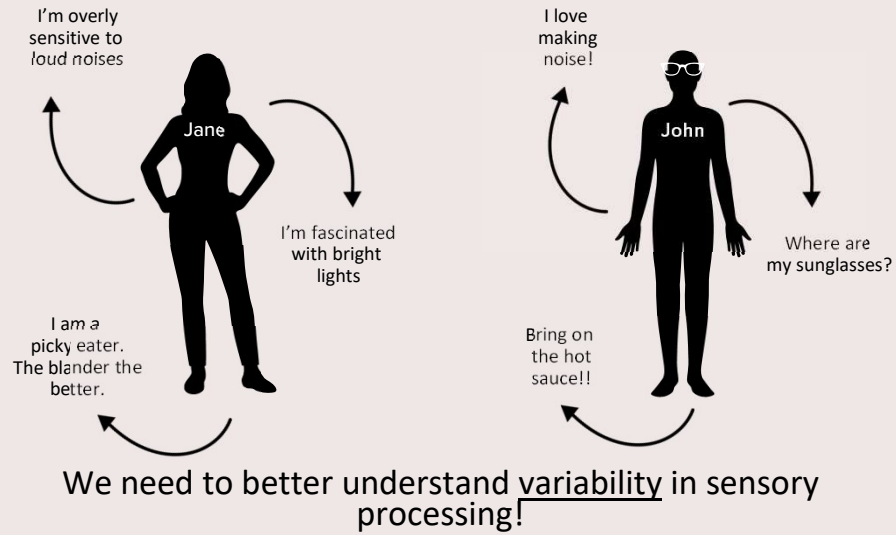
- Better understanding sensory-behaviour interactions in autism can:
 - Promote improved quality of life
 - Help us understand sensory processing, attention, social functioning, and anxiety more broadly



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Autism Spectrum Disorder (ASD)

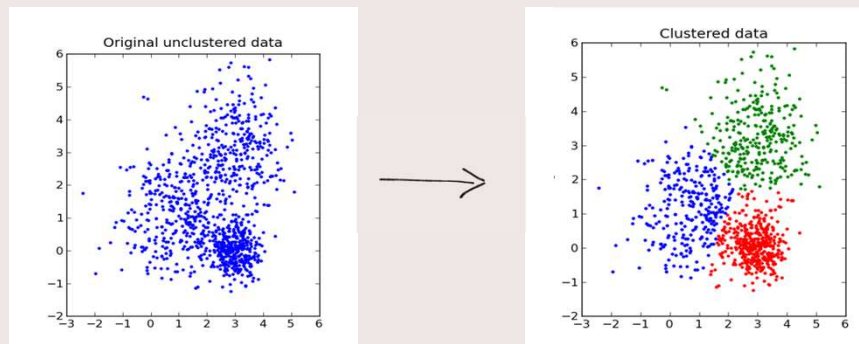


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Sensory Subtypes

- Cluster Analysis
- Groups data points that are similar, yet distinct from other data points
- Identifies Subtypes



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Sensory Subtypes

- Cluster Analysis
- Parent-Report Short Sensory Profile Data
- 599 Autistic Children/Young Adults
 - Age 1-21 (Average 10 years)

Short Sensory Profile Domains

- Tactile
- Taste and Smell
- Movement
- Underresponsive and Seeks Sensation
- Auditory Filtering
- Low Energy and Weakness
- Visual and Auditory

Short Sensory Profile, Dunn, 1999.

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Short Sensory Profile

INSTRUCTIONS

Please check the box that **best** describes the frequency with which your child does the following behaviors. Please answer all of the statements. If you are unable to comment because you have not observed the behavior or believe that it does not apply to your child, please draw an X through the number for that item. Write any comments at the end of each section. Please do not write in the Section Raw Score Total row.

Use the following key to mark your responses:

ALWAYS	When presented with the opportunity, your child always responds in this manner, 100% of the time.
FREQUENTLY	When presented with the opportunity, your child frequently responds in this manner, about 75% of the time.
OCCASIONALLY	When presented with the opportunity, your child occasionally responds in this manner, about 50% of the time.
SELDOM	When presented with the opportunity, your child seldom responds in this manner, about 25% of the time.
NEVER	When presented with the opportunity, your child never responds in this manner, 0% of the time.

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Short Sensory Profile

- Tactile (Touch)
 - For example:
 - Avoids going barefoot, especially in sand or grass
 - Reacts emotionally or aggressively to touch
 - Rubs or scratches out a spot that has been touched



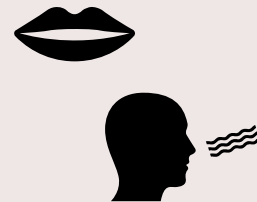
Short Sensory Profile, Dunn, 1999.

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Short Sensory Profile

- Taste and Smell
 - For example:
 - Avoids certain tastes or food smells that are typically part of children's diets
 - Will only eat certain certain tastes
 - Picky eater, especially regarding food textures



Short Sensory Profile, Dunn, 1999.

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Short Sensory Profile

- Movement
 - For example:
 - Becomes anxious or distressed when feet leave the ground
 - Fears falling or heights
 - Dislikes activities where head is upside down



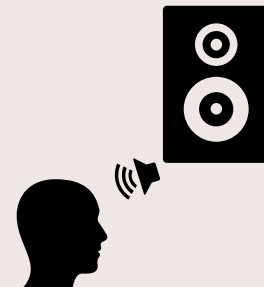
Short Sensory Profile, Dunn, 1999.

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Short Sensory Profile

- Underresponsive/Seeks Sensation
 - For example:
 - Enjoys strange noises/ seeks to make noise for noise's sake
 - Touches people and objects
 - Becomes overly excitable during movement activity



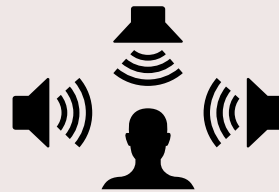
Short Sensory Profile, Dunn, 1999.

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Short Sensory Profile

- Auditory Filtering
 - For example:
 - Is distracted or has trouble functioning if there is a lot of noise around
 - Doesn't respond when name is called but you know their hearing is okay
 - Has difficulty paying attention



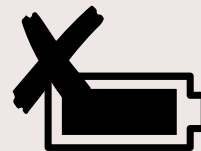
Short Sensory Profile, Dunn, 1999.

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Short Sensory Profile

- Low Energy/Weak
 - For example:
 - Seems to have weak muscles
 - Tires easily, especially when standing or holding a particular body position
 - Props to support self (even during activity)



Short Sensory Profile, Dunn, 1999.

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Short Sensory Profile

- Visual/Auditory Sensitivity
 - For example:
 - Holds hands over ears to protect from sounds
 - Is bothered by bright lights after others have adapted to light
 - Responds negatively to unexpected or loud noises



Short Sensory Profile, Dunn, 1999.

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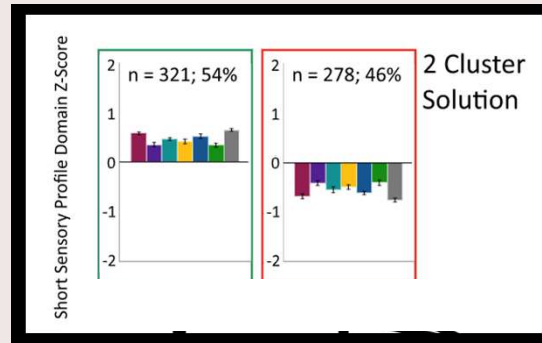
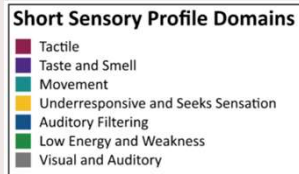
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Short Sensory Profile

- Scoring
 - 1= Always, 2= Frequently, 3= Occasionally, 4=Seldom, 5= Never
 - Higher Scores = Fewer Sensory Processing Differences
 - Lower Scores = More Sensory Processing Differences
- Cluster Analysis
 - + = Fewer Sensory Processing Differences than Autistic Peers
 - 0 = Average score across 599 Autistic Children and Adults
 - - = More Sensory Processing Differences than Autistic peers

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Are there Sensory Subtypes in Autism?

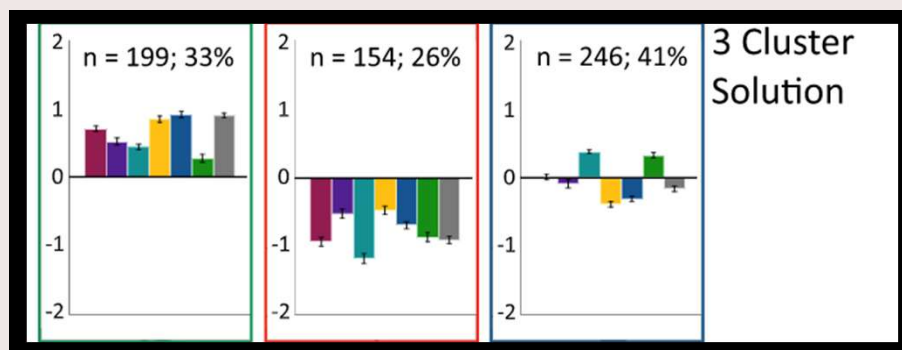


Scheerer et al., 2021; Molecular Autism

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Are there Sensory Subtypes in Autism?



Scheerer et al., 2021; Molecular Autism

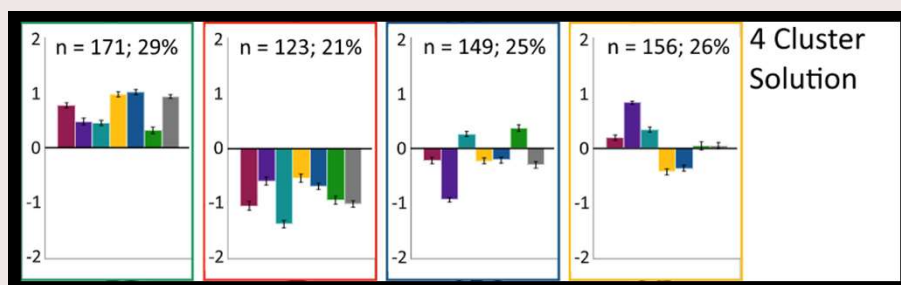
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Are there Sensory Subtypes in Autism?

Short Sensory Profile Domains

- Tactile
- Taste and Smell
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- Underresponsive and Seeks Sensation
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Scheerer et al., 2021; Molecular Autism

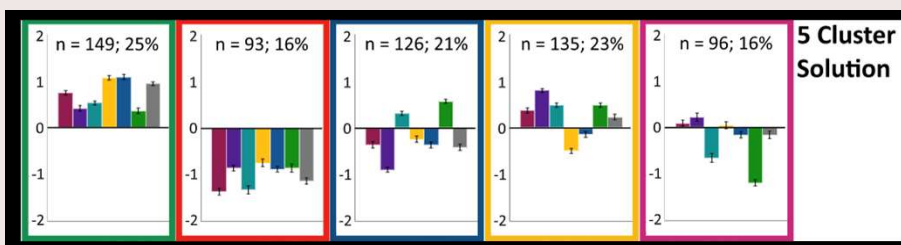
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Are there Sensory Subtypes in Autism?

Short Sensory Profile Domains

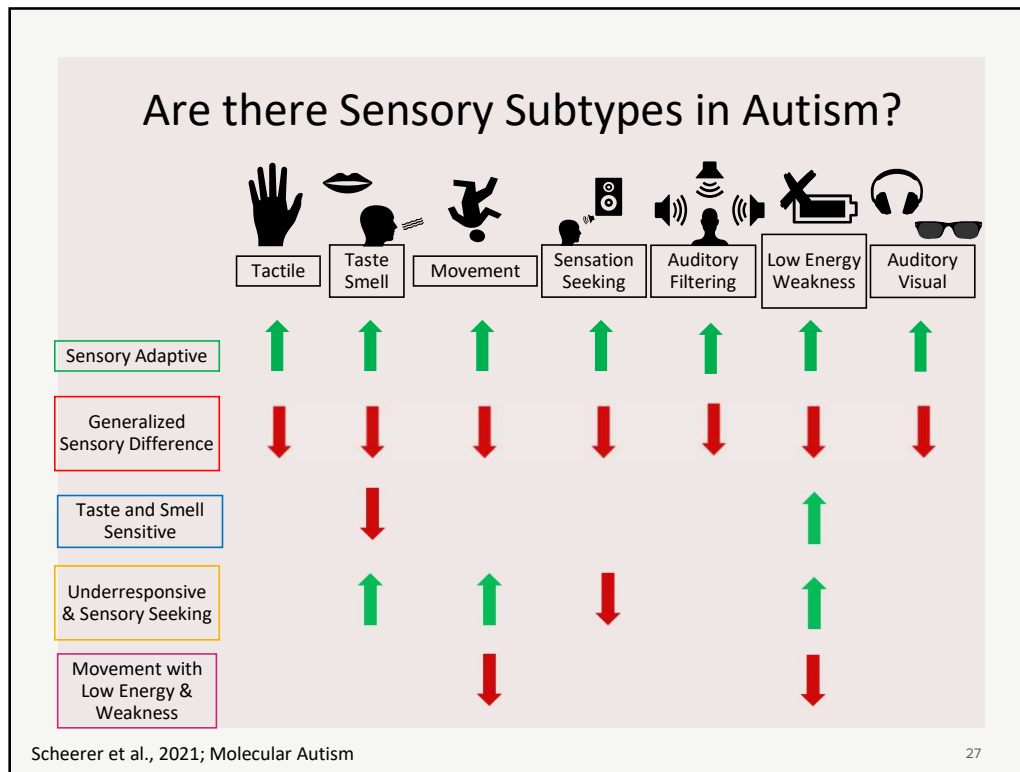
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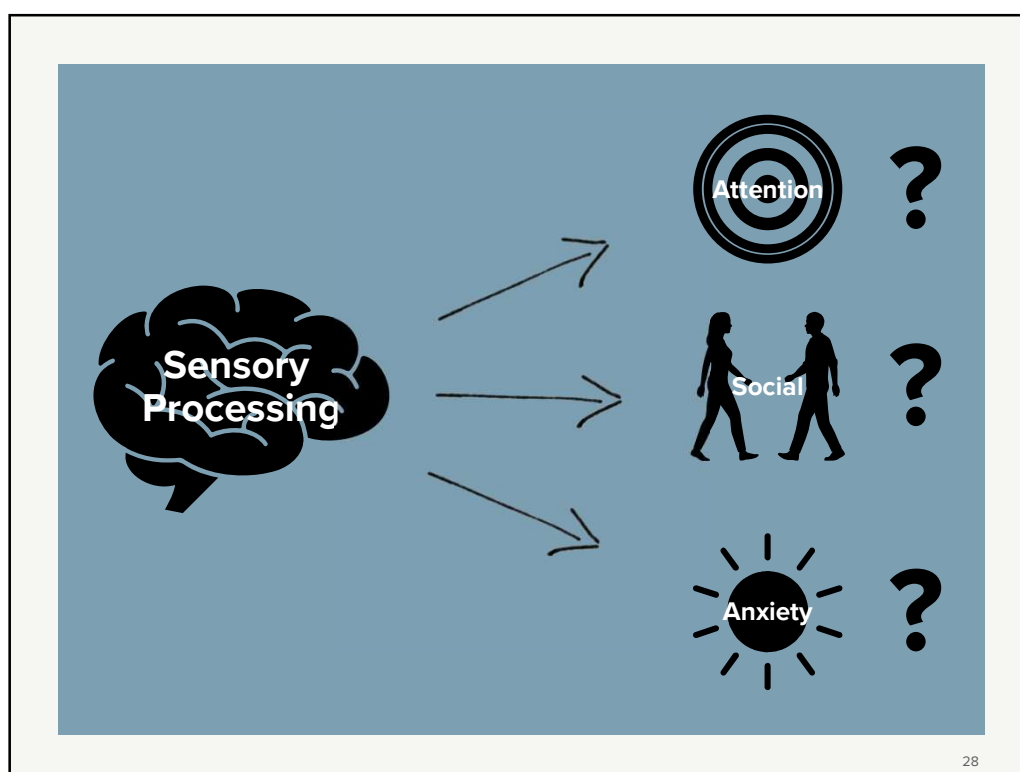
Scheerer et al., 2021; Molecular Autism

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Attention

- Strengths and Weaknesses of Attention-Deficit/Hyperactivity Disorder Symptoms of Normal Behaviour Scale (SWAN)
 - Inattention Sub-scale
 - Hyperactivity Sub-scale
 - Data from 463 children and young adults.

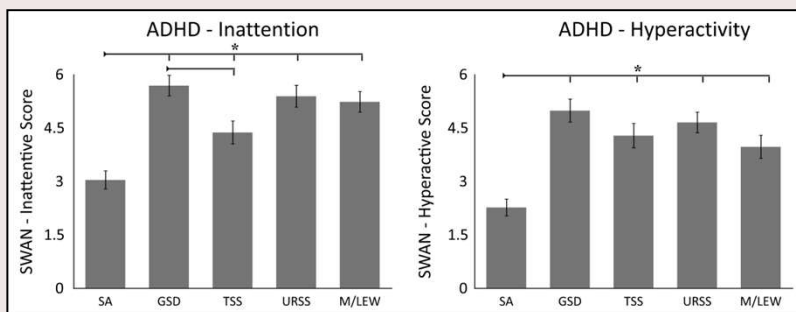


Scheerer et al., 2021; Molecular Autism

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Attention

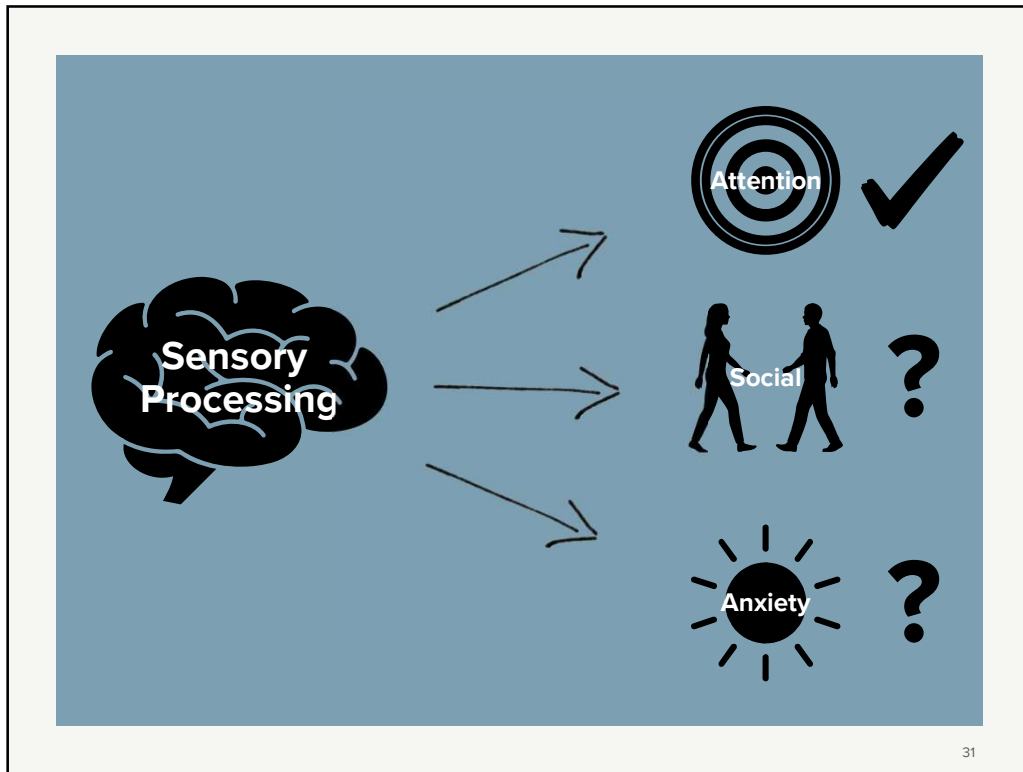


- The Sensory Adaptive (SA) subtype was associated with less inattention and hyperactivity.
- The Taste and Smell Sensitivity (TSS) subtype was also associated with less inattention relative to the Generalized Sensory Difference (GSD) subtype.

Scheerer et al., 2021; Molecular Autism

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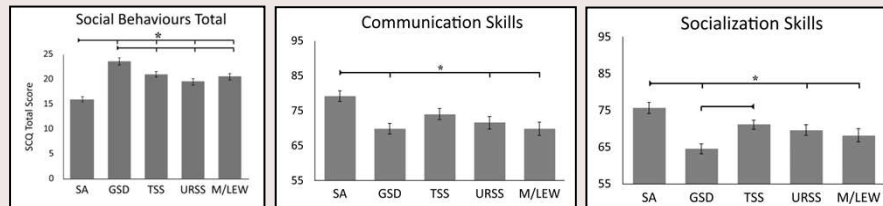
Social Characteristics

- Social Communication Questionnaire (SCQ)
 - Data from 534 children and young adults.
- Vineland Adaptive Behaviour Scales-Second Edition (VABS)
 - Communication Sub-scale
 - Socialization Sub-scale
 - Data from 534 children and young adults.

Scheerer et al., 2021; Molecular Autism

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Social Characteristics

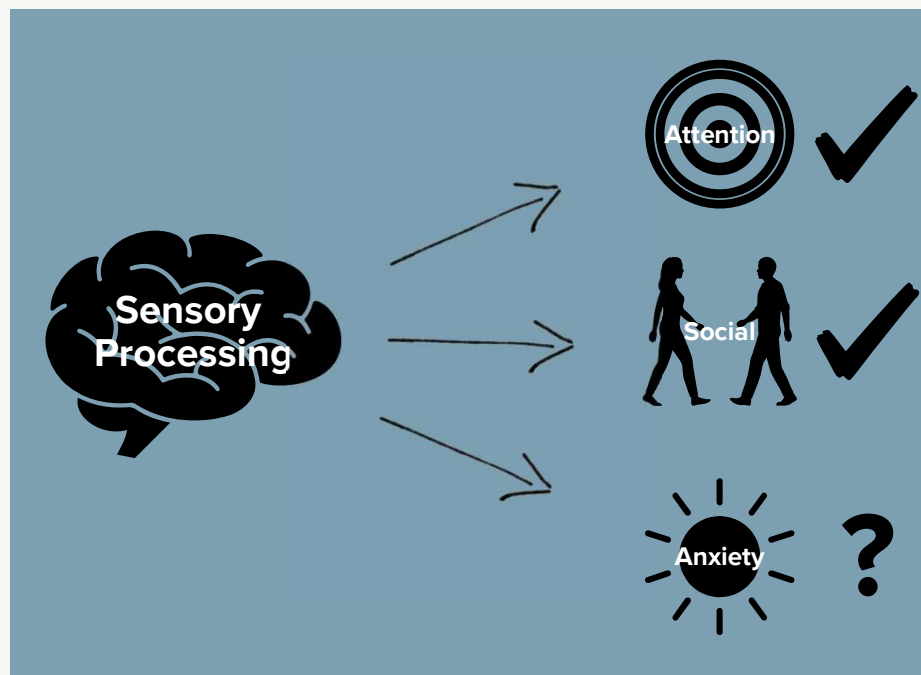


- The Sensory Adaptive (SA) subtype was associated with less social differences on the SCQ.
- The Sensory Adaptive (SA) subtype was associated with more adaptive communication and socialization skills on the VABS.

Scheerer et al., 2021; Molecular Autism

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Anxiety Behaviours

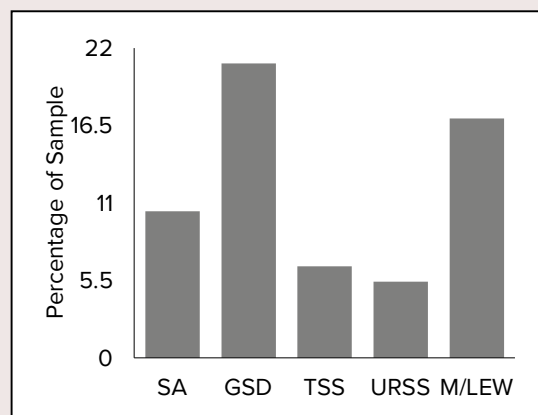
- Clinical Diagnosis of Co-morbid Anxiety
 - Data from 534 children and young adults.
- The Spence Children's Anxiety Scale (SCAS)
 - Panic, Separation, Social, Generalized
 - Data from 164 children and young adults.
- Revised Children's Anxiety and Depression Scale (RCADS)
 - Panic, Separation, Social, Generalized
 - Data from 315 children and young adults.



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Anxiety Behaviours

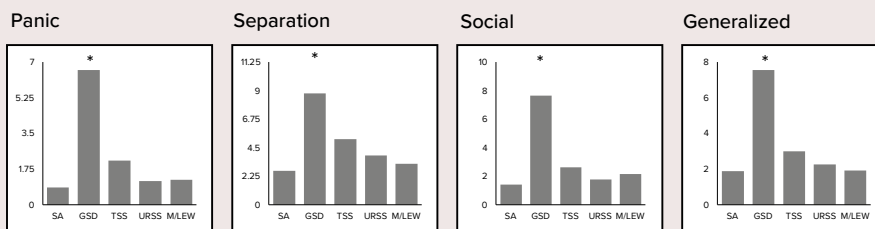


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Anxiety Behaviours

Spence Children's Anxiety Scale



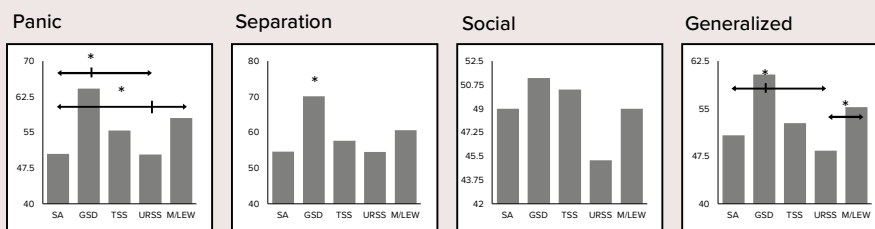
- Children classified by the Generalized Sensory Difference (GSD) subtype had higher levels of anxiety overall.

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Anxiety Behaviours

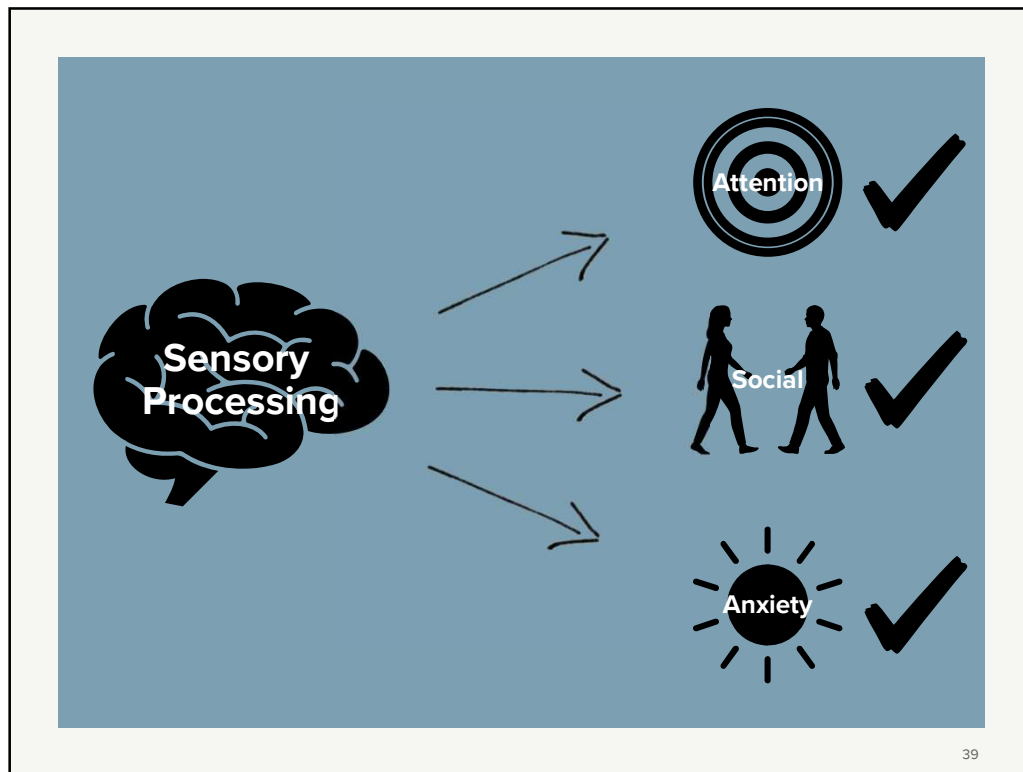
Revised Children's Anxiety and Depression Scale



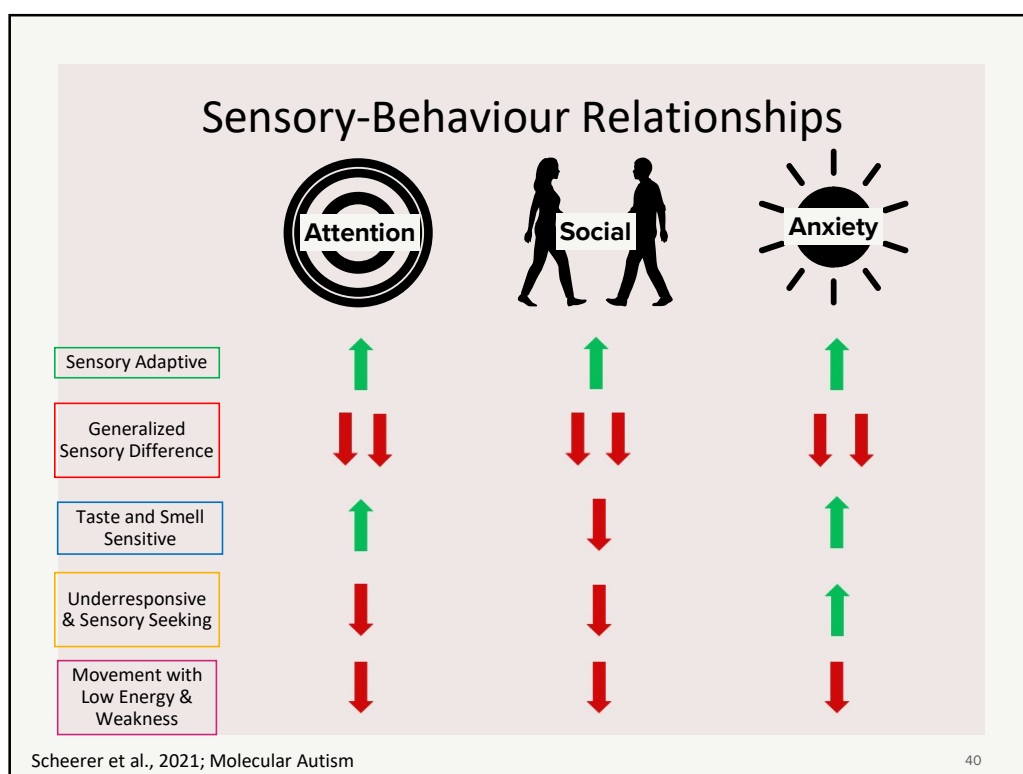
- Children classified by Generalized Sensory Differences (GSD) had elevated levels of anxiety.
- Children classified by the Movement and Low Energy and Weakness (M/LEW) subtype had higher rates of generalized anxiety and panic behaviours.

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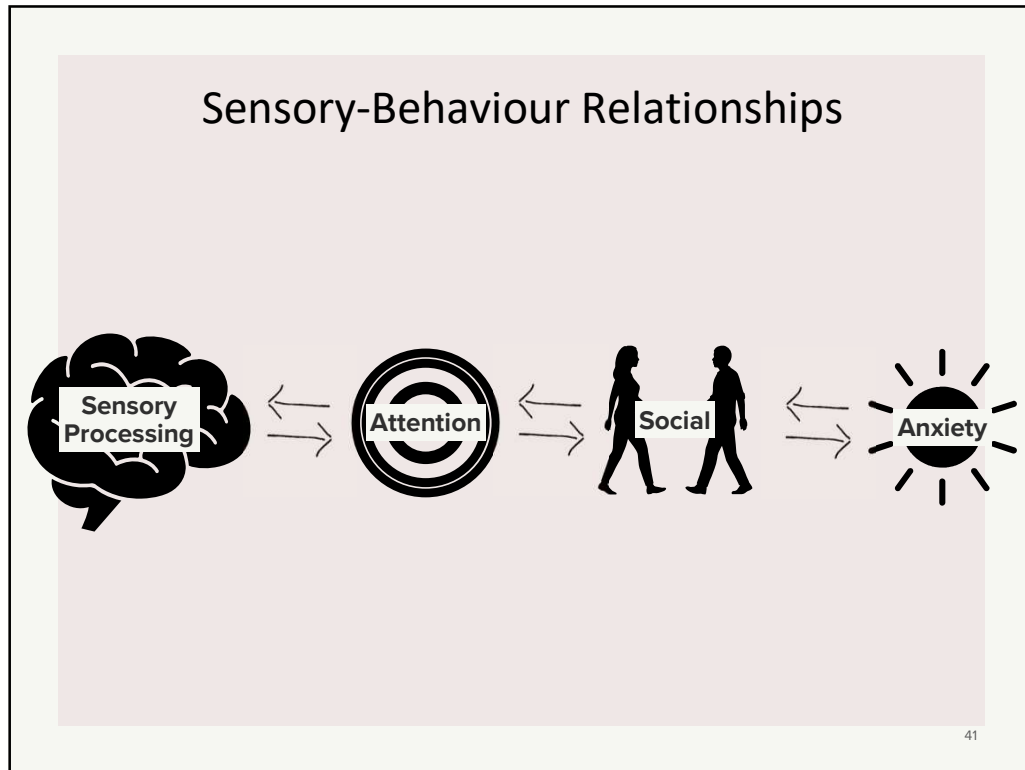
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What do we do with this?

- Better understanding sensory-behaviour interactions in autism can:
 - Promote improved quality of life
 - Sensory modifications may improve attention, social behaviours, and anxiety levels
 - Environments can be tailored to support individual needs
 - Be better prepared to cope with distressing environments

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Conclusion

- Sensory Processing behaviours can be clustered into discrete sensory subtypes.
- Sensory Subtypes are associated with differences in attention, social behaviours, and anxiety.
- Supporting autistic people's sensory processing differences may be a key step in promoting adaptive attentional processes, social behaviours, and managing anxiety.

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Thank You!



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Questions?

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