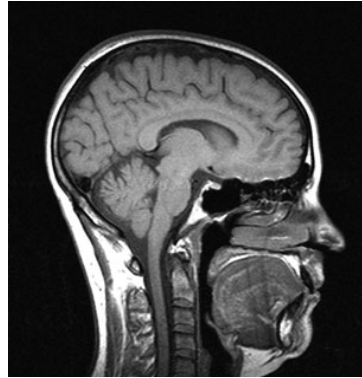


Interoception and anxiety in autistic adults

Sarah N Garfinkel

Psychiatry and Neuroscience
Brighton and Sussex Medical School
University of Sussex

Brain – body interactions



The senses

Exteroception



Proprioception

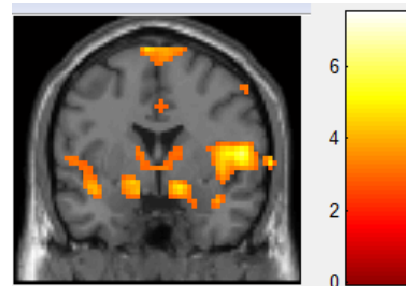
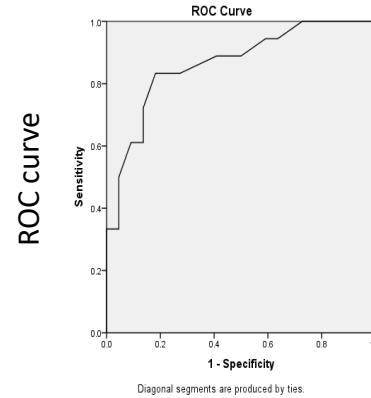
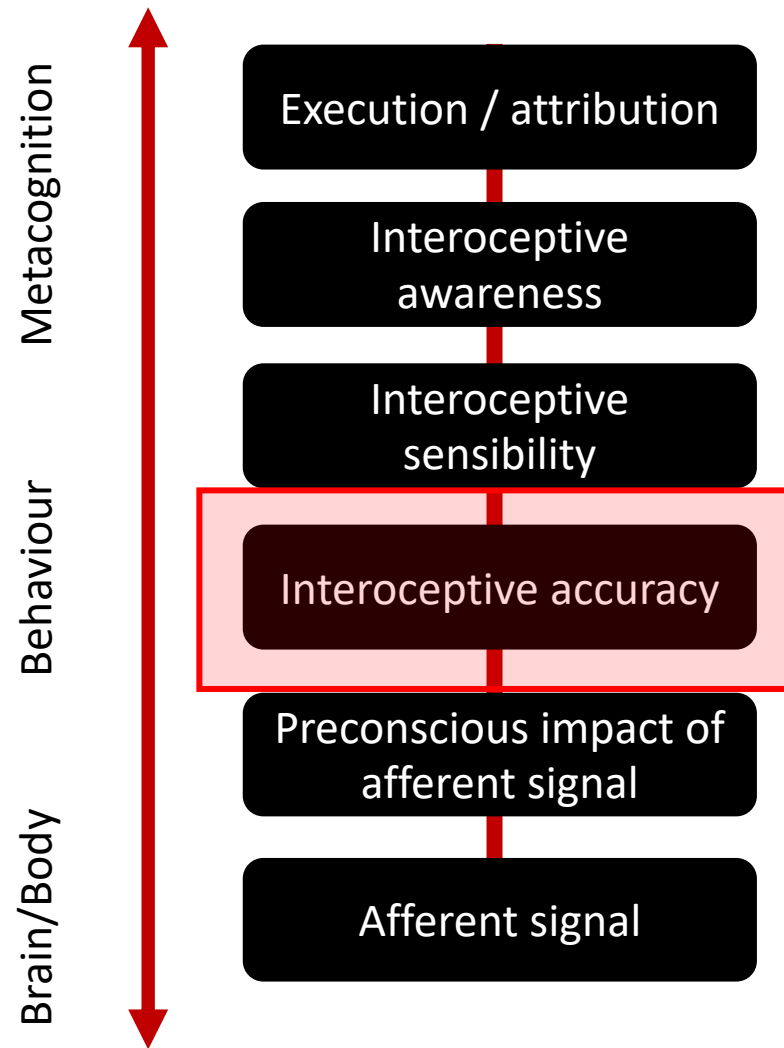


Interoception



Interoception refers to the process by which the nervous system senses, interprets, and integrates signals originating from within the body, providing a moment-by-moment mapping of the body's internal landscape across conscious and unconscious levels (Khalsa et al., 2018)

Dimensions of interoception



Quadt, Critchley & Garfinkel 2018
Annals New York Academy of Sciences

Interoceptive accuracy: emotion



COGNITION AND EMOTION, 2000, 14 (3), 417–427

Heartbeat detection and the experience of emotions

Stefan Wiens, Elizabeth S. Mezzacappa, and Edward S. Katkin

State University of New York at Stony Brook, USA

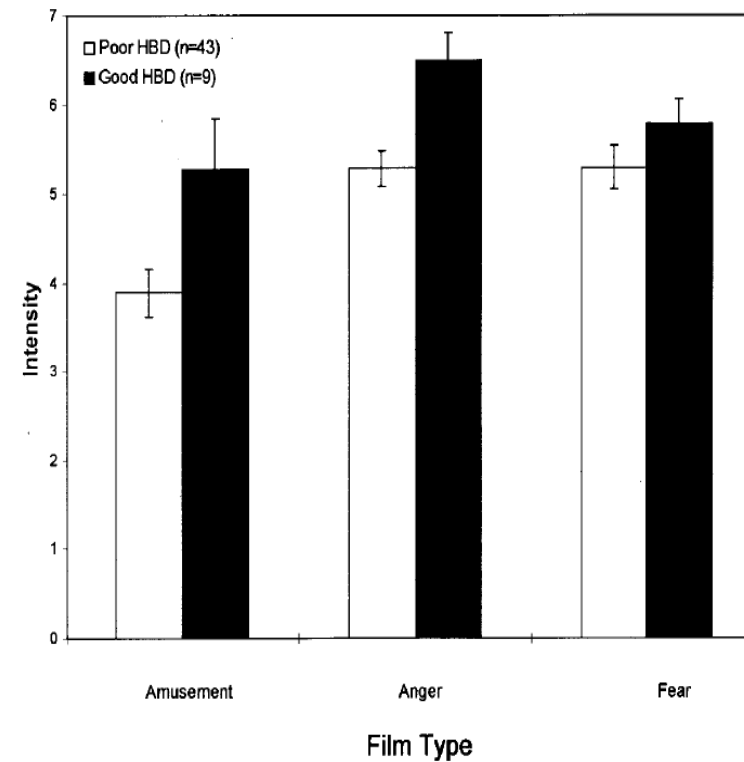
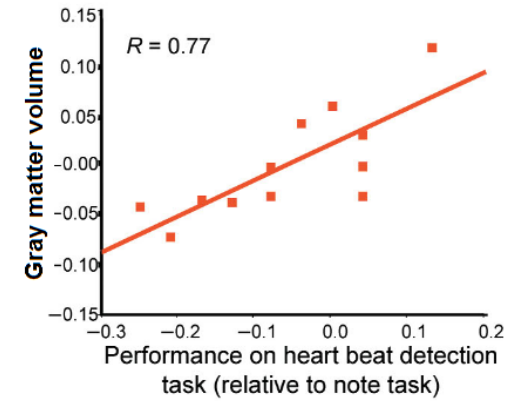
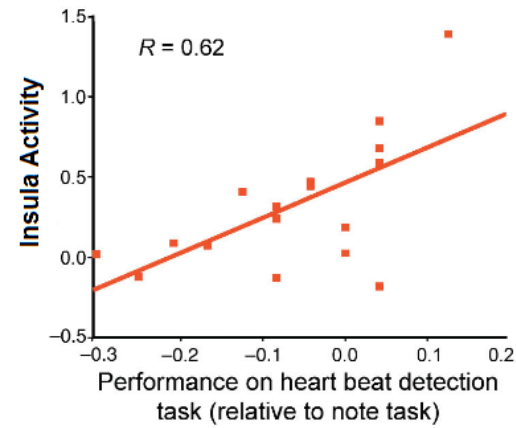
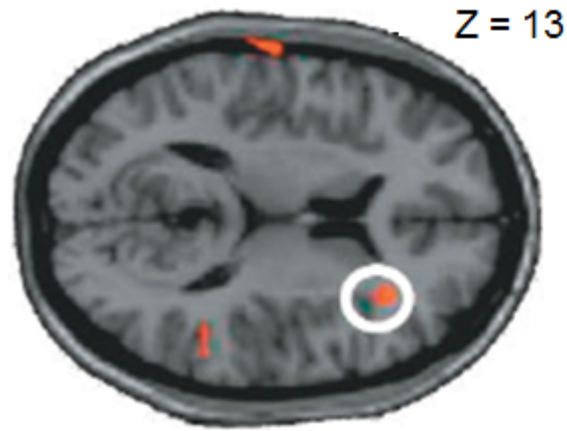


Figure 1. Mean intensity ratings of good and poor heartbeat detectors (HBD) to pairs of films targeting amusement, anger, and fear.

Neural substrate: Insula



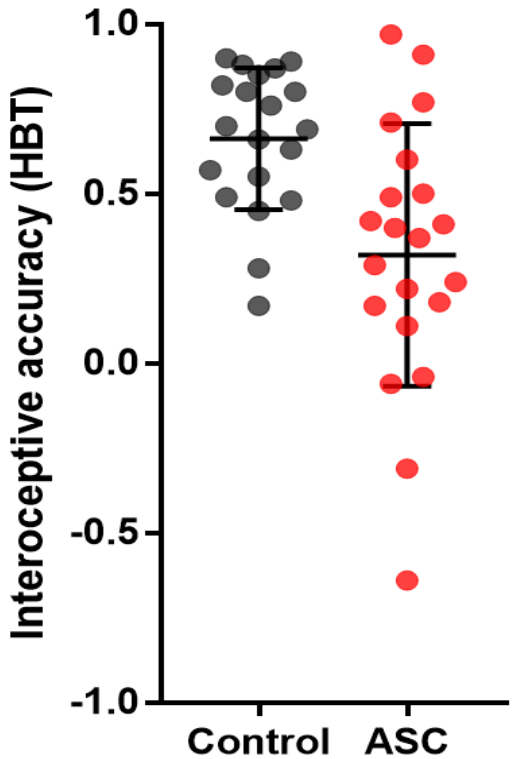
Critchley et al., 2004, Nature Neuroscience

Autism Spectrum Condition (ASC)

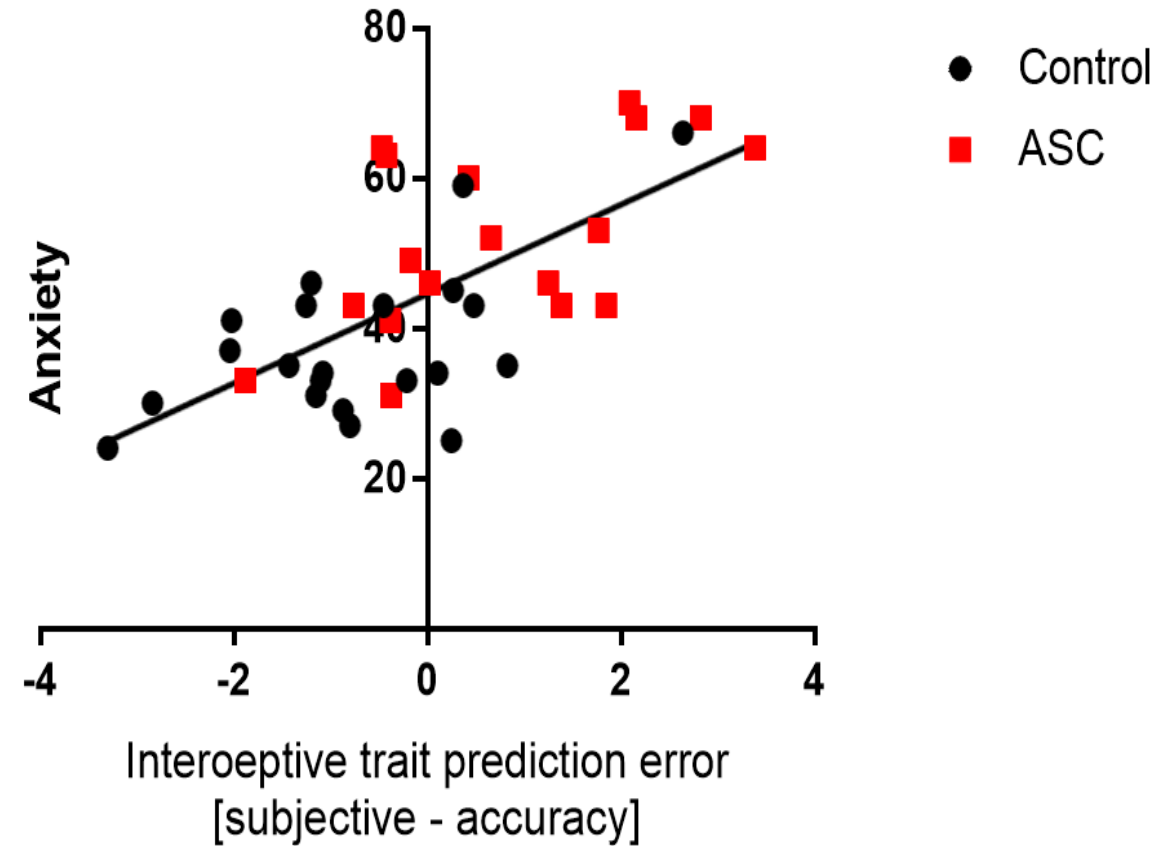
Neurodevelopmental condition
displaying alterations in emotion
recognition in self and other.

Autism and interoception

Interoceptive accuracy



Interoceptive error - anxiety



Garfinkel et al., 2016

Training protocol

Accuracy

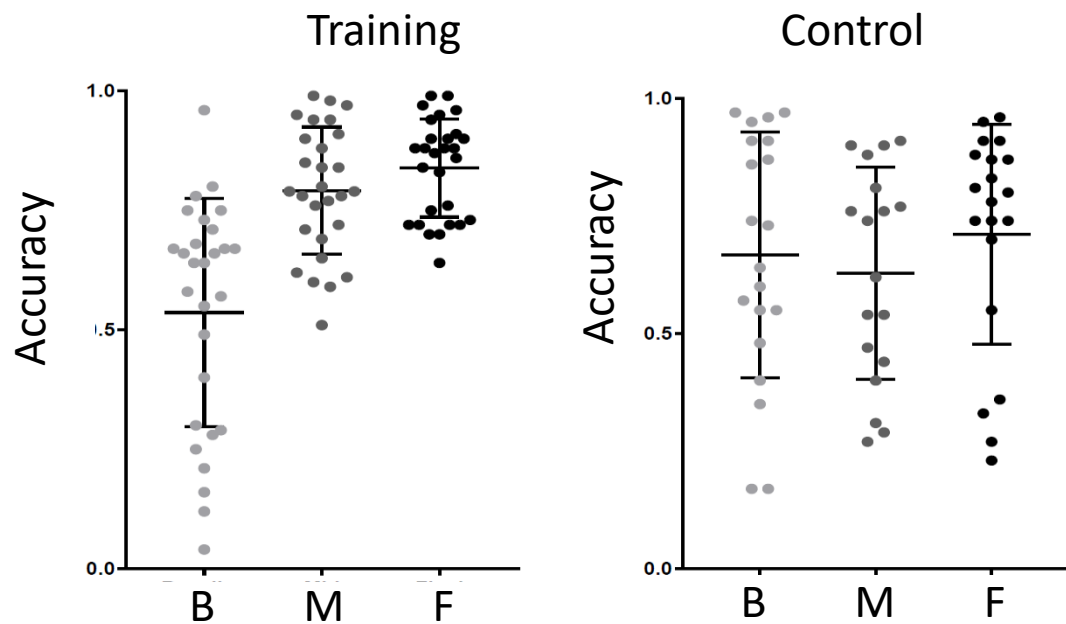


Regulation

Autonomic
control

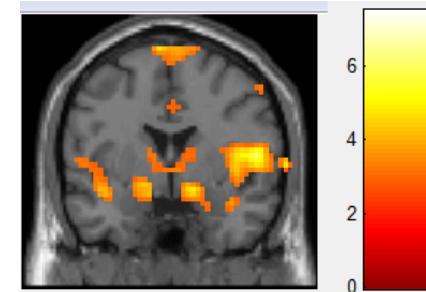
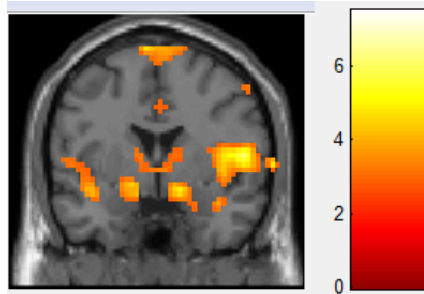
Interoceptive training

Heartbeat tracking



Clinical Trial: Autism (N=120)

Interoceptive training



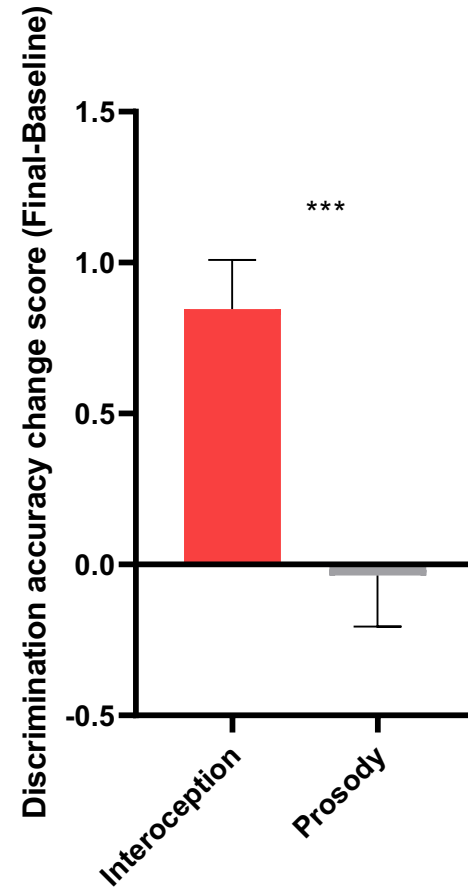
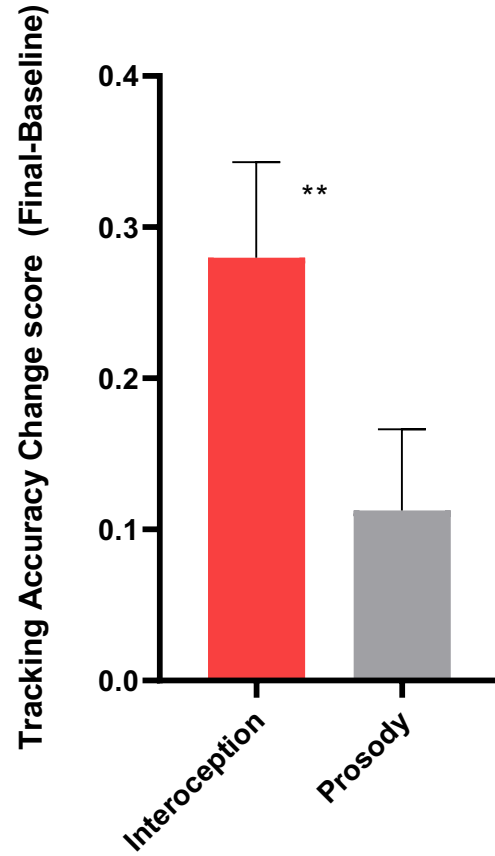
Δ Anxiety
 Δ Emotion

Exteroceptive training

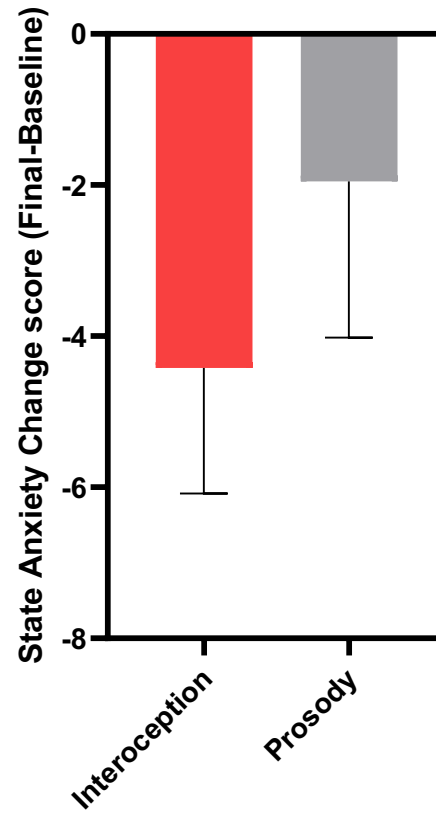
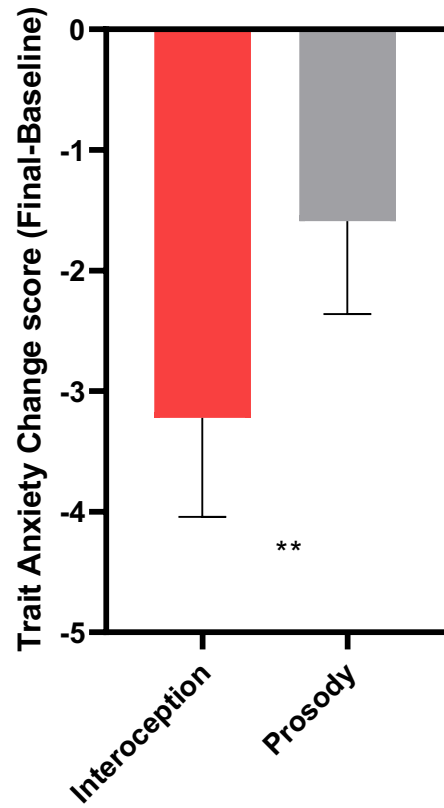


Δ Anxiety
 Δ Emotion

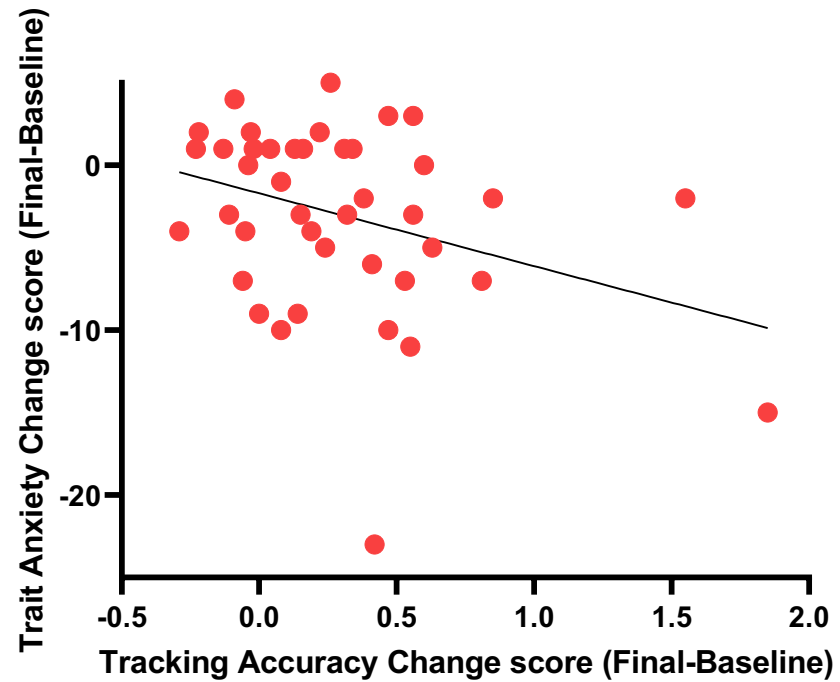
Results Teaser



Results Teaser



Results Teaser



Reduction of sensory overload

As the inner channel gets clearer,
the outer channel gets more quiet

Not worrying and enhanced regulation

When I notice the impacts of anxiety on my body I am more aware of them and am able to reassure myself that it is just a physical reaction. I am better at taking deep breaths and trying to slow my breathing and heart rate down, rather than letting it spiral.

Generalized bodily awareness

I believe it has increased my awareness of hunger and as a result I remember to eat/drink/go to the toilet

Conclusions



- Interoception is the sensing of internal bodily sensations
- Interoception can influence emotion and interoceptive error is related to anxiety
- Interoceptive accuracy is reduced in some autistic individuals
- Interoceptive training: new treatment for anxiety

Thank you



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University of Sussex
Sackler Centre for Consciousness Science



European Research Council
Established by the European Commission



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Michael Breakspear

#ActuallyAutistic

It gives me the ability to be highly creative and see connections between things that non autistics don't. A difference in thinking, communication styles, sensory perceptions... a different way of experiencing the world but equally as valid.

2:45 pm - 28 Feb 2019

7 Likes



Autism is a pervasive and inherent part of my brain and body. Autism is the way I process information; it is my deep sensory interaction with the world; it is the joy of stimming.

3:30 pm - 28 Feb 2019

2 Likes



Autism is being different, not defective.
Like a cat is not a defective dog.

10:50 pm - 28 Feb 2019

7 Likes



Autism is an umbrella term for a cluster of neurodevelopmental endophenotypes.

6:38 pm - 28 Feb 2019

1 Like



The senses

Exteroception



Proprioception

