

Sensory processing sensitivity, stress and anxiety in young high-functioning adults with Autism Spectrum Disorder

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Autism spectrum disorder (ASD)

DSM-5:

- 1) Limitations social communication/interaction
- 2) Restricted behaviour/interests/activities
(subsymptom: sensory over-/underresponsivity)

SPS in general population: Liss, Mailloux, & Erchull (2008)

| | | | | |
|-----------------------|-------------|-------|------|---|
| Aesthetic experiences | * | - | - | X |
| Low sensory threshold | X | X | X | X |
| Ease of excitation | X | X | X | X |
| | ASD Anx. | Alex. | Dep. | |

* Only “attention to details” (= ASD symptom)

SPS in ASD population?

From empirical research with people with ASD:

Sensory processing differences in early development (over-/underresponsive)

Too intense → (social) withdrawal (Liss et al., 2008)

Brains more active while “resting” (Perez Velazquez & Galan, 2013)

From self-report of people with ASD:

Sensory processing → autistic symptoms (constraining communication; Robledo et al., 2012)

Common: “stress” and “anxiety” (Donnellan et al., 2012)



But: empathy? Noticing subtleties?





But: empathy? Noticing subtleties?

YES

Recent ASD theories:

1) Empathy imbalance (Smith, 2009):

Low cognitive empathy

Normal-high emotional empathy

2) Intense world theory
(Markram & Markram)

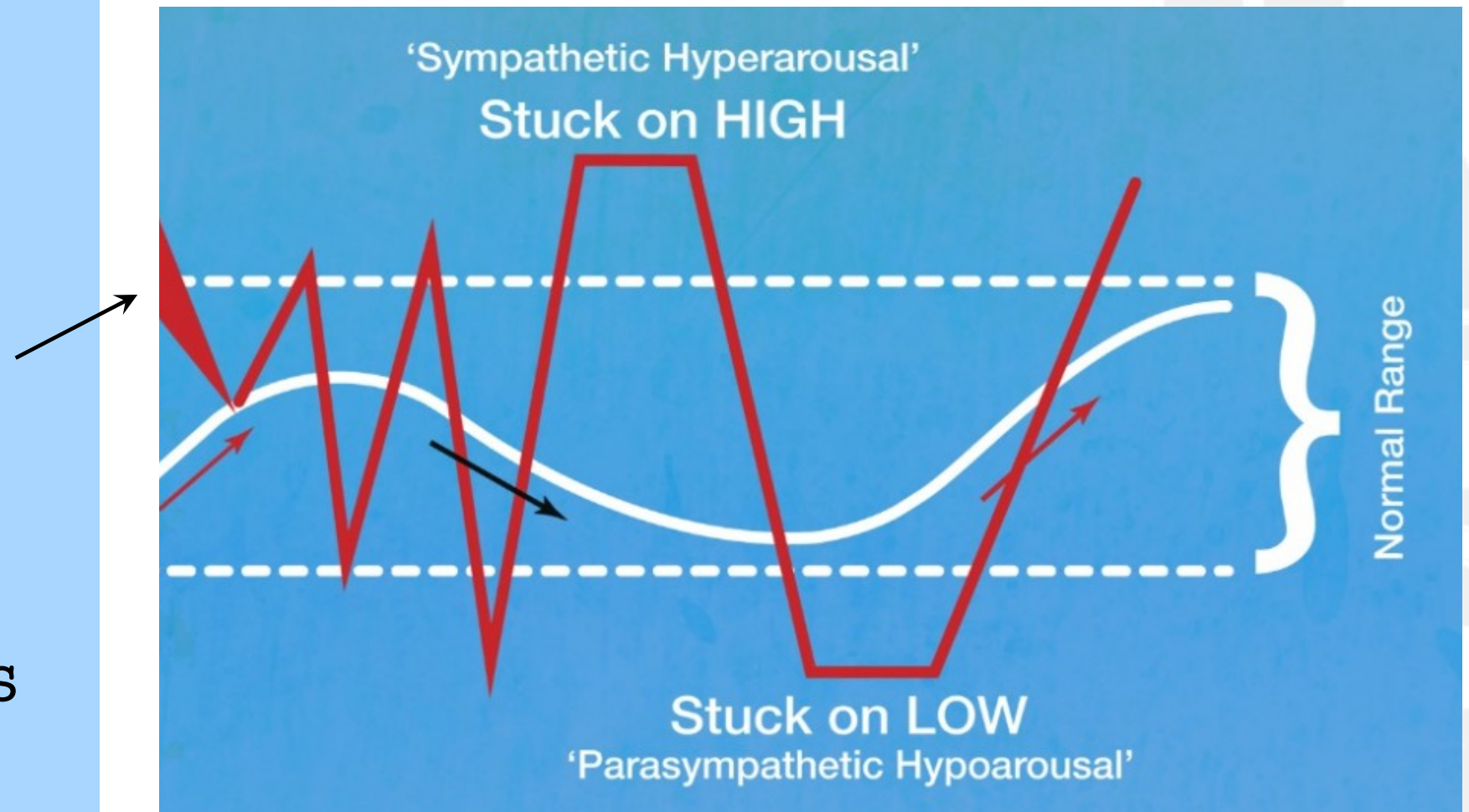
But:

ASD: hyper- AND
hypo-responsive?

1) Overwhelmed
nervous system:

Hyper- and
hypo-responsive stress
system

2) ASD subgroup..?



Common comorbidities in ASD:

Hyperarousal: (social) anxiety disorder (84%), ADHD (14-78%)

Hypoarousal: depression (43%)

More research needed

SPS / sensory processing in ASD?

↔ subjective and objective stress (heart rate) in ASD?

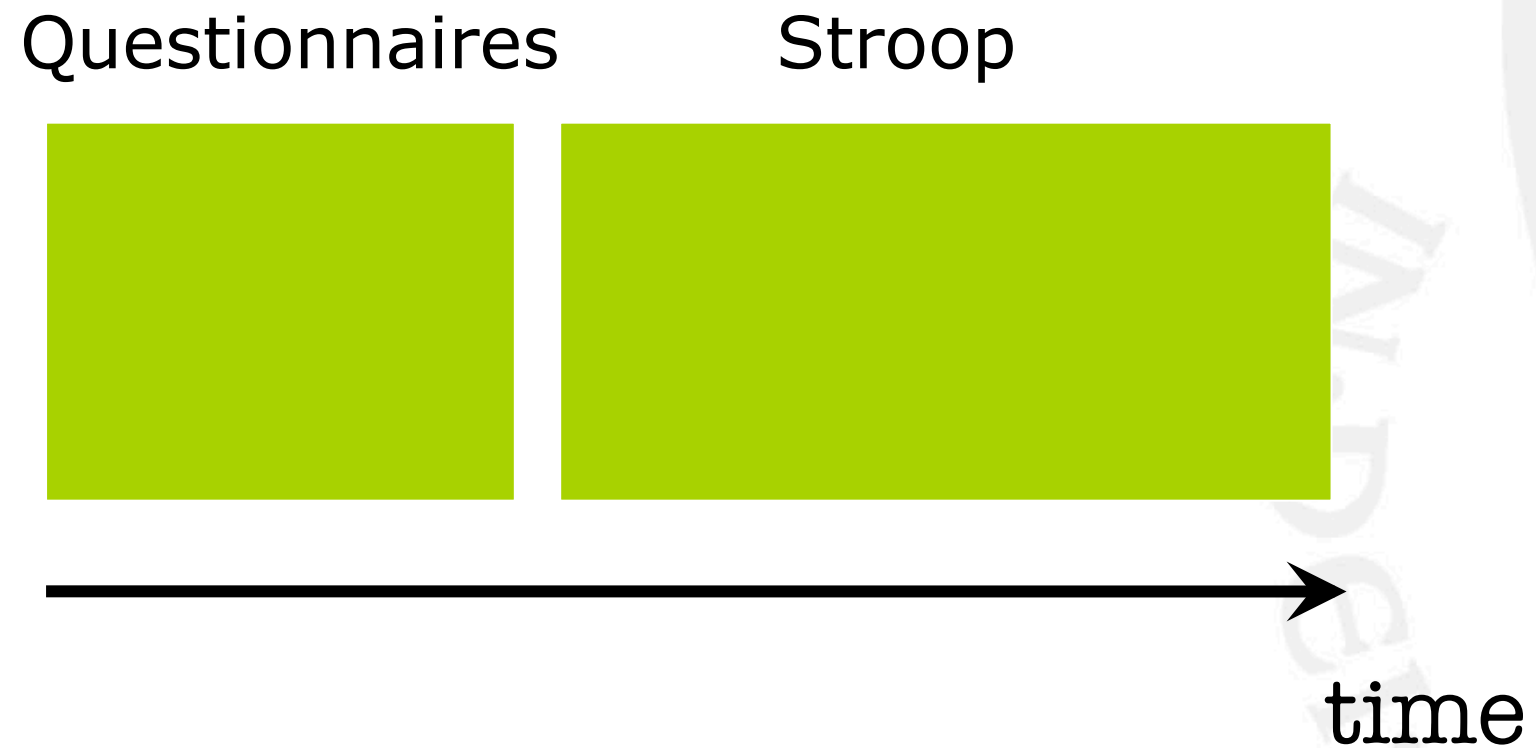
Participants

ASD: 10 women, 10 men (18 - 27 years old)

No ASD: 13 women, 10 men (17 - 34 years old)

All: university / higher vocational education

Study*



* Heart rate measured during entire study

Questionnaires

Highly Sensitive Person scale (Aron & Aron)

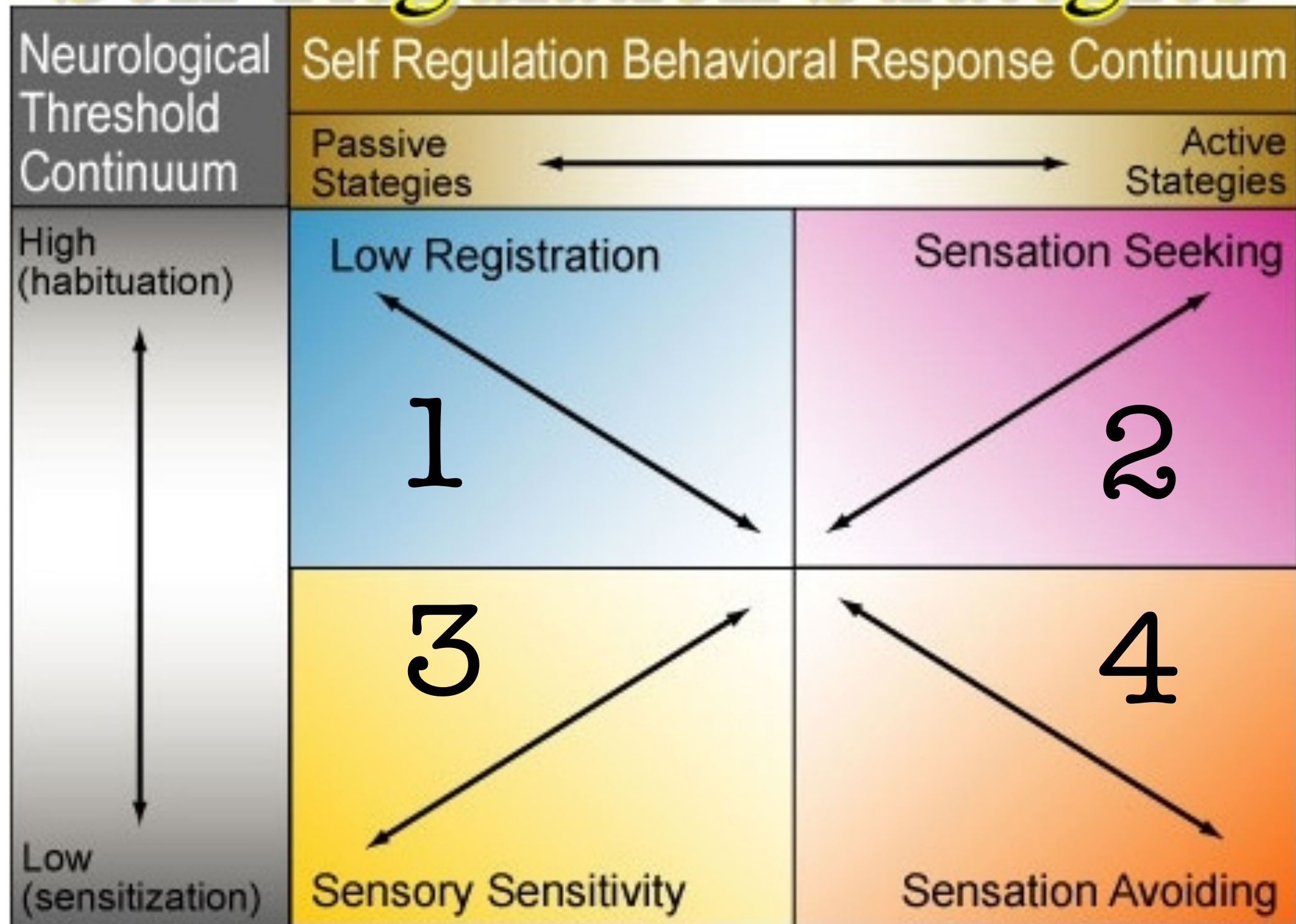
Adolescent/Adult Sensory Profile

Four quadrants

State-Trait Anxiety Scale
State anxiety

Visual Analogue Scales
Anxiety, subjective stress

Self-Regulation Strategies



Questionnaires

Highly Sensitive Person scale

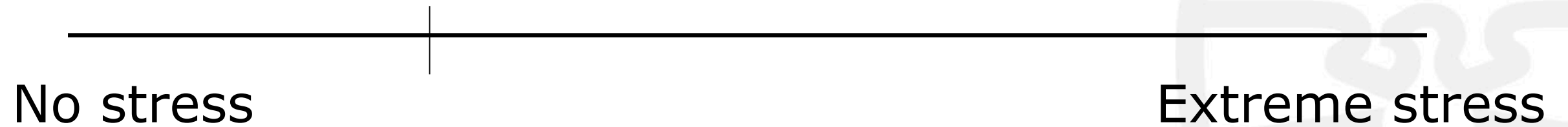
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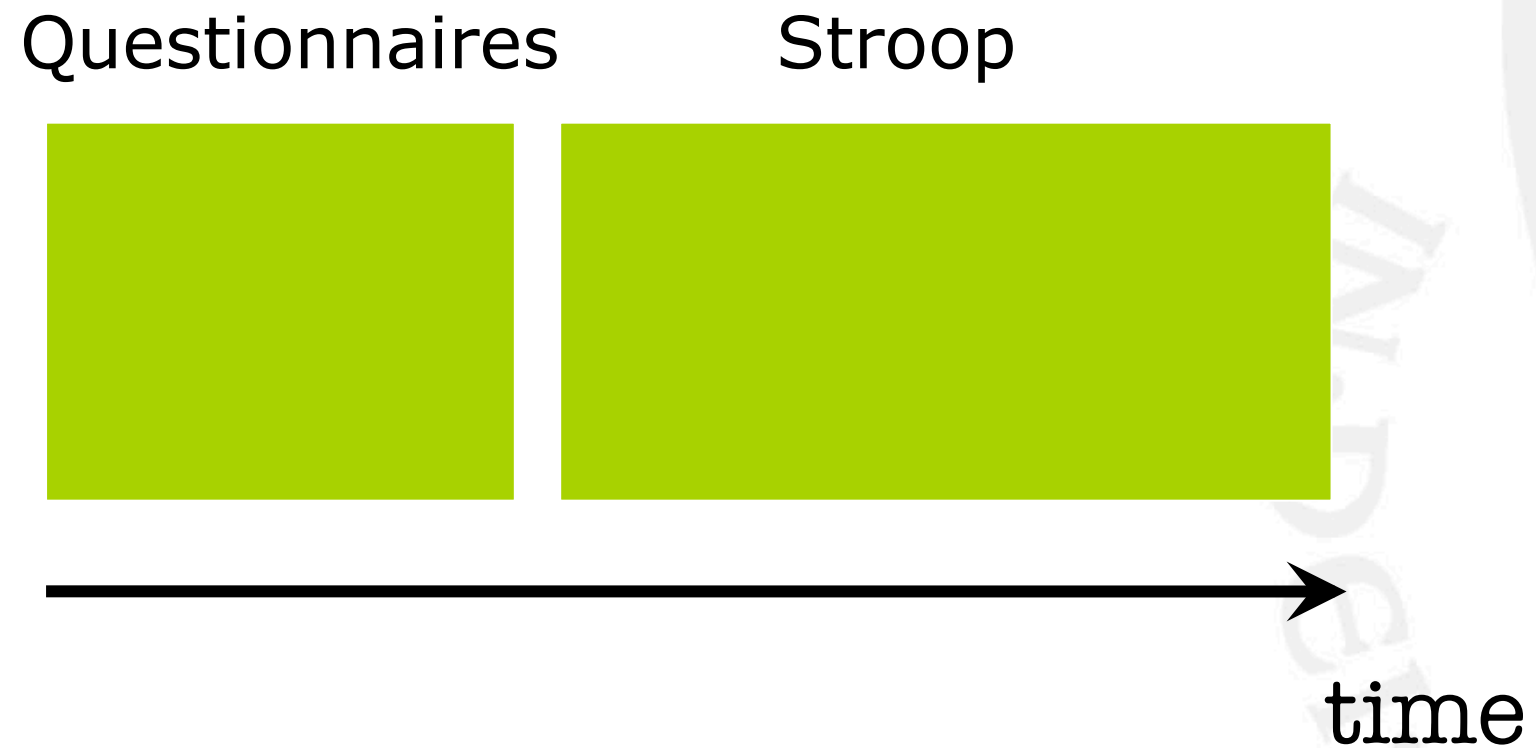
Visual Analogue Scales
Anxiety, subjective stress

Visual Analogue Scales

Subjective stress and anxiety



Study*



* Heart rate measured during entire study

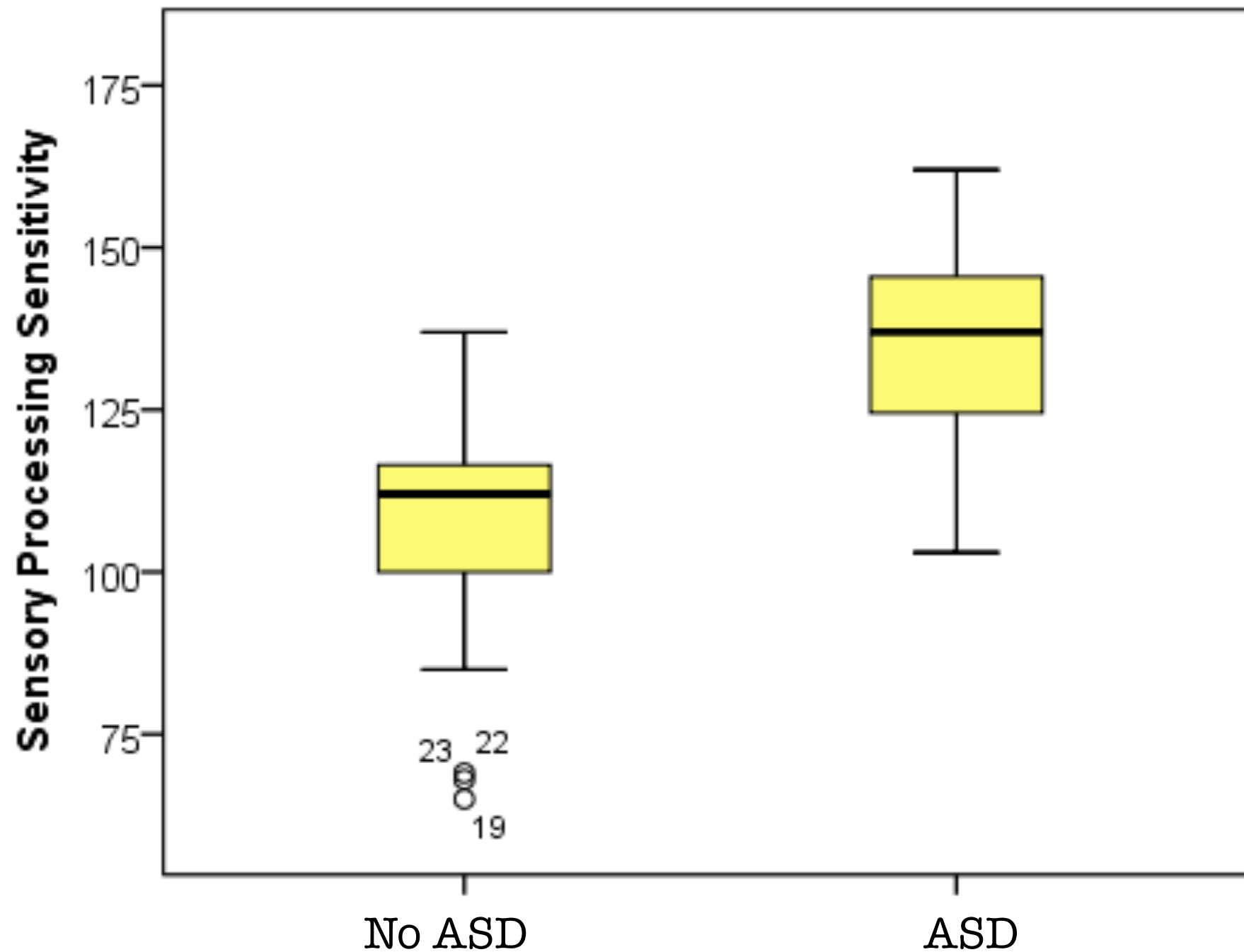
Stroop task (1060 words)

Approximately 30 minute Stroop + unexpected bleeps

Red
Yellow
Blue
Green
Green
Yellow
Blue

Blue
Green
Yellow
Red
Green
Blue
Red

Overall sensory processing sensitivity (possible scores: 27 – 189)



| | ASD (versus no ASD) | ASD women (versus ASD men) |
|----------------------------|---------------------|----------------------------|
| AASP | | |
| <i>Low registration</i> | ASD > no ASD* | n.s. |
| <i>Sensory sensitivity</i> | ASD > no ASD* | women > men* |
| <i>Sensation seeking</i> | ASD < no ASD* | n.s. |
| <i>Sensory avoiding</i> | ASD > no ASD** | n.s. |
| | | |
| SPS (Aron & Aron) | ASD > no ASD** | women > men* |

* $p < .05$; ** $p < .001$

SPS \leftrightarrow stress

Subjective + objective stress (heart rate)

ASD and no ASD

Correlations

| | Subjective stress | | | Objective stress |
|-----------------------------------|-------------------|--------------|--------------|------------------|
| | VAS stress | VAS anxiety | STAI | Heart rate |
| SPS (Aron & Aron) | | | | |
| <i>No ASD</i> | .45 * | .51 * | .57 * | .02 |
| <i>ASD</i> | .41 | .27 | .41 | .62 * |
| | | | | |
| Sensory sensitivity (AASP) | | | | |
| <i>No ASD</i> | .32 * | .23 | .56 * | -.12 |
| <i>ASD</i> | .24 | .06 | .08 | .32 # |

marginally significant

Conclusions:

(High-functioning) ASD strongly related to SPS
Subjective stress not related to SPS in ASD
Objective stress related to SPS in ASD

SPS might explain ASD symptoms

Future research:

Larger study (new study planned)
Replication SPS \leftrightarrow stress (reactivity) (in ASD)
Associations SPS \leftrightarrow social / daily functioning in ASD

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| | ASD (versus no ASD) | ASD women (versus men) |
|----------------------------|-------------------------------|-------------------------------|
| AASP | | |
| <i>Low registration</i> | $p = .016 \rightarrow$ higher | n.s. |
| <i>Sensory sensitivity</i> | $p = .005 \rightarrow$ higher | $p = .005 \rightarrow$ higher |
| <i>Sensation seeking</i> | $p = .016 \rightarrow$ lower | n.s. |
| <i>Sensory avoiding</i> | $p < .001 \rightarrow$ higher | n.s. |
| | | |
| SPS (Aron & Aron) | $p < .001 \rightarrow$ higher | $p = .03 \rightarrow$ higher |

* $p < .05$; * * $p < .001$