

Examining the role of emotion regulation and physiological arousal in anxiety in Autism Spectrum Disorder (ASD)

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- BACKGROUND**
- Up to 84% of children with ASD experience clinically significant anxiety
 - Negative impacts on academic achievement, employment outcomes, and physical and mental health (White et al. 2009)
 - Very few evidence-based interventions exist for anxiety in ASD
 - Biological, physiological, and emotional factors underlying anxiety in ASD are largely unknown
 - Emotion regulation (ER) difficulties and atypical physiological arousal are two suggested factors (White et al. 2014)

- OBJECTIVE**
- To examine the role of ASD symptoms, emotion regulation, and physiological arousal in anxiety.
 - To investigate two potential models explaining the relationships between these factors.

METHODS

Participants' RSA was recorded during resting state (movie-watching) and video gameplay.

- For short intervals, the controls were inverted/unresponsive to elicit frustration (negative modulation).
- RSA is an index of parasympathetic activity
- RSA reactivity calculated as: modulated gameplay RSA – resting state RSA
- The SCQ, a 40-item parent-report questionnaire, was used to characterize ASD symptoms (Rutter et al. 2003).
- ER was indexed by the EDI, a 30-item parent-report questionnaire with acceptable psychometric properties in samples of children with ASD (Samson et al. 2014).
- The SCARED is a 41-item parent-report questionnaire validated in samples of children with ASD (Stern et al. 2014).
- Structural equation modelling were used to test the relational models.

PARTICIPANT CHARACTERISTICS

Group	N	Sex (m:f)	Age	Full Scale IQ	SCQ	EDI	RSA (log(ms ²))	SCARED
ASD	26	20:6	11.6±2.06	109.4±11.88	15.8±7.41	20.5±15.38	-0.1±0.51	20.2±14.15
TD	32	17:15	9.9±1.73	116.4±11.42	2.7±2.89	5.9±6.45	-0.5±0.60	9.7±10.50

Autism Spectrum Disorder symptoms may mediate the association between RSA reactivity and emotion dysregulation, while contributing to anxiety symptoms.

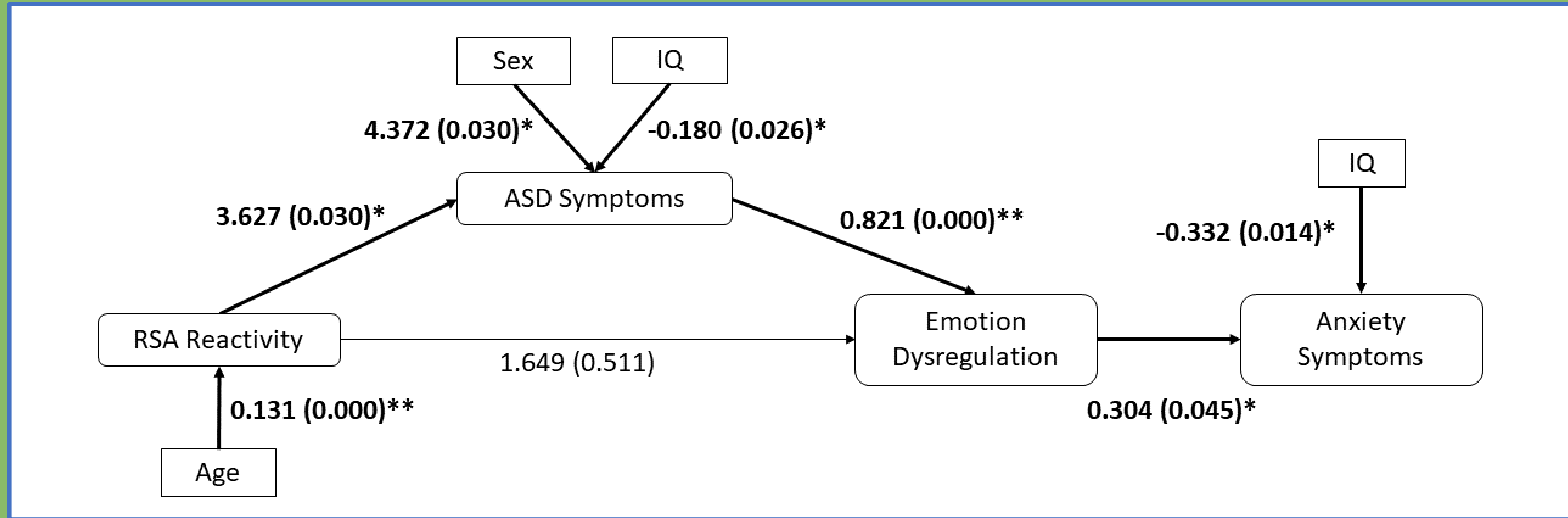


FIGURE 1: Relational model considering ASD symptoms to mediate the association between physiological arousal and emotion regulation, ultimately explaining anxiety symptoms. Annotated with effect sizes and p-values. * p < 0.05, ** p < 0.01.

MODEL FIT INDICES

	χ^2 (p-value)	Degrees of freedom	CFI	TLI	RMSEA (min-max, p-value)
Figure 1 Model	11.82 (0.30)	10	0.973	0.943	0.052 (0-0.147, 0.41)
Figure 2 Model	10.99 (0.36)	10	0.985	0.965	0.041 (0-0.160, 0.47)

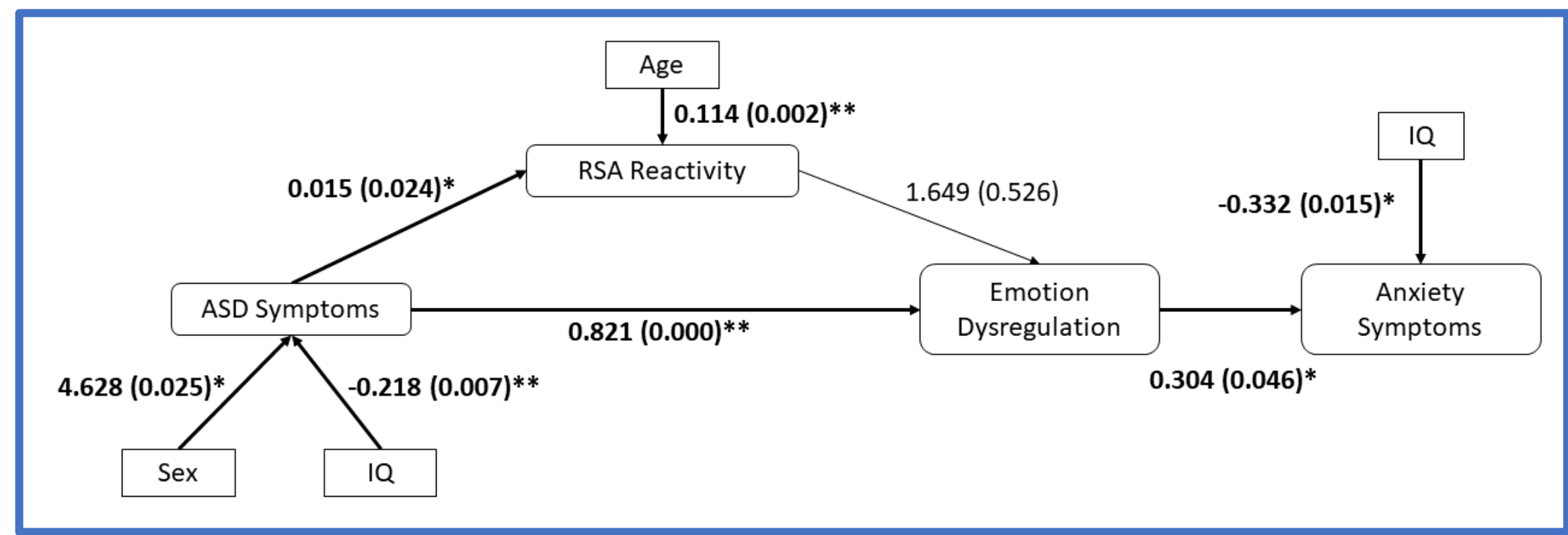


FIGURE 2: White et al's proposed model explaining how physiological arousal and emotion regulation relate to anxiety symptoms. Annotated with effect sizes and p-values. * p < 0.05, ** p < 0.01.

- RESULTS**
- Both models displayed good fit indices.
 - ASD symptoms mediated the association between RSA reactivity and emotion dysregulation (Figure 1).
 - Emotion dysregulation associated with anxiety symptoms (Figure 1 and 2).
 - RSA reactivity did not mediate the association between ASD symptoms and emotion dysregulation (Figure 2).

- CONCLUSIONS**
- Less parasympathetic withdrawal during frustrating gameplay associated with greater ASD symptoms (Figure 1).
 - Greater ASD symptoms associated with greater emotion regulation difficulties (Figure 1).
 - These relationships mediated the association between parasympathetic reactivity and emotion regulation difficulties (Figure 1).
 - Greater emotion regulation difficulties associated with greater anxiety symptoms (Figure 1 and 2).

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