

The Role Parental Stress Plays on the Intelligence Test of 5-year-old Children with Potential Autism Trait

Sheow Yun Sie M.A. BCBA.LBA¹, Donato Delngeniis B.A.¹, & Yoko Nomura PhD^{1,2}



¹Department of Psychology, Queens College, the City University of New York

²Department of Psychiatry, Icahn School of Medicine at Mount Sinai, NY



Introduction

- Previous research looking at the interplay between preterm birth, maternal stress, and child IQ found emotional distress, rather than perinatal risk, to be a better predictor for intelligence abilities^[1].
- Research among children with autism spectrum disorder (ASD) found intellectual abilities, measured by IQ performance, to be a significant predictors of parental stress^[2].
- IQ among children with various neuro-developmental disabilities (NDDs) was found to be significantly associated with parental stress^[3].
- Previous findings show that higher parental stress is associated with lower child IQ outcomes and vice versa.
- Little to no research explored the interaction of Parental Stress Levels of children with Potential Autism Trait and their consequent impact on Children Intelligence Test.

Methods

Participants:

- 97 mothers and their children from the Stress in Pregnancy Study.
- Age of children: 5-year-old
- Sex: 55.7% female ($n = 54$); 44.3% male ($n = 43$)

Measures:

- Parental Stress Index (PSI):** Caregiver-report questionnaire used to assess magnitude of stress in the parent-child. Grouped by "High Parenting Stress" and "Normal Parenting Stress"
- Autism Quotient-10 (AQ10):** Screening tool to identify for possible autism trait. Children grouped into "no Autism trait" and "Potential Autism Trait."
- Wechsler Preschool and Primary Scale of Intelligence (WPPSI-IV):** Intelligence test for children between the ages 2.5-7 years to assesses cognitive ability. Variables extracted: Full Scale IQ, Visual Spatial, Fluid Reasoning, and Working Memory.

Data Analysis:

- A Pearson product-moment correlation was conducted to determine the relationship between parental stress, children with potential autism trait, and the child's cognitive abilities.
- A Factorial ANOVA was conducted to compare the main effects of parental stress and potential autism trait in children; and their interaction on the child's cognitive abilities.

References

1. Turpin, H., Urben, S., Ansermet, F., Borghini, A., Murray, M. M., & Müller-Nix, C. (2019). The interplay between prematurity, maternal stress and children's intelligence quotient at age 11: a longitudinal study. *Scientific reports*, 9(1), 1-9.
2. Pastor-Cerezo, G., Fernández-Andrés, M. I., Tárraga-Mínguez, R., & Navarro-Peña, J. M. (2016). Parental Stress and ASD: Relationship With Autism Symptom Severity, IQ, and Resilience. *Focus on Autism and Other Developmental Disabilities*, 31(4), 300-311.
3. Craig, F., Operto, F. F., De Giacomo, A., Margari, L., Frolli, A., Conson, M., ... & Margari, F. (2016). Parenting stress among parents of children with neurodevelopmental disorders. *Psychiatry research*, 242, 121-129.
4. Roughan, L., & Hadwin, J. A. (2011). The impact of working memory training in young people with social, emotional and behavioural difficulties. *Learning and Individual Differences*, 21(6), 759-764.

Acknowledgement

Thank you to Christine Ginalis and Harold Butler for comments on the poster.

Funding source: NIMH R01MH102729 (PI: Yoko Nomura)

Email correspondence: kathrynnssy@gmail.com

Results

Pearson product-moment correlation coefficient shows:

- A negative correlation between **Children with Potential Autism Trait with Fluid Reasoning Index**, $r = -.25$, $n = 97$, $p = .01$.
- A negative correlation between the **Children with Potential Autism Trait with Processing Speed Index**, $r = -.27$, $n = 97$, $p = .01$.

Figure 1

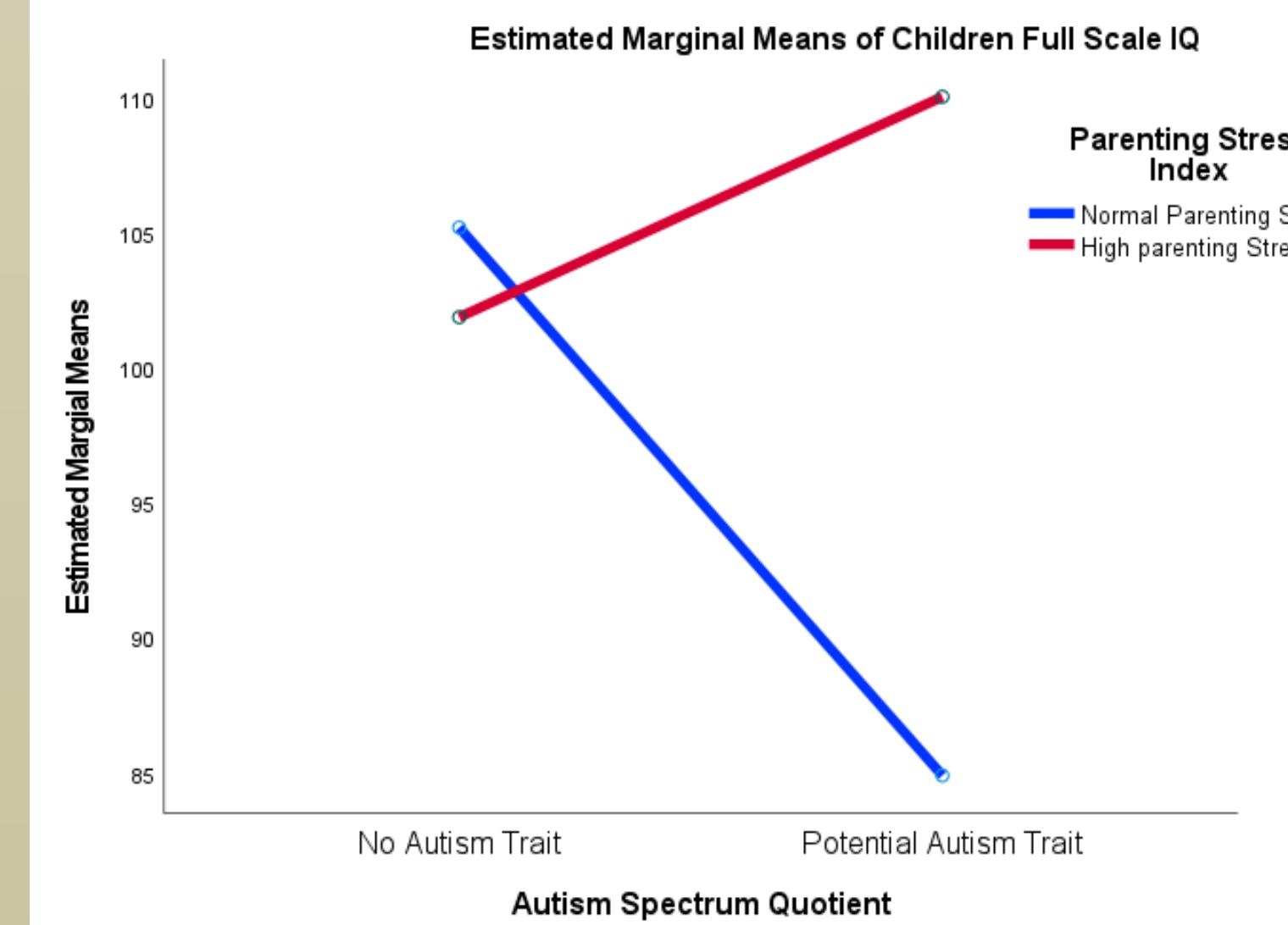


Figure 4

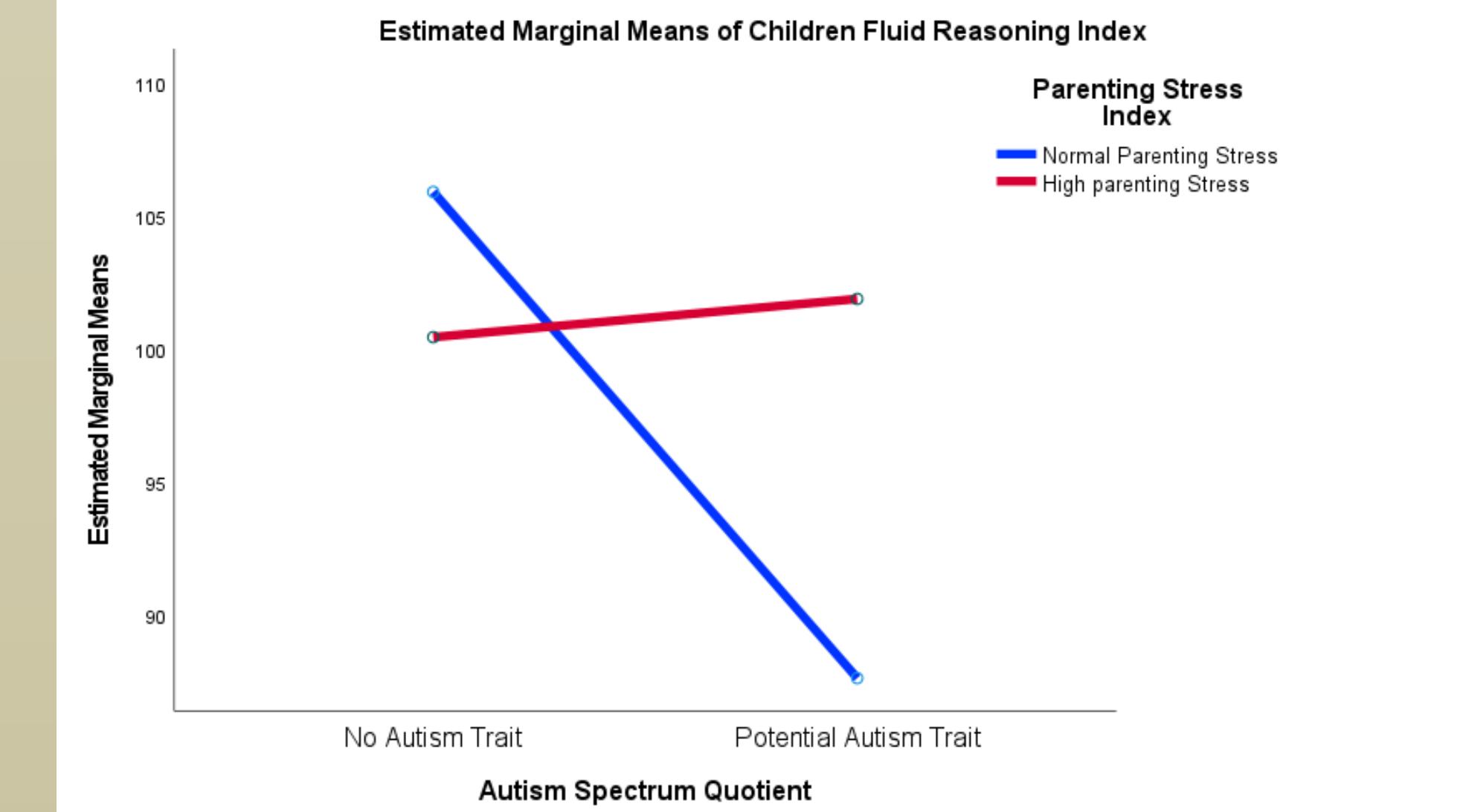


Figure 2

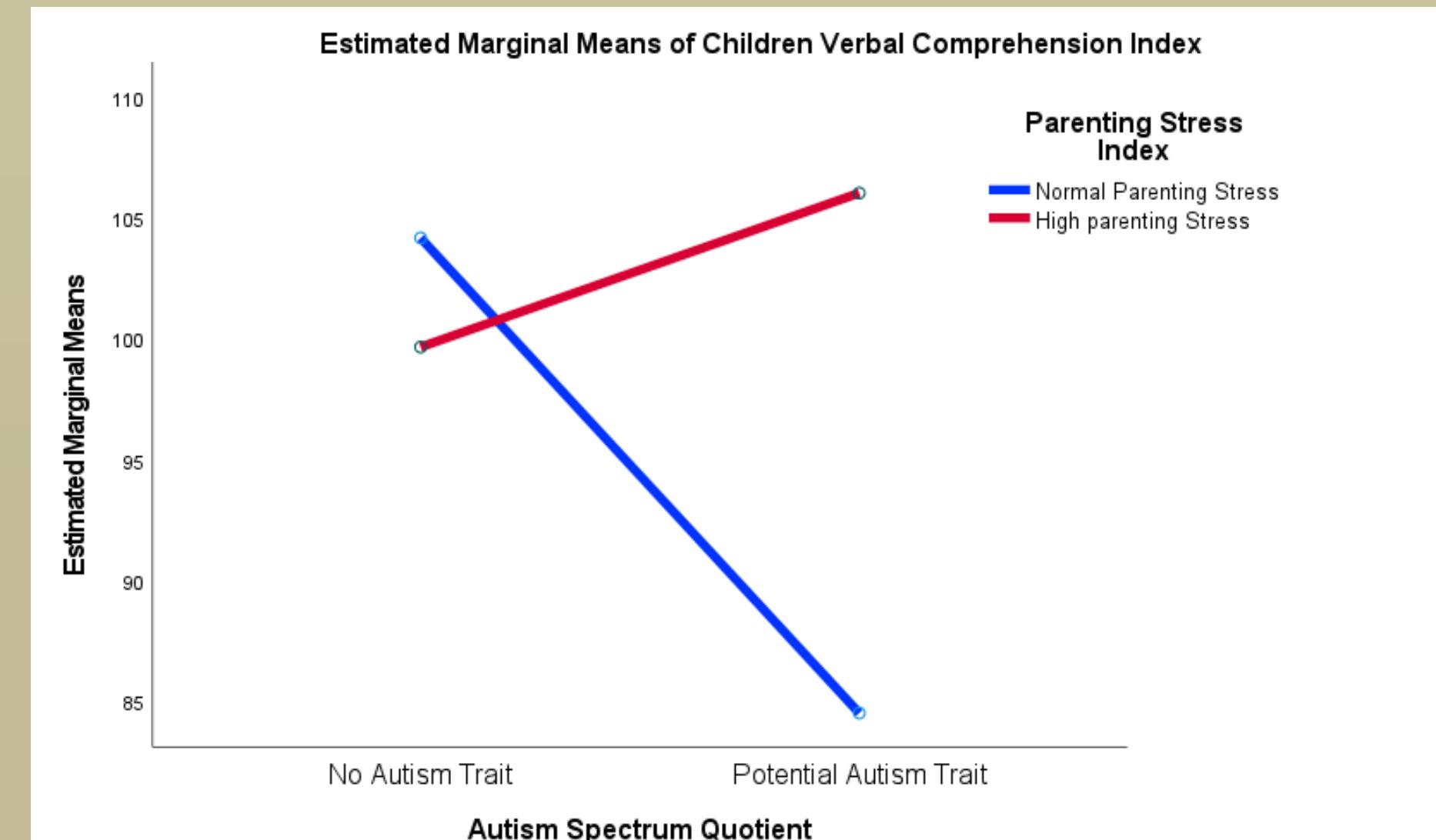


Figure 5

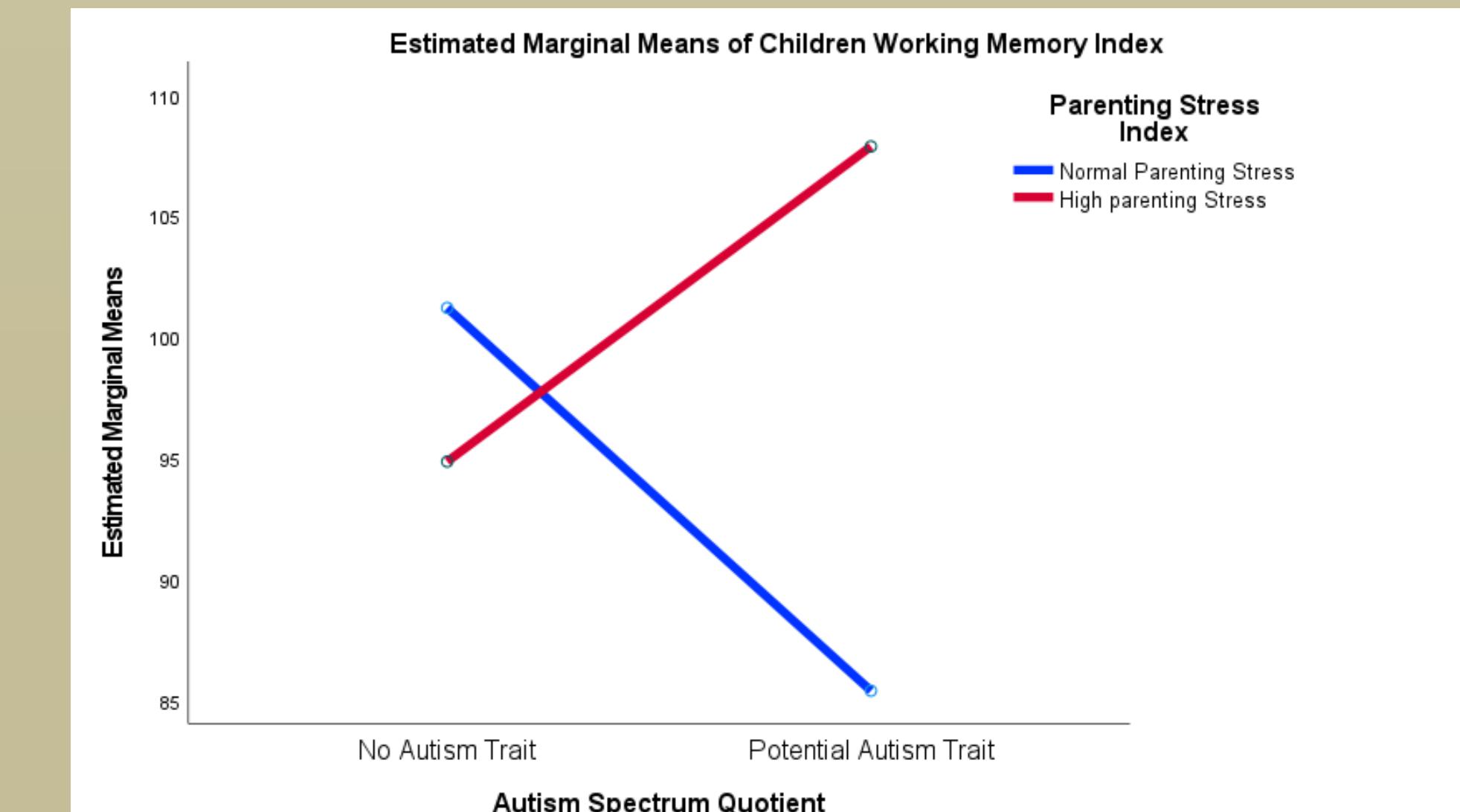


Figure 3

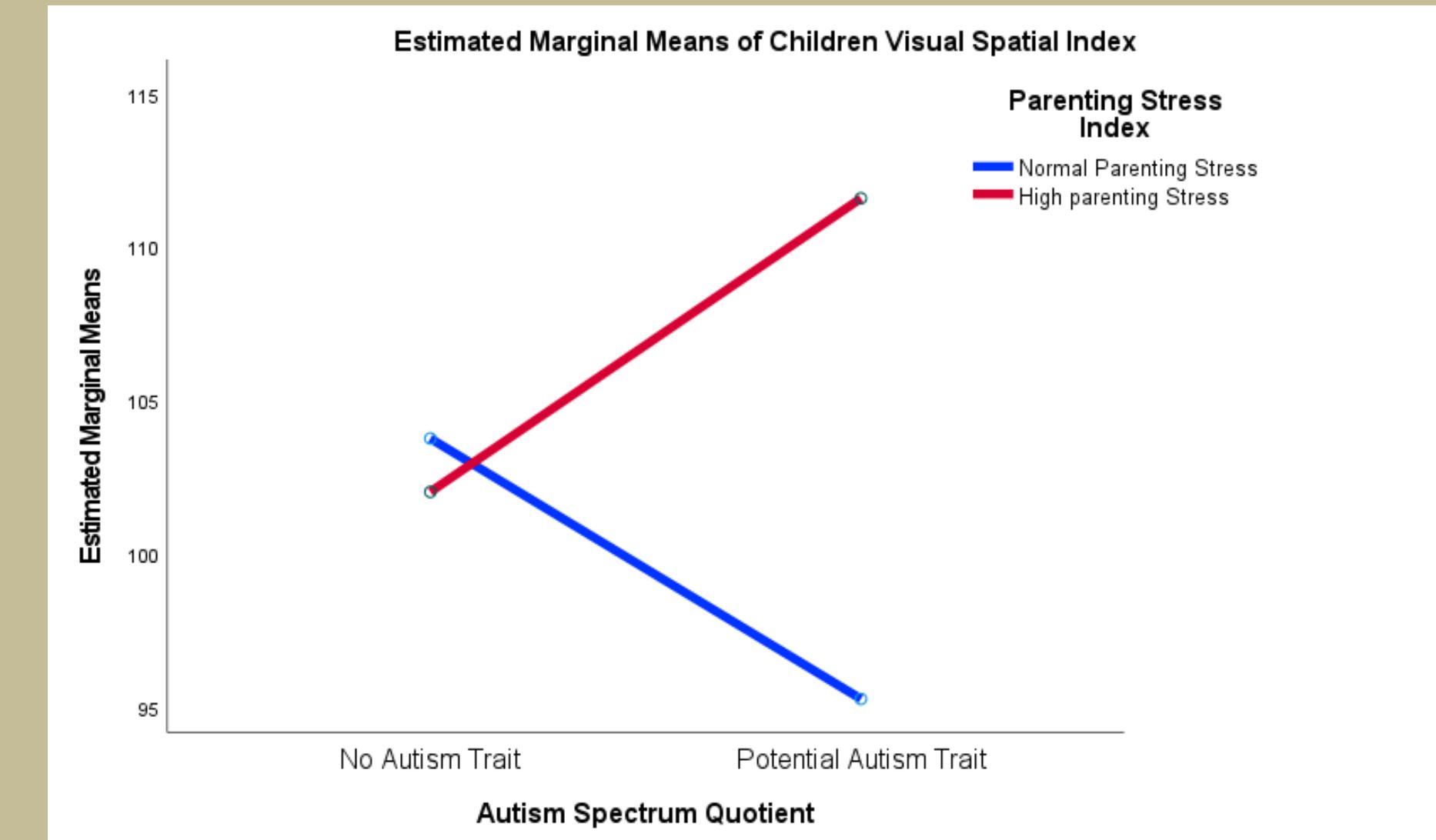


Figure 1 to Figure 5: The interaction effect between Parental Stress and Children with Potential Autism Trait was statistically significant for Children Full Scale IQ, $F(1, 93) = 11.46$, $p = .001$, Verbal Comprehension Index, $F(1, 93) = 6.54$, $p = .01$, Visual Spatial Index, $F(1, 93) = 4.64$, $p = .03$, Fluid Reasoning Index, $F(1, 93) = 5.81$, $p = .02$, and Working Memory Index, $F(1, 93) = 13.25$, $p < .001$.

Significant increase in Children's Intelligence Test among children with parents encountered High Parenting Stress while significant decrease in Children's Intelligence Test among children with parents encountered Normal Parenting Stress.

Discussion & Limitations

- A significant interaction was detected between parental stress levels and children with potential autism trait toward the child intelligence test, higher parental stress is associated with higher child intelligence test outcomes among children with potential autism trait.
- The study's findings contrasted previous literature, suggesting higher parental stress may in fact favor child intellectual outcomes.
- Future research should look into other factors such as working memory training, which has been shown to be an effective way of boosting the child's Working Memory, IQ, behavioral inhibition, trait anxiety, emotional and behavioral difficulties, and attentional control^[4].
- In addition, future researchers should identify other child-specific factors (for example, age, gender and so on) or treatment-specific factors (for example, supervision, parent training and so on) that may predict high intelligence test outcomes among the population on the autism spectrum in association with parental stress.