



## Background

- **Autism spectrum disorder (ASD)** is a developmental disorder characterized by impairments in behavioral, social, and communication skills.
- Mental health is defined as one's cognitive, emotional, and social well-being.
- Previous research has found associations with maternal prenatal depression/anxiety (internalizing disorders) and mental health disorders in offspring (Leis, J. A., et al., 2014).
- Females with autism often have a history of camouflaging their autism symptoms to fit in with typical peers, which can lead to a higher risk of developing mental health disorders (Corbett, B. A., et al., 2021).
- The **Broad Autism Phenotype (BAP)** refers to certain traits involved with impairments in language, communication, and social skills in people and could influence mental health.
- Mothers who reported having low social support and more autism traits had more depressive symptoms (Pruitt, M. M., Rhoden, M., & Ekas, N. V., 2018).
- **Objective:**
  - Explore how maternal mental health relates to the mental health of their female children with autism.
- **Hypothesis:**
  - Females with mothers who have mental health disorders will have a greater report of internalizing disorders.
  - We expect to see a positive correlation between Broader Autism Phenotype (BAP) scores in mothers and internalizing scores for autistic female children.

## Methods

### Participants:

42 ASD females, ages 8-17, and their biological mothers from the ACE GENDAAR study, with data from the four site NIH funded study that aims to study sex-based and neutral differences in children with ASD.

	N	CBCL Total	BAPQ subscale: aloofness	BAPQ subscale: Pragmatics	BAPQ total
ASD Female children	42	M= 63.16 SD= 11.77	-	-	-
Biological mothers	42	-	M= 34.52 SD= 11.95	M= 28.60 SD= 8.91	M= 98.83 SD= 26.88

Table1: Participant Characteristics

### Measures:

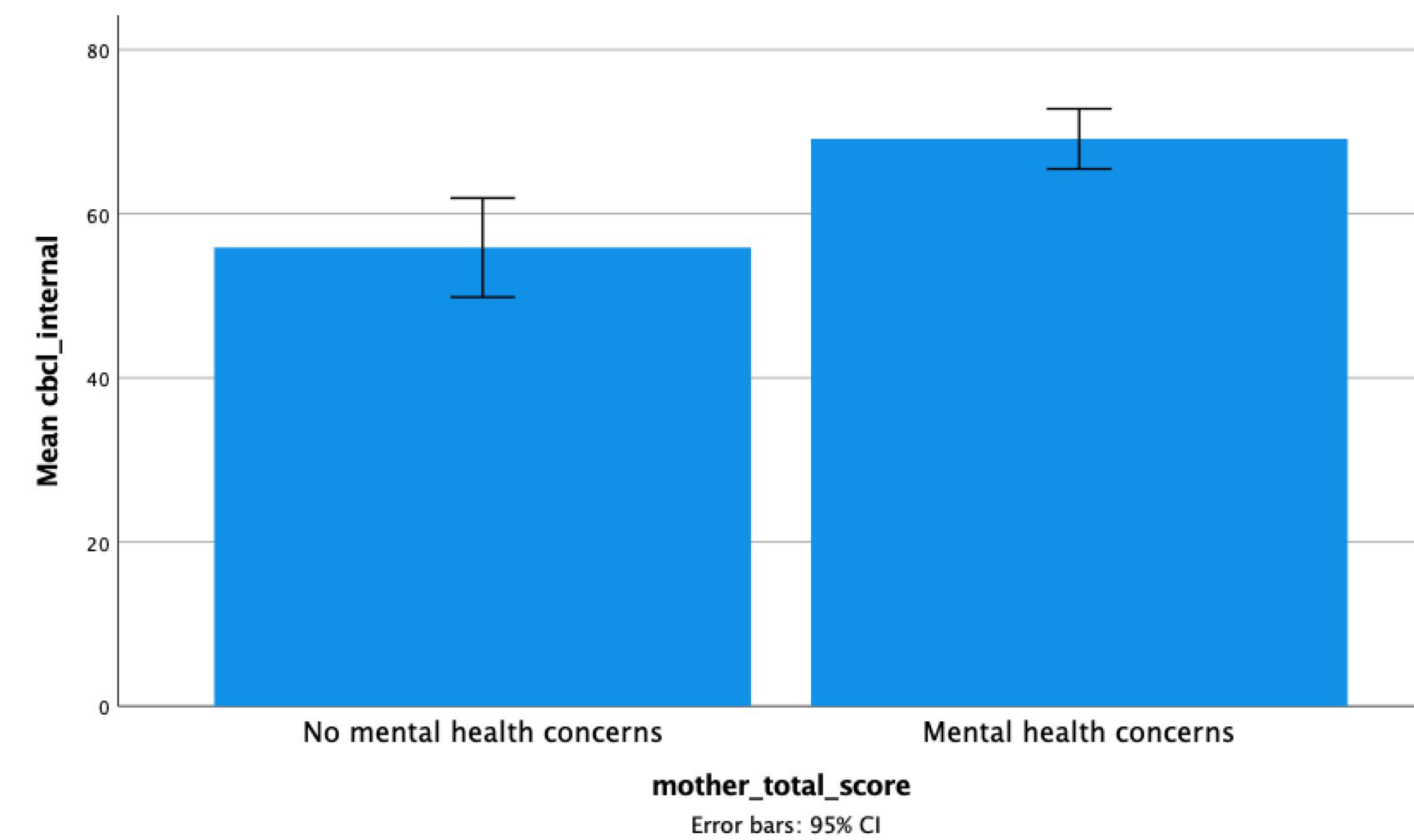
- ACE Family Medical History Interview: A parent questionnaire with a set of questions family medical history including mental health disorders. Maternal diagnosis of mental health disorders were abstracted. Mothers with any diagnosis of mental health disorder were coded as 1, no diagnosis was coded as 0.
- CBCL (Child Behavior Checklist) School-Age: A questionnaire completed by parents about the child's mental health including symptoms of internalizing scores. The higher the score, the greater the symptoms.
- BAPQ (Broader Autism Phenotype Questionnaire): A parent self questionnaire that measures the autism traits. Subscales include social aloofness, and pragmatic language abilities along with total BAPQ score on autism traits..

## Results

### Q1) Do females with mothers who have mental health disorders have greater internalizing symptoms?

A one way ANOVA was run between maternal mental health diagnosis and child internalizing scores.

#### Maternal Mental Health Diagnosis and Child Internalizing Disorders

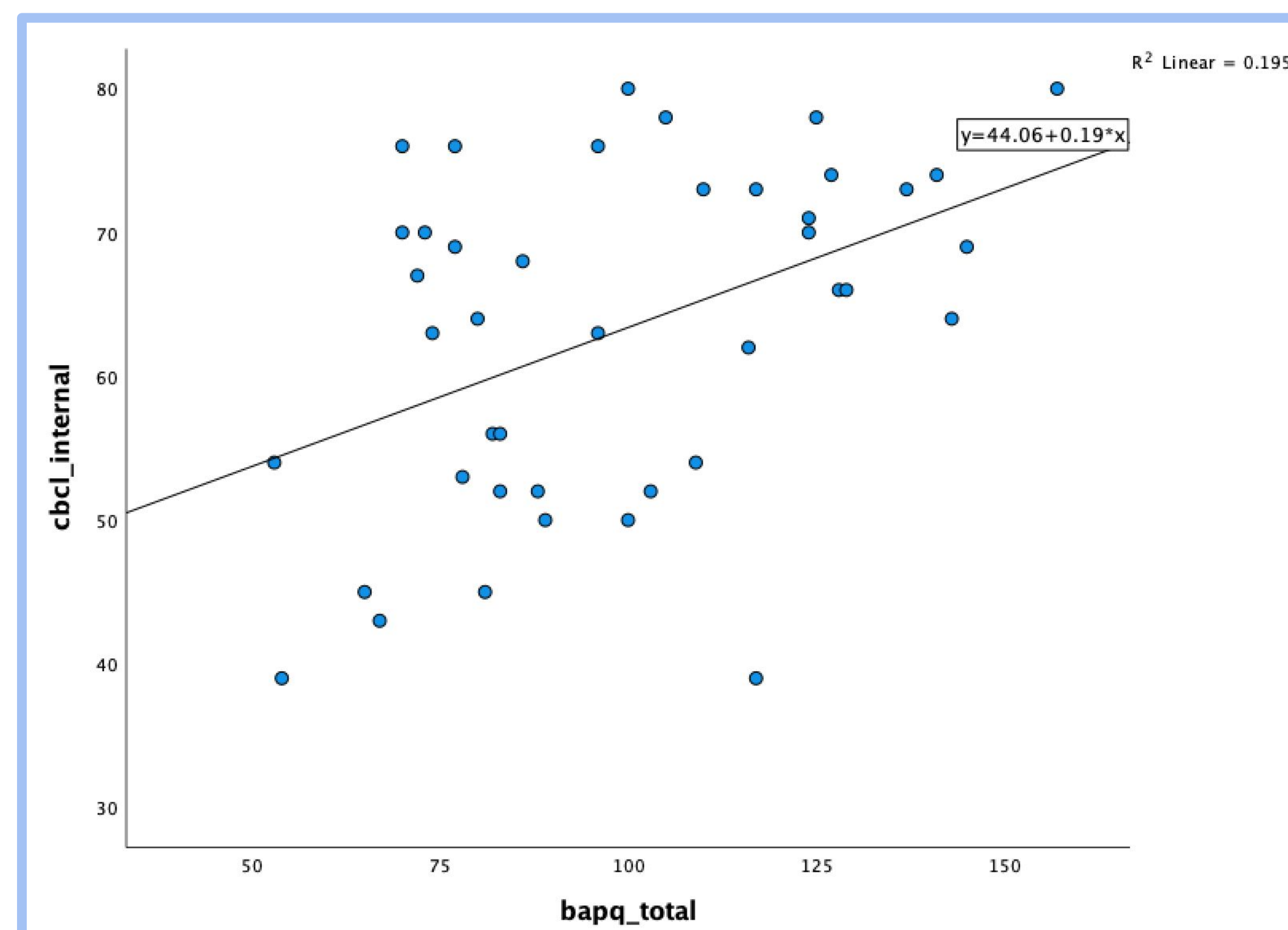


There is a significant main effect ( $F(1, 38) = 16.74, p < .001$ ) of internalizing behavior in children with mothers who have diagnosis of mental health disorders. Female children with mothers with a diagnosis of at least one mental health disorder had higher internalizing symptoms.

### Q2a. Is there a relationship between maternal autism traits (via BAPQ total) and internalizing scores in female children with ASD?

Correlation was run to understand the relationship between maternal autism traits and their female children's internalizing symptoms.

#### Correlation Between Maternal Broad Autism Traits and Child Internalizing Symptoms

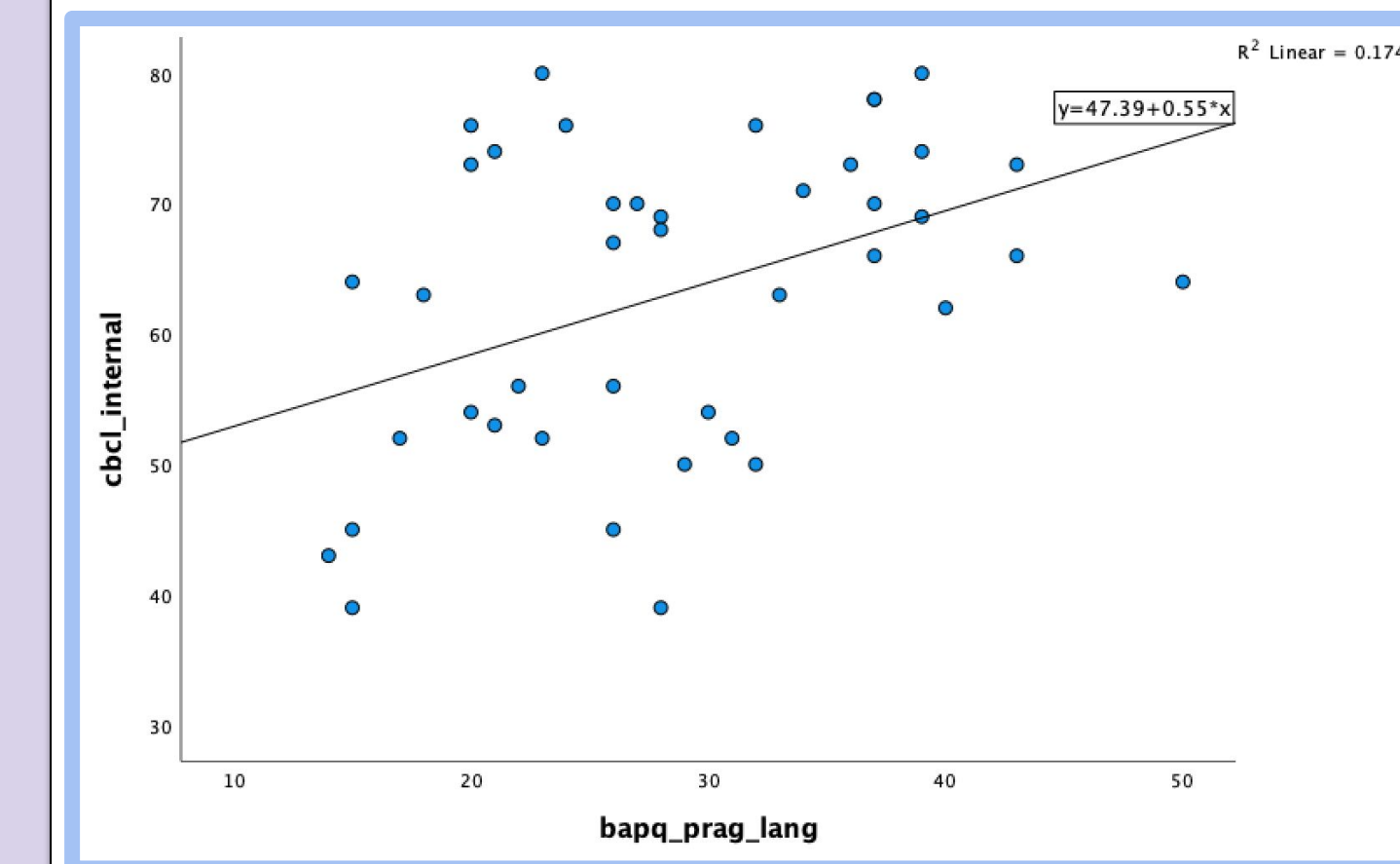


Correlations were ran between BAPQ total score and CBCL internalizing score. There is a significant positive correlation ( $r = .441, p = .003$ ) indicating mothers who have more autism behaviors overall tend to have female children with higher internalizing symptoms.

### Q2b. Is there a relationship between BAPQ subscales specifically aloof and pragmatic language / internalizing scores in female children with ASD?

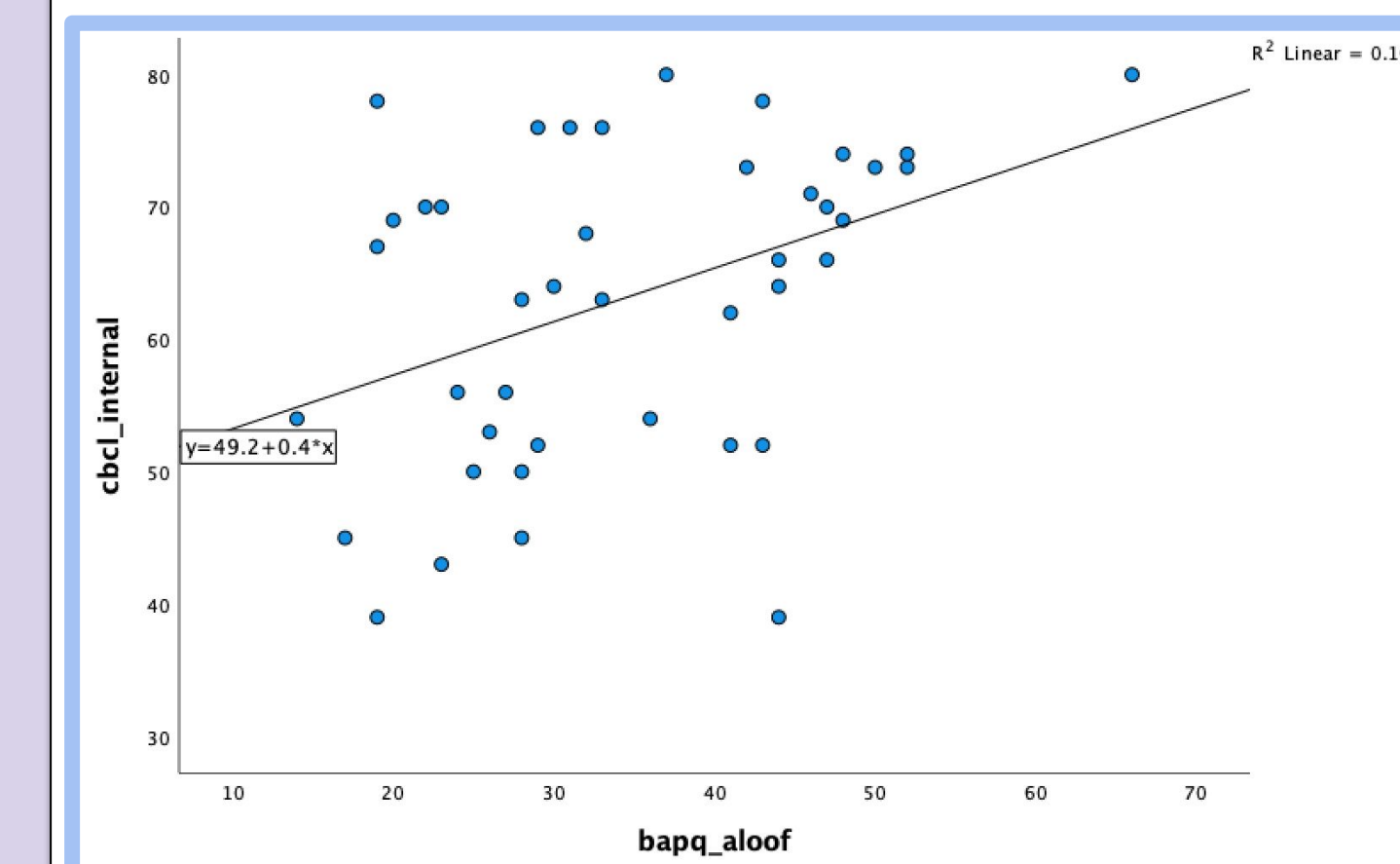
Correlation was ran to understand the relationship between two subscales of the BAPQ, Aloof and Pragmatics, and the child internalizing scores.

#### Correlation between Maternal BAPQ Subscale: Pragmatic and Child Internalizing Symptoms



There is a significant positive correlation between BAPQ subscale pragmatic and CBCL internalizing scores ( $r = .417, p = .006$ ). The higher the maternal pragmatic autism traits, the higher internalizing symptoms in children.

#### Correlation between Maternal BAPQ Subscale: Aloof and Child Internalizing Symptoms



There is a significant positive correlation between BAPQ subscale aloof and CBCL internalizing score ( $r = .411, p = .007$ ). This indicates that mothers who score higher on aloof autism traits tend to have female children with more internalizing symptoms.

## Discussion

### Summary:

- There is a significant main effect maternal mental health on child internalizing symptoms. Mothers with at least one diagnosed mental health disorder were more likely to have females children who reported higher internalizing symptoms compared to mothers who reported having no diagnosed mental health disorders.
- There is a significant positive correlation between the BAPQ total score, and subscales (aloof and pragmatic) and child internalizing symptoms. Mothers with more autism traits on BAPQ tend to have females with more internalizing symptoms (including anxiety and depression).
- Previous research has shown links between maternal prenatal mental health and child mental health disorders. Considering, the prevalence of higher internalizing disorders in females (Leis, J. A., et al., 2014), it is important to understand this relationship so female children at greater risk based on maternal mental health history can seek out early intervention.
- Maternal mental health and phenotype could be directly linked with autistic female children's mental health since there was a significant positive correlation between the subscales that measure maternal autism phenotype and female children's mental health. This could give insight on how mental health therapies can target concerning behaviors more accurately.
- Future studies should look at the interaction between maternal mental health and female children's externalizing behavior or how paternal health interacts with female children's internalizing disorders.

## References and Acknowledgements

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