



## Background

- One of the challenges experienced by autistic individuals is their difficulty in executive functioning (EF), which involves higher level cognitive processes such as planning, decision making, and problem solving.
- The EF dysfunction hypothesis of autism<sup>3</sup> posits that difficulty with EF is implicated in the cognitive and behavioral symptoms seen in autism.
- Autistic individuals also are reported to have more externalizing behaviors, such as aggression, conduct problems, and acting out behaviors.
- EF and externalizing behaviors maybe related; understanding the relationship between these two is crucial for developing intervention strategies.
- **Objective:** The primary goal of the current study is to examine the relationship between EF and externalizing behaviors in autistic and non-autistic children and adolescents.

## Methods

- Sixty-three children and adolescents (ages 7-13 years) (autistic and non-autistic) completed a short battery of assessments and questionnaires to measure intelligence (WASI-II), EF (BRIEF-2), and externalizing behaviors (BASC-3).
- The BRIEF-2 has the following three index scores: Cognitive Regulation Index (CRI), Emotion Regulation Index (ERI), and the Behavior Regulation Index (BRI).
- Three separate linear regressions were conducted with externalizing behaviors as the DV.
- In the first model, age and IQ were entered in step 1 as control variables.
- In the second step, CRI, ERI, and BRI were entered separately as predictor variable. This was repeated with ERI and BRI as IV's.

**Table 1. Descriptive Statistics**

	Mean (SD)	N
Age (Years)	9.73 (1.91)	63
FSIQ	97.00 (17.74)	63
CRI	61.95 (16.76)	63
ERI	26.92 (8.255)	63
BRI	21.49 (6.579)	63
BASC	51.00 (8.716)	62

## Results

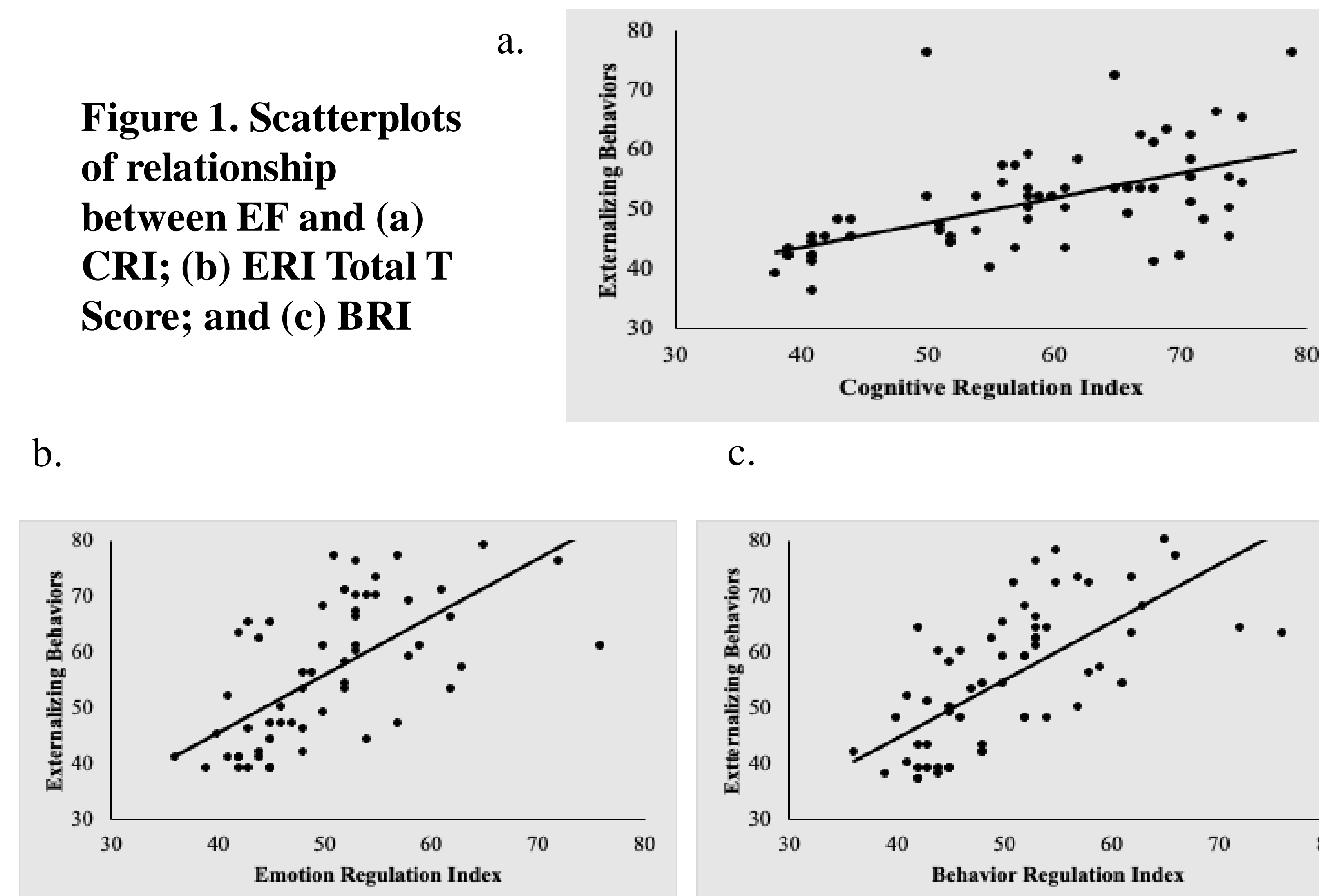
- While controlling for age and FSIQ, greater EF difficulties in the cognitive, behavioral, and emotional domain predict more externalizing behaviors.

**Table 2. Hierarchical Multiple Regression Analysis**

	B (SE B)	Sig.		B (SE B)	Sig.		B (SE B)	Sig.
<i>Step 1</i>			<i>Step 1</i>			<i>Step 1</i>		
FSIQ-2	-.175(.064)	0.008	FSIQ-2	-.175(.064)	0.008	FSIQ-2	-.175(.064)	0.008
Age	-.209(.588)	0.724	Age	-.209(.588)	0.724	Age	-.209(.588)	0.724
R	.343		R	.343		R	.343	
R <sup>2</sup>	.118		R <sup>2</sup>	.118		R <sup>2</sup>	.118	
Adj. R <sup>2</sup>	.088		Adj. R <sup>2</sup>	.088		Adj. R <sup>2</sup>	.088	
p-value		0.025	p-value		0.025	p-value		0.025
<i>Step 2</i>			<i>Step 2</i>			<i>Step 2</i>		
BRI	.484(.072)	<.001	ERI	.460(.073)	<.001	CRI	.435(.097)	<.001
R	0.71		R	0.689		R	0.587	
R <sup>2</sup>	0.505		R <sup>2</sup>	0.474		R <sup>2</sup>	0.345	
Adj. R <sup>2</sup>	0.479		Adj. R <sup>2</sup>	0.447		Adj. R <sup>2</sup>	0.311	
ΔR <sup>2</sup>	0.387		ΔR <sup>2</sup>	0.356		ΔR <sup>2</sup>	0.227	
p-value		<.001	p-value		<.001	p-value		<.001

- CRI significantly predicted externalizing behaviors ( $\beta=.584$ ,  $p<.001$ ,  $R^2$  Change= .227,  $F$  Change= 20.087,  $p<.001$ ).
- ERI significantly predicted externalizing problems ( $\beta=.698$ ,  $p<.001$ ,  $R^2$  Change= .356,  $F$  Change= 39.325,  $p<.001$ ).
- BRI significantly predicted externalizing problems ( $\beta=.709$ ,  $p<.001$ ,  $R^2$  Change= .387,  $F$  Change= 45.293,  $p<.001$ ).

**Figure 1. Scatterplots of relationship between EF and (a) CRI; (b) ERI Total T Score; and (c) BRI**



## Discussion & Conclusions

- The current results are consistent with previous findings of better EF skills being strongly associated lower levels of externalizing behaviors.
- Although externalizing behaviors are particularly common in ASD, they also frequently occur in children and adolescents with other conditions.
- Preliminary results from this sample generated strong predictive relationship between EF and externalizing behaviors, emphasizing the importance of considering EF when addressing externalizing behaviors in children.
- Thus, the interventions that address EF challenges may also help mitigate externalizing behaviors.
- Future studies should examine this relationship longitudinally to understand developmental changes in EF and externalizing behaviors. In addition, neural correlates of EF may provide mechanistic understanding of this association.

## References

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3. Hughes, C et al. "Evidence for executive dysfunction in autism." *Neuropsychologia* vol. 32,4 (1994): 477-92. doi:10.1016/0028-3932(94)90092-2.

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