

Comparing Visual Spatial Functioning, Tactile Perception, and Mathematical Achievement In Nonverbal Learning Disorder and Higher Functioning Autism



Selena Scott & Joseph E. Casey
University of Windsor



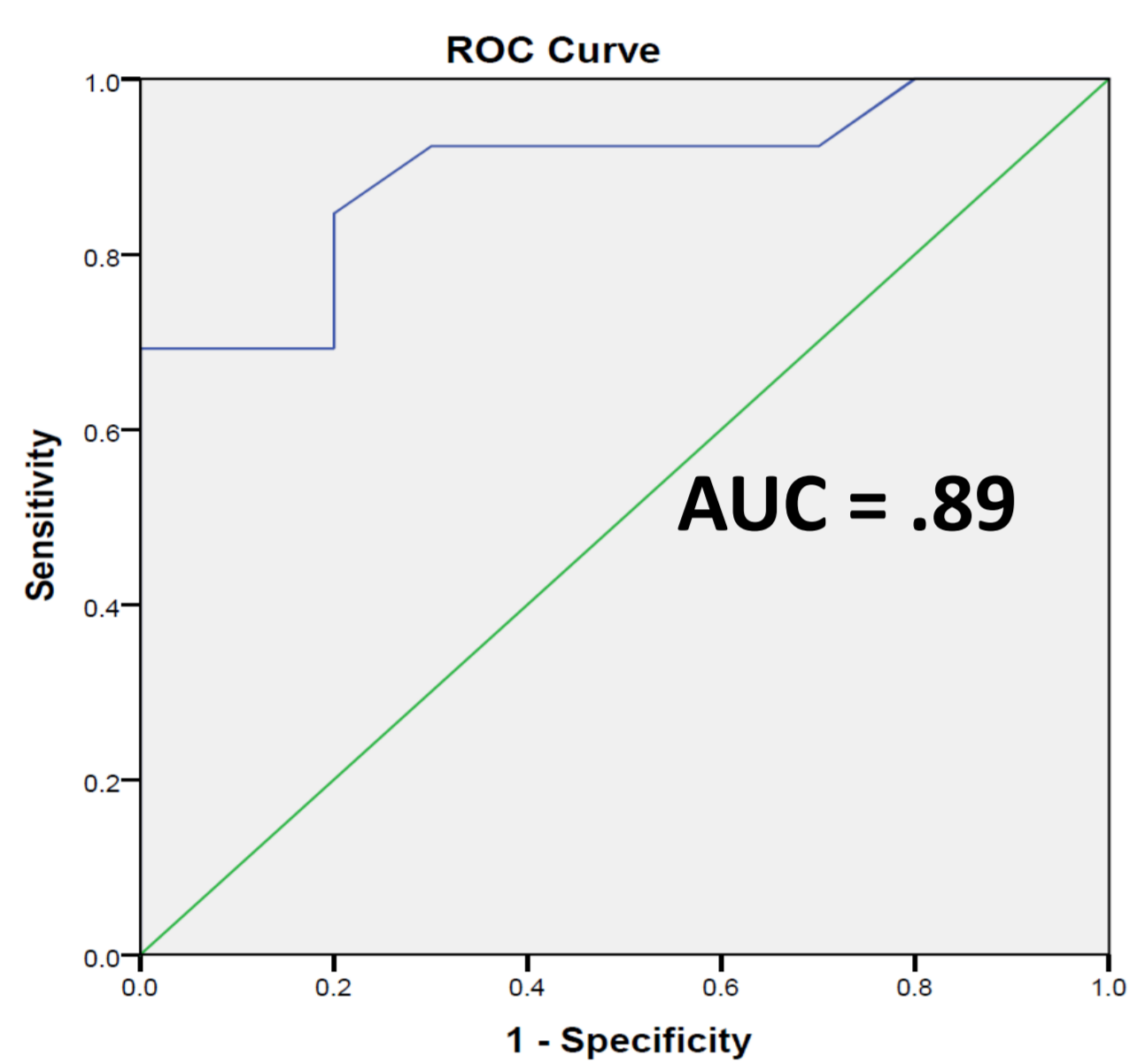
Introduction

- There is debate over the extent to which Higher Functioning Autism (HFA) and Nonverbal Learning Disorder (NVLD) overlap in neuropsychological and psychosocial characteristics, and, consequently, whether they can be clinically differentiated
- Some evidence is accumulating to support that certain diagnostically relevant social characteristics meaningfully differ between these two groups
- The present study investigated the hypothesis that these two disorders could be differentiated on several cognitive domains that represent areas of neuropsychological weakness relevant to the diagnosis of NVLD.

Methods

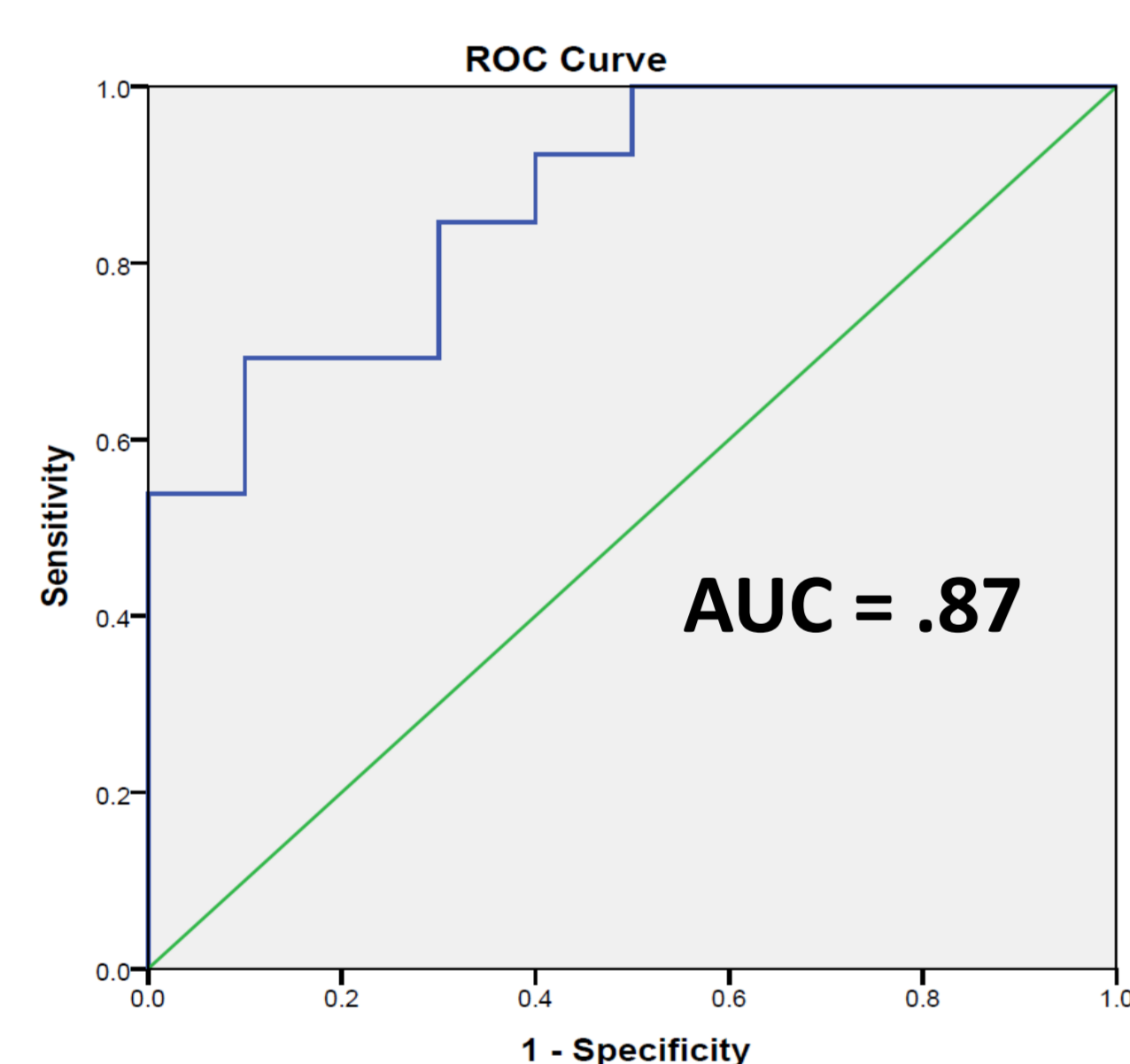
- 13 participants met criteria for HFA ($M_{age} = 12.7$; mean VCI = 99.7) based on a previous autism assessment without consideration of neuropsychological test results
- 10 participants met criteria for NVLD ($M_{age} = 12.8$; mean VCI = 97.0) based on criteria adapted from Casey et al. (1991) without consideration of their psychosocial functioning
- Composite variables were created for the domains of visual-spatial functioning and tactile perception
- Logistic regression and ROC curve analyses were used to evaluate how well composite variables and mathematical procedural knowledge discriminated between groups

Results



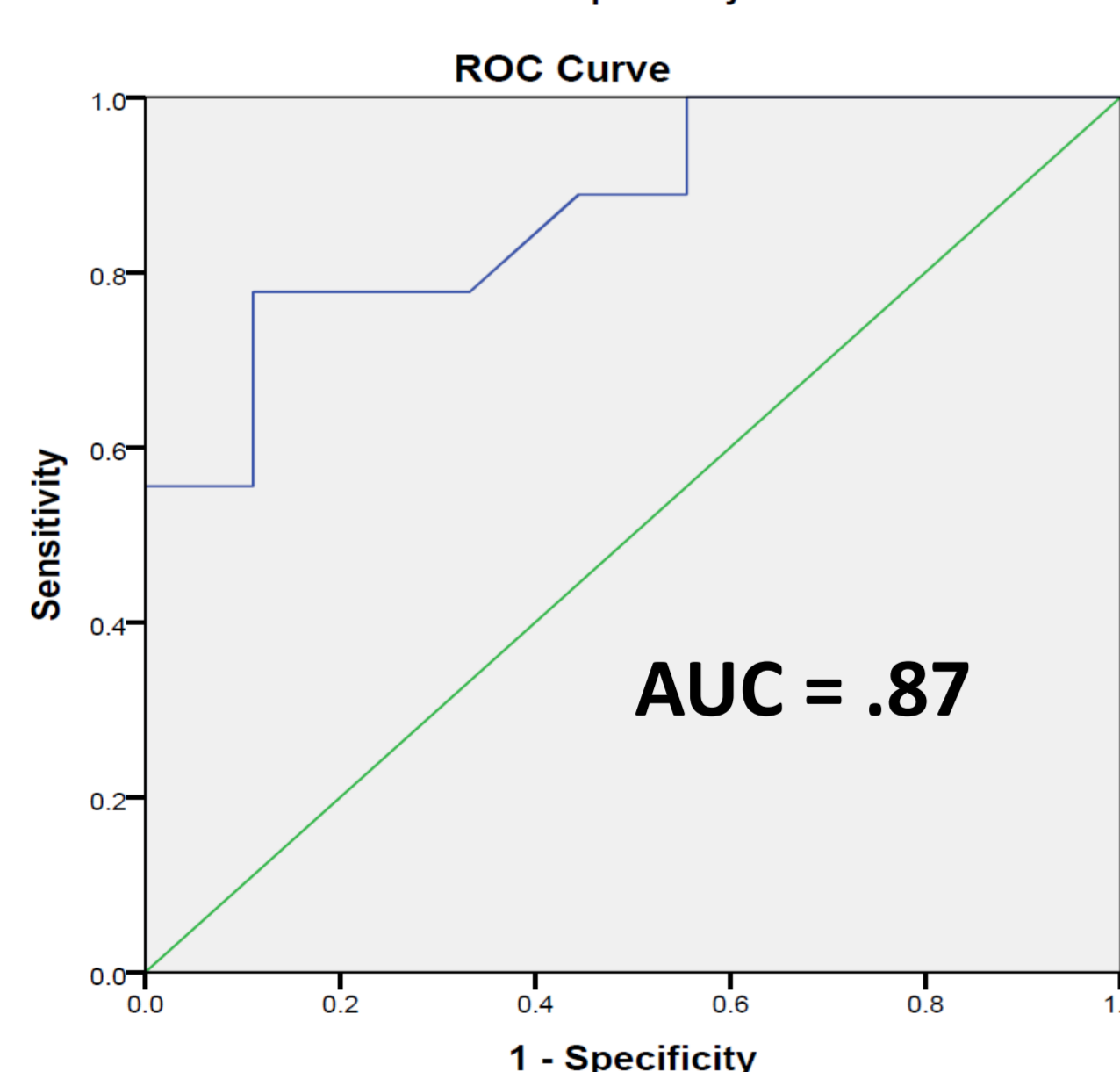
	B	SE	Wald	p
Numerical Operations WIAT-III	.19	.08	5.06	.02
Constant	-15.0	6.6	5.19	.02

Average scores across the 3 variables included in the logistic regression analyses were significantly lower for the NVLD group (smallest $t(21) = 3.34$, all $p < 0.01$); the Verbal Comprehension Index of the WISC-IV did not differ between groups ($t(20.03) = .43$, $p = .67$)



	B	SE	Wald	p
Visual Spatial Composite Drawing & Matching, and JOLO	.06	.03	6.52	.01
Constant	-8.5	3.5	6.06	.01

	ASD M (SD)	NVLD M (SD)
VCI (standard score)	98.8 (22.6)	96.5 (13.2)
Numerical Operations (standard score)	98.9 (17.5)	74.5 (6.7)
VSC* (t score)	51.3 (7.2)	39.8 (8.1)
TPC** (t score)	37.8 (13.8)	19.4 (11.2)



	B	SE	Wald	p
Tactile Perception Composite Fingertip Number Writing T for both hands*	.05	.02	5.59	.02
Constant	-3.1	1.4	4.75	.03

* Due to missing data, only 9 participants in each group were included in this logistic regression model

* Drawing & Matching subtests from WRAVMA, and JOLO
** Finger-tip Writing

Conclusions

- Performance on measures of mathematical procedural knowledge, visual-spatial functioning, and tactile perception adequately discriminated between children with NVLD and HFA, supporting that neuropsychological characteristics on average differ between these groups
- The findings add to the accumulating evidence that NVLD and HFA represent two distinct clinical conditions and support the validity of NVLD
- Replication of these results with a larger and more diverse sample is needed

