

# Adaptive Functioning versus Cognitive Scores in Young Children with Down Syndrome

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## Introduction

- Individuals with Down syndrome typically meet the criteria for intellectual disability:
  - Significant limitations in intellectual ability and adaptive functioning<sup>1</sup>
- Many studies only include a measure of overall intellectual functioning (e.g., IQ)
  - Intellectual functioning = “general mental capacity” = learning, reasoning, and problem solving<sup>1</sup>
  - Standard scores often fail to capture learning or gains in skills
  - Interpretation focuses on what an individual is unable to achieve rather than what they can do or how to build on strengths<sup>2,3</sup>
- Adaptive functioning = conceptual, social, and practical skills needed to participate in every day life<sup>1,4</sup>
  - Relative strengths in socialization; difficulties in communication and motor skills
  - Mixed evidence in daily living skills
  - Acquired in a similar sequence just at a slower pace
- Adaptive functioning measures provide information about strengths that can be built upon not captured in IQ tests<sup>3</sup>
- Researchers should consider the value of including adaptive functioning measures to more fully represent the whole individual

## Aim

- To examine the utility of adaptive functioning in addition to intellectual functioning in a sample of young children with Down syndrome
  - At the group level:
    - How much variability across the sample is captured by each measure’s standard score?
    - What is the correlation between those scores?
  - For each individual:
    - How similar are their standard scores on each measure?

## Method

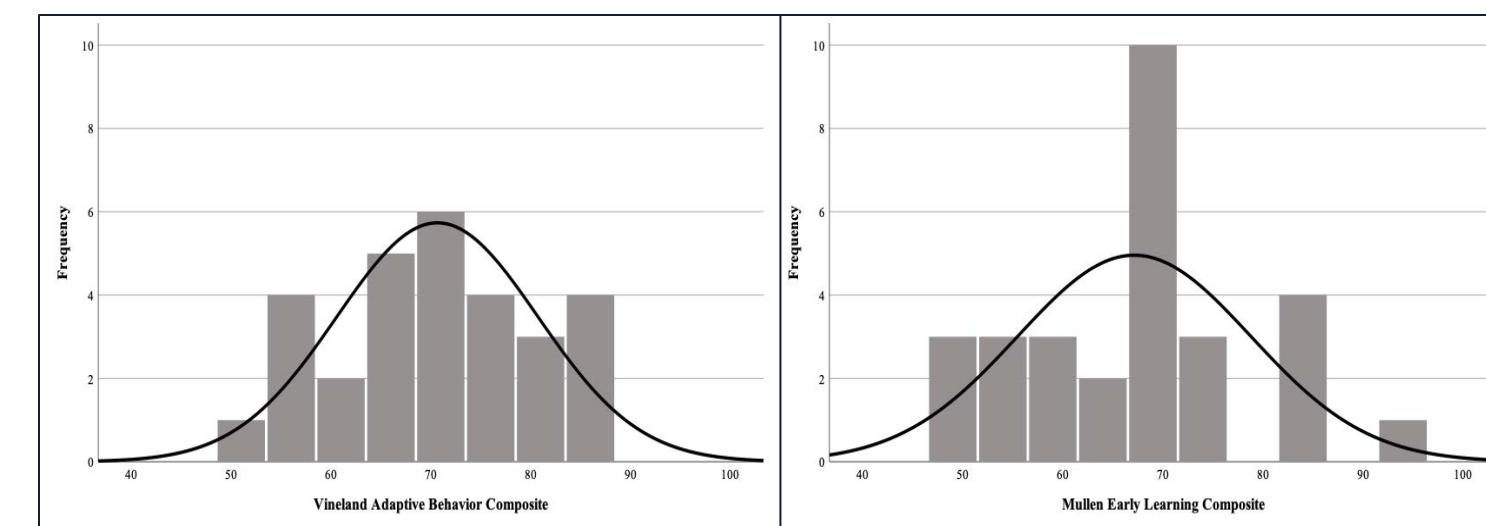
### Participants

- 29 young children with Down syndrome (72% male)

	Mean	SD	Range	Skew	Kurtosis
Age (months)	15.83	6.45	7-31	.69	-.30
Mullen	67.14	11.67	49-93	.25	-.36
Vineland	70.66	10.09	51-85	-.30	-.96
Receptive Vocabulary (CDI-WG)	65.22	57.29	0-176	.66	-1.02

### Measures

- Intellectual functioning = Mullen Scales of Early Learning
- Adaptive functioning = Vineland Adaptive Behavior Scales
- Receptive vocabulary = MacArthur-Bates Communication Development Inventory, Words & Gestures (CDI-WG)



### Procedure

- Children were administered the Mullen and mothers completed the Vineland and CDI-WG
- Created a Vineland-Mullen` difference score for each child
  - Scores closer to 0 = more similarity between measures

## Acknowledgements

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### Key References

- Schalock, R. L., Luckasson, R., & Tassé, M. J. (2021). Intellectual Disability : Definition, Diagnosis, Classification, and Systems of Supports. Silver Spring, MD: AAIDD.
- Buntin, W. H. E. (2013). Understanding disability: A strengths-based approach. The Oxford Handbook of Positive Psychology (pp. 1–22).
- Thompson, J. R., Shogren, K. A., & Wehmeyer, M. L. (2017). Handbook of Research-Based Practices For Educating Students with Intellectual Disability
- Tassé, M. J., Luckasson, R., & Schalock, R. L. (2016). The relation between intellectual functioning and adaptive behavior in the diagnosis of intellectual disability. Intellectual and Developmental Disabilities, 54(6), 381–390.

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## Results

### Group-level

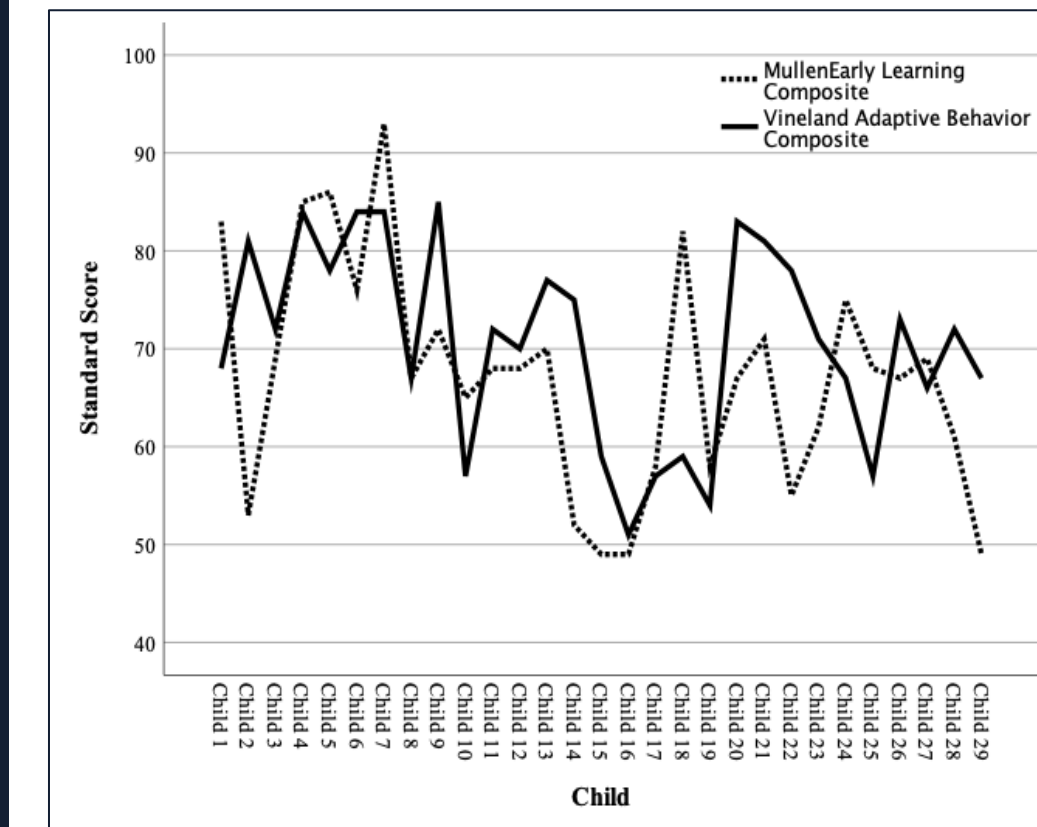
- Mullen and Vineland both normally distributed and positively correlated ( $r = .41, p = .03$ )
- No significant difference between Vineland and Mullen composite scores  $t(28) = -1.59, p = .12, d = .30$

Mullen	Number at Floor <sup>1</sup>	Vineland	Number at Floor <sup>1</sup>
Early Learning Composite	3	Adaptive Behaviour Composite	0
Visual Reception	8	Communication	1
Fine Motor	8	Socialization	0
Receptive Language	7	Daily Living	0
Expressive Language	4		

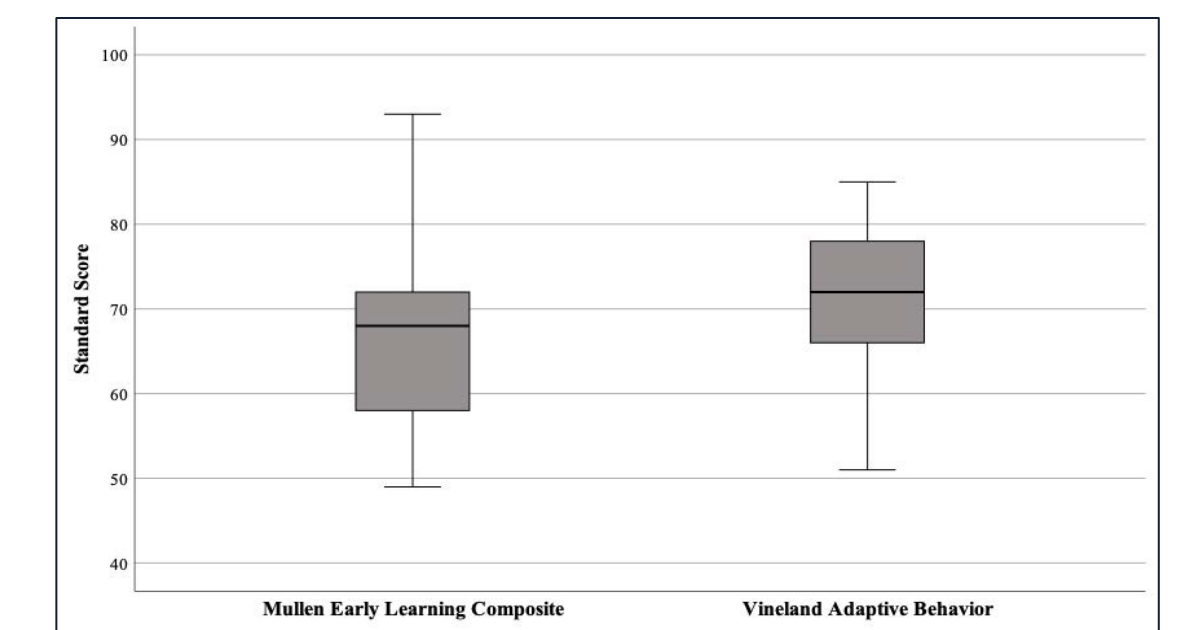
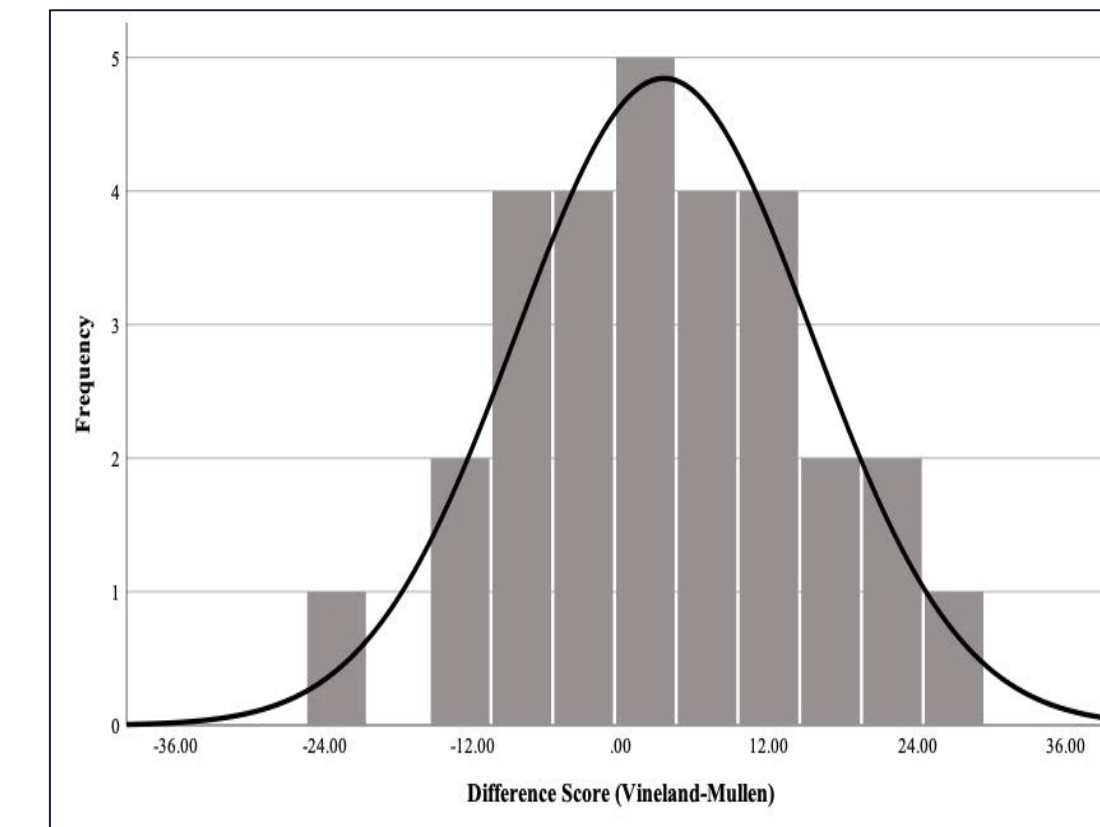
Note. <sup>1</sup>Lowest possible standard score

### Individual-level

- Visual inspection mostly indicates consistency between measures
- Some children had diverging scores



- Vineland-Mullen difference scores:
  - Relatively normally distributed
  - $M = 3.52, SD = 11.94$



- 21 children (67% male): Vineland-Mullen difference scores falling within 1 SD of group mean
  - Age and receptive vocabulary similar to full sample
- 6 children (83.3% male): higher Vineland versus Mullen scores
  - Older and higher receptive vocabulary scores
- 2 male children: higher Mullen versus Vineland scores
  - 12 months old with relatively low receptive vocabulary scores

## Discussion

- For a majority of children in our study, the Vineland and Mullen produced similar scores
  - Approximately one-third of the children demonstrated discrepancies of at least 1 SD
  - Only one child scored at floor on the Vineland
  - In contrast, 3 children scored at floor on the Mullen
- Results highlight the benefits of including measures of both intellectual and adaptive functioning to describe “level of functioning” of individuals with Down syndrome in behavioural research studies
  - The inclusion of adaptive functioning in future research will enhance the description of individuals with Down syndrome and other intellectual and developmental disabilities
  - Continue moving the field away from a discussion of deficits and towards a focus on strengths and capabilities