

# Aspects of Life Impacted by SSDs in Early Elementary Students

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## Introduction

- A speech sound disorder (SSD) “refers to any difficulty or a combination of difficulties with perception, motor production, or phonological representation of speech sounds and speech segments, including phonotactic rules governing permissible speech sound sequences in a language” (ASHA, 2016).
- Approximately 8 to 9 percent of young children in the U.S. have been diagnosed with a speech sound disorder (NIH, 2025).
- Some children with SSD have reported feelings of frustration, shyness, and low self-esteem in unfamiliar environments due to their inability to properly express how they’re feeling (Simoni et al., 2019).
- Each child with SSD is at risk of problems related to speech production, morphological awareness, memory, and social emotional well-being if their SSD is not addressed appropriately.

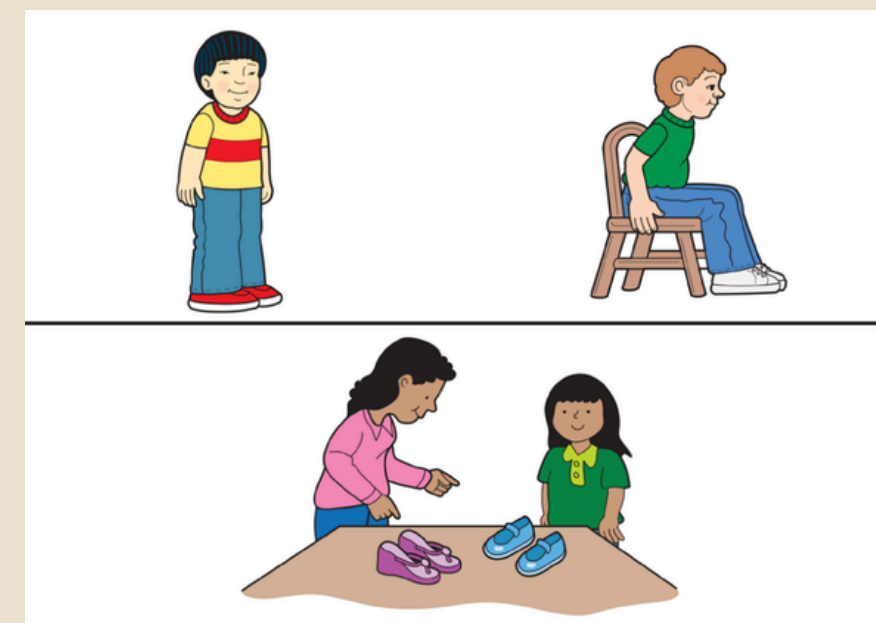
### Research Questions:

1. How do SSD impact the lives of children in relation to morphological awareness?
2. How do SSD impact the lives of children in relation to phonological memory?
3. How do SSD impact the lives of children in relation to socioemotional well-being?

## Participants

- All data were collected from a subset of 15 children out of the 84 children participating in the second academic year of the APPLES Project
- All children came from one school system, 5 children to represent each grade.
- Of the 5 kindergarten students selected, 3 were male and 2 were female; of the 5 first grade students, 4 were male and 1 was female; and of the 5 second grade students 3 were male and 2 were female.
- Children who participated had to be diagnosed with an idiopathic SSD beforehand.
- Excluded from the APPLES project are SSDs caused by, or related to: childhood apraxia of speech, cleft lip/palate, autism, Down syndrome, muscular dystrophy, cerebral palsy, stuttering, and other neurodevelopmental disorders.

## Methods: CELF-5 Word Structure



Assessor's prompt	Target word	Target morpheme or pronoun	Examples of SSD responses that would be correct (score as 1)	Examples of SSD responses that would be incorrect (score as 0)
This boy is standing and this boy is...	sitting	-ing	May have interdental or lateral lisp or may use "sittin" /θitɪŋ/ ("thitting")	"is" missing and/ or -ing missing entirely
Mom said, "These shoes are mine and those shoes are..."	yours	Possessive 's'	/jɔnz/ (no "r" sound, but the "s/z" sound is there)	/jɔn/ (no "r" or "s")

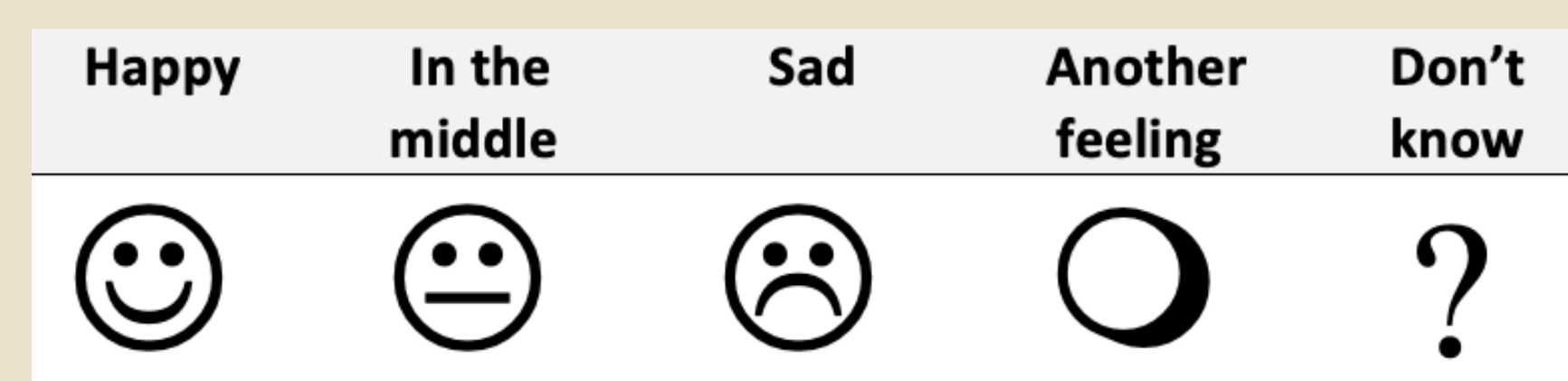
## Methods: CTOPP Memory for Digits

- Requires the child to repeat sequences of numbers presented through an audio recording. The child must repeat these numbers in the order given, with no corrective feedback after the initial 4 items.
- The assessment includes 28 total items, and the testing continues until the child makes 3 consecutive errors. The total number of correctly repeated sequences.

Item	Digits	Response	Score (1 or 0)
5.	1 6	.....	<input type="checkbox"/>
6.	7 2	.....	<input type="checkbox"/>
7.	9 4	.....	<input type="checkbox"/>
8.	5 2 1	.....	<input type="checkbox"/>
9.	6 4 8	.....	<input type="checkbox"/>
10.	8 3 6	.....	<input type="checkbox"/>

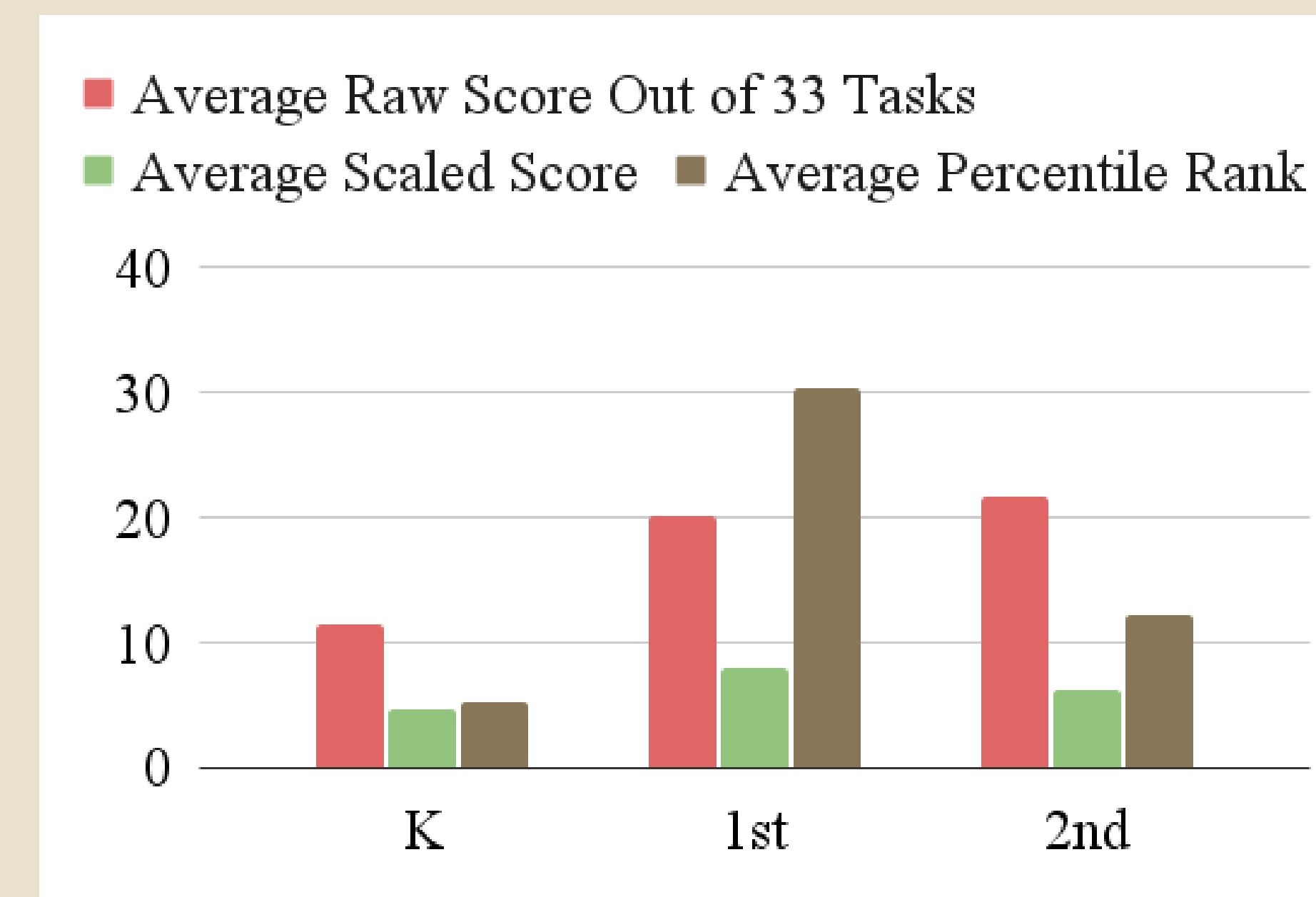
## Methods: SPAA-C

- SPAA-C: Speech Participation and Activity Assessment of Children

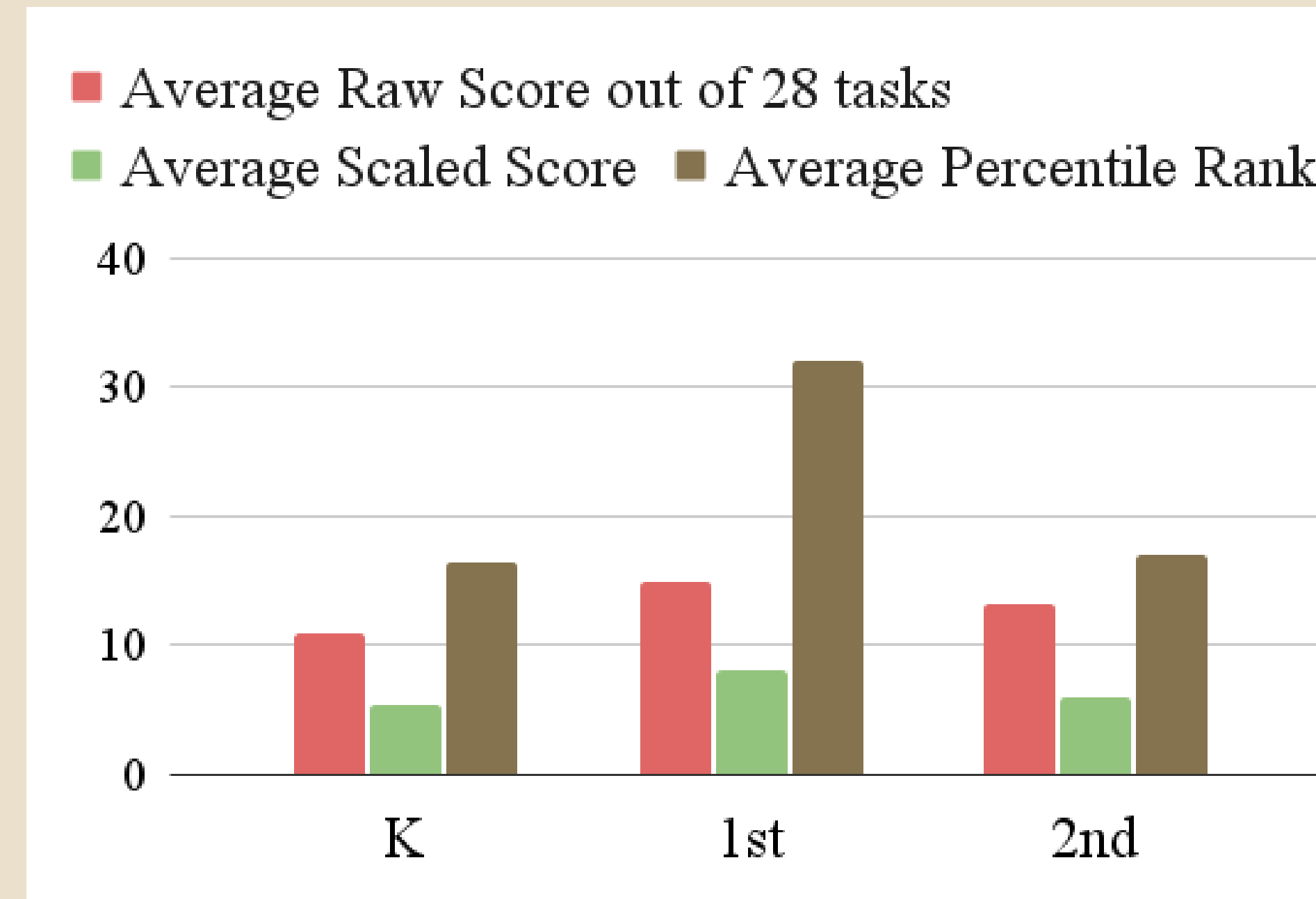


- The SPAA-C is administered to gain a better understanding on childrens’ own perceptions of their speech by asking 10 questions about their emotions in different speaking scenarios.

## Results: CELF-5 Word Structure



## Results: CTOPP Memory for Digits



## Results: SPAA-C

- Children with SSDs tend to feel worse about their speech as they get older (shift from mostly happy kindergarteners to more sad 2<sup>nd</sup> graders)
- Female children with SSDs tend to feel worse about their speech compared to their male counterparts at all ages
- Studying the socioemotional impact of SSDs in children can help better inform treatment approaches and support these students in their day-to-day lives

## Conclusions

- All data collected is from the second academic year in a 4-year study; therefore, all results are preliminary.
- Due to the small sample size, results are limited in their reliability.
- Results show that K-2-aged children with SSD score below average compared to their peers on morphological awareness and phonological memory tests, and they tend to struggle more with socioemotional well-being as they get older.
- The results of this project help strengthen the idea that Speech Language Pathologists, educators, and parents/caregivers need the proper knowledge to address a child’s SSD and prevent the child from being at a disadvantage compared to their peers.

## Next Steps

- APPLES will continue to discover the impacts of SSDs in children in multiple (other) areas through multiple avenues of testing.
- APPLES will also consider data collected from Washington State University throughout the project to obtain a larger, more representative sample.
- As more participants are tested for the remainder of the project, more data will be collected and input into REDCap.
- Once all data is collected, it will be analyzed to gain a better understanding of what specifically needs addressing when providing treatment for a child with SSD.

## References

