

Exploring co-occurring DLD and ADHD and its impact on negative emotion frequency and word learning: a comparative study

Kathryn Cushman₁, Taylor Berrier₁, Dawna Duff, PhD.₂, Suzanne Adlof, PhD.₁

SCROLL Lab, Department of Communication Sciences and Disorders, Arnold School of Public Health, University of South Carolina₁, Decker College of Nursing and Health Sciences Division of Speech and Language Pathology, Binghamton University₂

Background

- Developmental Language Disorder (DLD) is a neurodevelopmental disorder that affects the learning, understanding, and use of spoken language (McGregor, 2020).
- ADHD is a “persistent and severe impairment of psychological development resulting from a high level of inattentive, restless and impulsive behaviour” (Kumperscak, 2013)
- DLD and ADHD often occur together, with estimates of their rates of comorbidity ranging between 3-37% (Tomblin & Mueller, 2012; Redmond, 2020).
- Both ADHD and DLD have been linked with emotion regulation problems (Graziano & Garcia, 2016; Fujiki et al., 2004)
- Emotion regulation is important for learning; dysregulated emotions can interfere with concentration, making it difficult to encode new information.
- Challenging learning situations may simultaneously influence emotion regulation abilities.

Research Questions

- Do children with ADHD+DLD exhibit more frequent instances of negative emotions during spoken word learning compared to children with ADHD or DLD alone?
- Do children with ADHD+DLD exhibit poorer word learning than children with ADHD or DLD alone?
- What is the correlation between the frequency of negative emotions and word learning abilities for each group?

Participants

- 49 2nd grade children
- Selected for behavior coding from a larger study of spoken word learning in children with DLD/dyslexia.
- Children were administered standardized assessments (CELF-5) and parents reported ADHD diagnoses and symptoms (ADHD-RS-5).

Participants, Ctd

- Sample included 12 children with DLD, 25 children with ADHD, and 12 children with ADHD+DLD.
- Parents reported race as follows: Black/African American 10%, Multiracial 2%, White 88%. Ethnicity was Hispanic/Latino 16%, Not Hispanic/Latino 80%, and Unreported 4%.

Method

Word Learning Task:

- Computerized word learning instruction taught 8 novel words paired with pictures and descriptions.
- Participants were asked to recall each word and identify the correct matching picture at least 3x times during the training.
- Feedback was provided for each response.
- Word learning was assessed with recall and recognition tasks administered immediately after instruction and one week later.
- The word learning instruction and assessment sessions were video recorded.

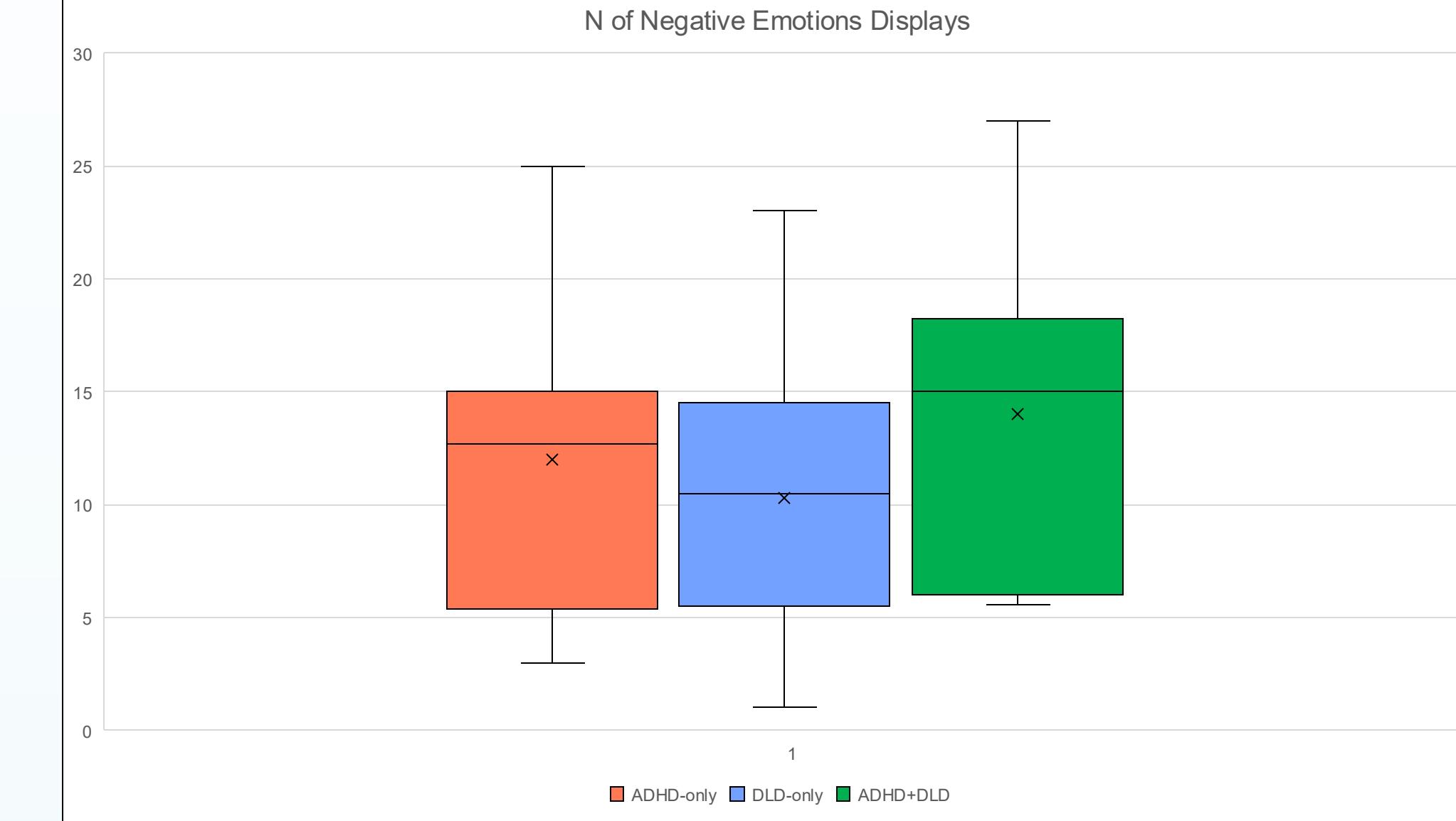
Behavior Coding Measure:

- We used a behavior coding schema to review video footage of participants completing the most difficult round of word learning instruction. In this round, there were 24 opportunities to complete recall or recognition practice trials, with feedback.
- Videos of children were segmented into 5s intervals, and each interval was reviewed and coded for behaviors indicating negative emotion:
 - negative emotion ventilations, disengagement, solicitations, and task- or self-criticisms
- A total score was calculated by taking the sum of the number of intervals with negative emotion codes for a given video.
- All videos were double coded, and disagreements were resolved by consensus.

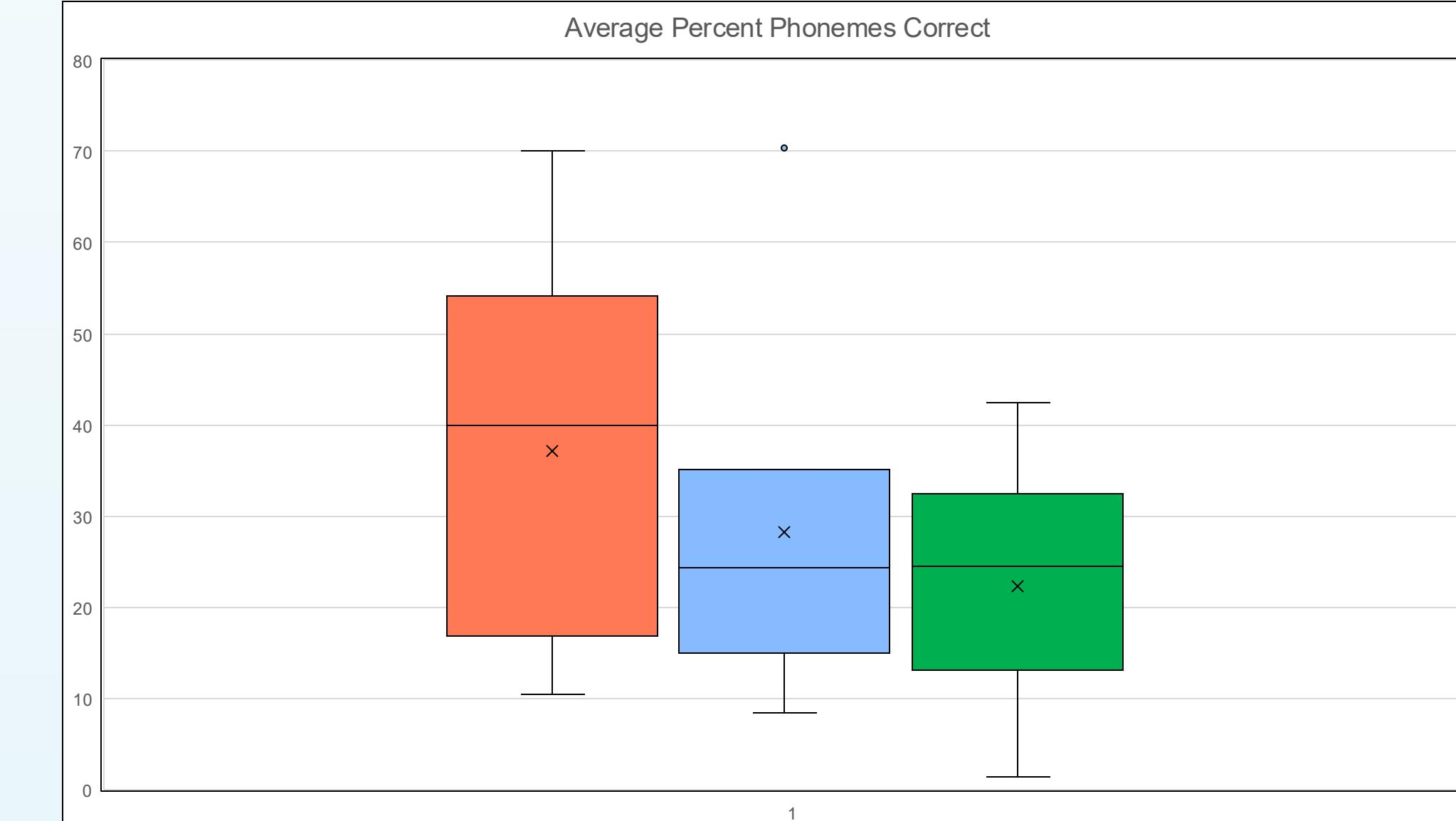
Results

There was no significant difference in N negative emotions between children with DLD, ADHD, and ADHD+DLD ($F = 0.75$; $p = .394$). See graph.

N Negative Emotion Displays by Group

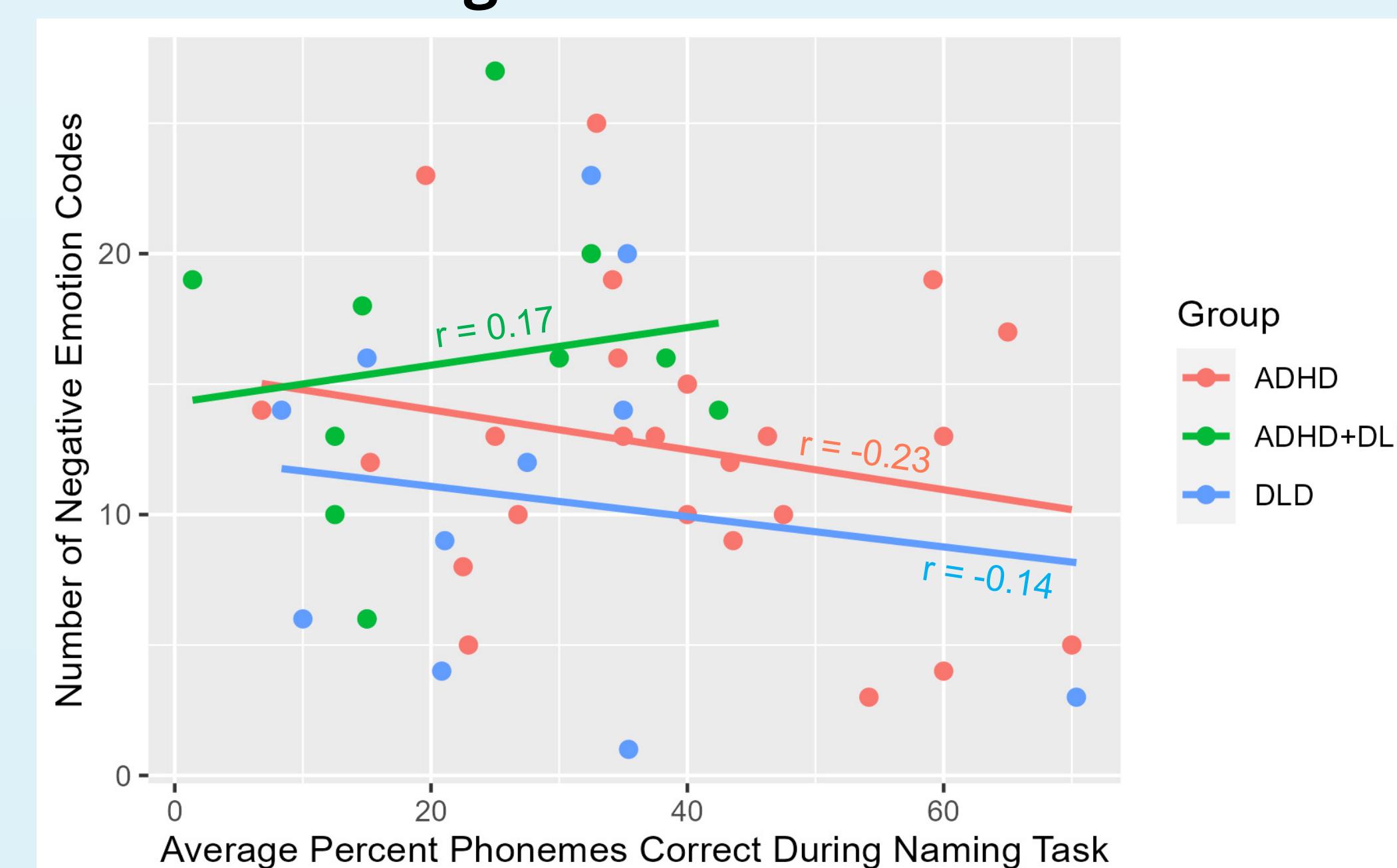


Average Percent Phonemes Correct During Word Recall by Group



There was a significant difference in children's word recall at post-test ($F = 4.80$; $p = .013$). Pairwise comparisons revealed a significant difference between ADHD+DLD and ADHD groups, but not between the other groups.

Correlations between N Negative Emotion Displays and Average Percent Phonemes Correct During Word Recall



Across all groups, there were no significant correlations between the number of negative emotions and word recall at post-test ($p > .29$).

Conclusion

- Though all children displayed at least one instance of negative emotion, there were no significant group differences in N negative emotions displayed during word learning.
- However, there was a group difference for spoken word learning.
- Correlations between the number of negative emotion displays and word learning in children with DLD, ADHD, and ADHD+DLD were not significant.
- It is encouraging that the experience of negative emotions during word learning did not correlate with word learning outcomes; children across multiple diagnosis groups may be resilient to negative state emotions during learning.

Implications:

- Negative emotions during learning may not reflect a child's ultimate outcome.
 - Clinicians should discuss with caregivers whether negative emotions seen during intervention are prolonged into other areas of life or resolved quickly after a session has ended.
- Clinicians also may wish to encourage their students when encountering a negative emotion during learning.
 - Experiencing frustration may be a part of the learning process and may not necessarily reflect a poor outcome with a given concept.

Future research should consider asking children with DLD, ADHD, and ADHD+DLD about the emotions they experience during learning to corroborate behavioral findings.

Acknowledgements

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