Poster Title: Parent Connectors: Supporting Parents of Middle School Students with EBD
First Presenter: Angelique Aitken, University of Nebraska-Lincoln (aaitken2@unl.edu)

Poster Abstract:
Rationale: A caring, skilled, and empowered parent who is engaged in and knowledgeable of the critical facets of their child's life is a powerful protective factor. The importance of familial support in a student's academic success has been documented in several research studies (Fan & Chen, 2001; Jeynes, 2005; 2007). However, the parents of youth with emotional or behavioral disturbance (EBD) often have lower levels of reported parental involvement with school (Duppong Hurley, et al., 2018; Wagner et al., 2006; Wagner et al., 2005). One approach to improve the outcomes for students with EBD is to provide one-on-one parental support from a peer that has shared experience of a child with EBD (Hoagwood et al., 2010). While these interventions are less common than peer-led small groups, they have more robust research designs, and some evidence of improvements for children and families (January, et al., 2016; Kutash, et al., 2011; 2013).

Method: This ongoing RCT, to date, includes 282 families of students with EBD from 29 middle schools. Parents in the treatment condition (n=148) were paired with a peer-mentor called a parent connector (PC). The PCs' objective was to provide support, information, and skill-building through weekly 30-60 minute phone calls during the school year by a trained peer who also had a child with EBD. The four core components delivered during the school-year are (a) providing emotional support, (b) promotion of benefits of actions and positive expectations, (c) providing informational and (d) instrumental support. Student measures were obtained from schools include level of emotional functioning, ratings of academic competence, and number of days of suspensions. Parent measures included the Caregiver Strain Questionnaire (alpha=.86; Brannan et al., 1997), satisfaction with school, assessments of parental involvement, and participation in the program.

Findings: While parents in both conditions showed a decrease in subjective strain from intake to posttest, parents in the treatment group demonstrated a greater reduction in strain compared to parents in the control condition (g = -0.13; covariate-adjusted effect size). Parents in the treatment condition also showed differences in community empowerment compared to parents in the control condition (g = 0.19). Parents in the treatment conditions reported higher empowerment at posttest when controlling for differences at intake. Parents in the treatment condition also reported greater satisfaction with schools at posttest compared to parents in the control condition. The largest differences in satisfaction were reported in the areas on quality of information (related to academics and behavior), frequency of communication, the amount and difficulty of homework, and the effectiveness of communication with the teacher. In all cases, parents in the treatment group reported greater satisfaction. Parents in the treatment conditions were 30% to 44% more likely than parents in the control condition to be very satisfied with their communication with their child's school. Parents in the treatment group also reported meeting face-to-face more often with their child's special education and regular education teacher.

We will present the highlights from the study to date and discuss implications of the findings.

References (if any):


Poster Title: Predicting Fourth-Grade Mathematics Achievement with Early Numeracy, Early Literacy, and Behavior Ratings

First Presenter: Abigail A. Allen, Clemson University (aaallen@clemson.edu)

Second Presenter: R. Alex Smith, University of Southern Mississippi (R.Alexander.Smith@usm.edu)

Additional Authors: Erica S. Lembke, University of Missouri, lembkee@missouri.edu

Poster Abstract:
Prevention science is concerned with identifying key malleable variables that predict long-term risk and then developing effective early interventions that address said variables. Mathematics abilities are key to future school and career success. Early numeracy predicts future mathematics achievement (Geary, 1993; Jordan et al., 2007), but less is known about the importance of early literacy skills to later mathematics achievement (Jordan et al., 2007). Behavior also predicts future academic outcomes (Reinke et al., 2008), and measures of both academic and behavioral risk should be integrated to better identify student risk profiles. The purpose of this study was to investigate the question: What is the relationship between early numeracy and literacy performance, first-grade behavior ratings, and fourth-grade mathematics achievement?

Four hundred students in first grade (2011-2012) were followed until fourth grade (2014-2015) in a large suburban district. Four early numeracy CBMs (EN; Oral Counting, Number Identification, Missing Number, Quantity Discrimination) and a Nonsense Word Fluency CBM (NWF) were given to all first-grade students in the fall, winter, and spring. Participants’ teachers completed the Behavioral and Emotional Screening System, Teacher rating scale (BESS-T; Kamphaus & Reynolds, 2007) in the fall of first grade. In fourth grade, participants were given a Mathematics Concepts and Application (M-CAP) and a Mathematics Computation CBM (M-COMP) in fall, winter, and spring.

Grade-based z-scores were calculated for each measure. An EN composite score was calculated by combining the z-scores of each EN task, and a fourth grade CBM composite score was calculated by combining the z-scores of the M-COMP and M-CAP. A stepwise multiple regression analysis was conducted to determine which first-grade factors predicted fourth-grade mathematics performance. Pearson correlations were calculated for individual and composite measures.

Regression analysis indicated that three predictors (EN composite, NWF, behavior) accounted for 34% of the variance in fourth grade CBM composites (R^2 = .34, F (3, 117) = 19.31, p < .001). Individual predictors that significantly predicted mathematics achievement were NWF (B = .31, β = .19, p < .05) and behavior (B = -.64, β = -.38, p < .001). A second regression analysis was conducted with the individual EN measures. All four EN measures accounted for 19% of the variance in fourth grade CBM composites (R^2 = .19, F (4, 414) = 24.14, p < .001); Number Identification accounted for 15.5%, Oral Counting 0.7%, Quantity Discrimination 0.7%, and Missing Number 2%. Significant predictors were Number Identification (B = .35, β = .21, p < .001) and Missing Number (B = .31, β = .19, p < .001). Correlational analyses suggested a significant (p < .001) positive correlation between EN and fourth-grade mathematics (r = .34) and between NWF and fourth-grade mathematics (r = .36). A significant (p < .001) negative relationship existed between first-grade behavior and fourth-grade mathematics (r = -.42).

First-grade behavior predicted unique variance in fourth-grade mathematics beyond early numeracy skills alone, as did early literacy. The current findings are consistent with previous research (Reinke et al., 2008). Implications for research and practice will be discussed.

References (if any):


Poster Title: Implementation of Intensive Intervention in Mathematics for Middle School Students

First Presenter: Sarah V. Arden, American Institutes for Research (sarden@air.org)

Poster Abstract:
Nationally, there is an urgent need to improve outcomes in mathematics for all students, especially students with and at risk for disabilities. As a result, improving mathematics instructional practices is at the forefront of many school improvement efforts. While overall scores in mathematics have increased since 2013, scores for students receiving special education services have remained stable or declined (National Assessment of Educational Progress, 2017). These trends suggest a need for educators to better understand both grade level mathematics standards (Brahier, 2016), and how to provide appropriate intervention for students with severe and persistent learning needs.

One way to meet the needs of all students, including those who struggle, is within a Multi-tiered System of Support (MTSS) framework. MTSS is a tiered system of support that encompasses the way universal screening, core instruction, progress monitoring, and intervention delivery is structured to support all students’ academic and behavioral needs. The most intensive tier of an MTSS system is often referred to as Tier 3, and in some cases is where special education services are delivered. While we would support the idea that all instruction across tiers should be data-informed, we suggest using a more formalized process called Data-based Individualization for students whom demonstrate the need for intensive intervention within an MTSS framework.

DBI is a validated, systematic, and iterative process of intervention, assessment, and adaptation that allows educators to individualize instruction for students with severe and persistent learning needs. Four decades of evidence support the promise of DBI. For example, a meta-analysis by Jung and colleagues (2018) showed that collecting progress monitoring data, providing teachers with an analysis of the types of errors that students made, and giving them expert instructional recommendations to address these errors had significant positive effects on student achievement.

DBI should be implemented to support students for whom core instruction (i.e., Tier 1) and secondary intervention (i.e., Tier 2) have been insufficient to facilitate adequate progress. DBI is a real-life example of improvement science applied to an educational problem by utilizing data-based decision-making practices to intensify and adapt instruction to improve outcomes for SWDs. Despite evidence supporting the efficacy of DBI, many schools struggle to implement the process without support, especially middle schools. Implementation often stalls when intervention teams confront barriers such as providing standards aligned instruction to students far below grade level, overcoming conflicting school and district policies, or working with leaders who fail to take an active role in the process. Thus, this poster will not only introduce participants to the components of the DBI process and its application to mathematics instruction, it will also address the critical role of planning and leadership to maximize the likelihood of successful implementation at the middle school level.

References (if any):

**Poster Title:** Math Problem Solving and Cognitive Growth in English Language Learners: Results of Year 1  
**First Presenter:** Monica Asencio, University of New Mexico (masencio@unm.edu)  
**Second Presenter:** Stefania Petcu, University of New Mexico (spetcu@unm.edu)  
**Additional Authors:** Lee Swanson, University of California-Riverside (hlswanson@unm.edu)

**Poster Abstract:**
This NSF study is designed to help English language learners who have difficulties in math by accurately identifying where difficulties in learning mathematics lie and what processes may be identified to develop effective interventions. The study follows ELL children over three testing waves. For children in grades 1, 2, and 3, a battery of math, cognitive, language and reading tests in English and Spanish will be administered each year over a three-year period (total estimated minimum N=400) to children with and without math disabilities who are learning English as a second language. Participants will (a) learn to identify children who may be at risk for difficulties in math, and (b) increase their knowledge about variables that mediate and compensate for the relationship between cognition and math achievement. Preliminary results will be presented (results of year 1).

**References (if any):**
**Poster Title:** The Relationship between Pretest Reading Scores and Student Response to Vocabulary Interventions  
**First Presenter:** Christy R. Austin, The University of Texas at Austin (christyaustin@utexas.edu)

**Poster Abstract:**  
The Matthew Effect has been applied to reading development, describing the widening gap between strong and poor readers over time, especially in the area of vocabulary development (Stanovich, 1986). This synthesis systematically reviews studies investigating the relationship between pretest reading scores and student response to vocabulary interventions. Criteria for inclusion in this synthesis include: (a) word learning or vocabulary intervention studies provided in English in a school setting, (b) included at least one outcome measure of word learning, operationalized as either receptive or expressive vocabulary, (c) provided sufficient data to determine how student differences at pre-test impacted response to a word learning or vocabulary intervention (moderator analysis or pre-test/posttest correlation), (d) included students in grades PreK-3, and (e) published in a peer-reviewed journal. Forty-three studies met inclusion criteria. Studies were analyzed by: (a) type of analysis, (b) reading skills measured at pretest, (c) standardized versus researcher-developed measures at pre-test, (d) grade level, and (e) disability status. Results demonstrate that initial pretest reading scores are related to student response to vocabulary interventions, favoring students with higher initial reading skills. Implications present the benefits and challenges of supporting vocabulary development in the early elementary grades.

**References (if any):**  
Poster Title: The Impact of Equation-Solving within Word-Problem Intervention for Third Graders with Mathematics Difficulty
First Presenter: Katherine Berry, The University of Texas at Austin (kberry@austin.utexas.edu)
Second Presenter: Sarah Powell, The University of Texas at Austin (srpowell@austin.utexas.edu)

Poster Abstract:
Purpose/Research Questions: The purpose of this study was to examine the impact of equation-solving instruction within an intensive, 16-week, word-problem intervention for third-grade students with mathematics difficulty (MD). We identified MD as students with mathematics performance at or below the 13th percentile on a word-problem measure. We asked the following research questions: (1) Do third-grade students with MD who receive word-problem intervention with equation solving (WP + ES) outperform students who receive word-problem intervention alone (WP)? (2) Do third-grade students who receive word-problem intervention (WP + ES or WP) outperform students with MD who do not receive intervention?
Participants and Method: After receiving approval from our university Institutional Review Board, we recruited teachers from 13 public elementary schools for participation in the study. In September 2016, 917 third-grade students were recruited and screened from these 13 schools. Students who performed <13th percentile on a word-problem measure were identified as at-risk for MD and deemed eligible for the study. Eligible students were randomly assigned to one of the three groups: word-problem intervention with equation solving (WP + ES; n = 50), word-problem intervention without equation solving (WP; n = 50), or business-as-usual comparison group (BAU; n = 55).
The word-problem intervention included 48 one-on-one lessons, implemented three times a week, with each session lasting about 30 min. Each lesson consisted of several activities including (1) math fact flash cards, (2) interventionist-led activities about the equal sign for students who received intervention with equation solving (WP + ES) and math review activities for students who received intervention without equation solving (WP), (3) interventionist-led lesson featuring schema instruction, (4) schema sorting practice, and (5) cumulative review.
In all, 14 interventionists were recruited from the University's special education programs, trained on testing and tutoring protocols, and taught to implement testing and tutoring sessions with fidelity. Interventionist fidelity data were collected on >20% of sessions through in-person supervisory observations and analysis of audio-recorded sessions. After the intervention, all eligible students were post tested across basic mathematical and word-problem knowledge to determine differences across intervention and business-as-usual conditions.
Findings: Data analysis indicated that students who received word-problem intervention with equation solving (WP + ES) demonstrated superior growth in word-problem solving skills over students who received intervention alone (WP), with an ES of 0.37. The average gain, from pre- to post-test, for equation-solving students (WP + ES) was 19.95 points, compared to 16.07 points for intervention alone students (WP).
Students who received word-problem intervention with and without equation solving (WP + ES or WP) demonstrated superior mathematics performance over students in the comparison group (BAU), with an ES of 1.45. The average gain, from pre- to post-test, for intervention students (WP + ES or WP) was 18.01 points compared to 4.04 points for comparison students (BAU).
With our randomized-control trial, we have determined an efficacious method for providing word-problem intervention to students with MD. The use of schemas and equation solving within word-problem intervention holds important implications for future intervention research for students with or at-risk for disability.
**Poster Title:** Response-To-Intervention: Inter-country lessons for educational policy discussion  
**First Presenter:** Piia Bjorn, University of Eastern Finland (piia.bjorn@uef.fi)

**Poster Abstract:**
What similarities and differences do educational frameworks have for providing support in learning and participation? How knowledge on learning and instruction and support for all students would be best received and further implemented? These are the questions we (Björn, Aro, Koponen, L.S. Fuchs & D. Fuchs) have pondered upon now for a few years now. In the U.S., RTI (Response-To-Intervention) for a long time has been a suggested framework for identifying students with disabilities, whereas the Finnish "RTI" is taking its first steps. In our previous papers (Björn et al., 2015), we found the original purpose and thereby also the definition of RTI (Response-To-Intervention) framework differing to some extent. For example, the RTI was primarily developed for LD identification whereas the Finnish version aimed to re-structure the existing support service framework for struggling students. Instead, prevention of LD was an acknowledged goal in both of the frameworks. It seemed that the two frameworks were similar from the outside but differences in the content existed. Further, we started to wonder why the renewed Finnish framework was outlined similarly as the U.S. RTI but the massive amount of existing knowledge on the pros and cons of the approach seemed to be neglected, as many important definitions were not made in the formal documents following. We realized the role of the special education service system differing within RTI in different parts of the U.S., while in Finland, special educational services have the same role within the RTI-like framework through the country (Björn et al., 2015).

We continued by comparing assessment and instruction in those frameworks (Björn et al., 2018). There are some earlier studies that have examined the differences between identification and learning support frameworks in the U.S. and Finland (see, Itkonen & Jahnukainen, 2007). These types of papers presenting and comparing educational frameworks implemented in different countries are important because even though the processes behind the reforms differ, the actual need for constructing frameworks for support in learning stems from the same source. That is, all education systems try to teach students effectively and with reasonable cost. Discussion in this presentation will consider improvements in educational frameworks in both countries based on our findings.

**References (if any):**


Poster Title: Supporting Inquiry Science with SNUDLE, a Digital Science Notebook

First Presenter: Jose Blackorby, CAST, Harvard Graduate School of Education (jblackorby@cast.org)
Second Presenter: Jennifer Yu, SRI (jennifer.yu@sri.com)

Poster Abstract:
The Next Generation Science Standards (NGSS) provide a vision of the future where all students are challenged by a comprehensive and rigorous science education, including those students who have been traditionally underserved (NGSS, 2013). To achieve this vision the field will need to develop new approaches and supportive tools as the process of active science learning presents challenges for many students (Keselman, 2003), and especially those who struggle with reading and writing, have difficulty with memory, executive function, and learning strategies, or who otherwise have low motivation for science learning (Keselman, 2003; Scruggs & Mastropieri, 1994). In response, CAST has developed a digital tool and intervention called Science Notebook in Universally Designed Environment or SNUDLE. Based on Universal Design for Learning (UDL), SNUDLE provides students with: (a) space to collect, organize, and display observations and data; (b) space to reflect and make sense of inquiry experiences; and (c) multiple opportunities to demonstrate understanding and receive formative feedback. SNUDLE was designed with a purposeful focus on lowering construct-irrelevant barriers to science learning. It was thus developed according to accessibility guidelines from the World Wide Web Consortium (W3C-WAI, 1999), Section 508 of the Rehabilitation Act (29 U.S.C. 794d), and the National Center for Accessible Media (2006). Text-to-speech technology is built directly into the notebook interface with real time highlighting to support simultaneous access to auditory and visual processing, as well as word-by-word English-to-Spanish translation, alt text and long descriptions for images, keyboard accessible actions, and a multimedia glossary provided to provide just-in-time support for vocabulary use and development. In addition to providing access to science notebook use, SNUDLE leverages contextual support that is intended to develop and then reinforce effective science learning behaviors. As students complete each part of a science activity, they are reminded through the navigational structure of the UDSN that they are moving through a process: plan, get data, explain. Once students begin to build an explanation for their inquiry experience, they are further provided with contextual supports to facilitate, guide, and then reinforce the process behaviors necessary for effective science notebook use.

This poster will describe a 4-year IES Goal 3 randomized control trial designed support 4th grade general and special education students acquire and implement inquiry science skills. Specifically, the study evaluates the effects of SNUDLE on students' science content knowledge from the STEMScopes curriculum, broad science knowledge measured by NWEA's MAP science test, and students' motivation for science. The study focused on 4th grade students (n=671) in elementary schools (n=7) in an urban school district in Texas. Blocking on schools and teachers, 4th-grade science were randomly assigned to SNUDLE or to traditional paper-based science notebooks (TSN). This poster will present results from Year 2 of the study including HLM impact analyses on key outcomes, subgroup analyses for students with disabilities, low performing students, and English Languages Learners, as well as measures of fidelity of implementation.

References (if any):


Poster Title: The Relation Between Duration and Effectiveness: Tier 2 Language Comprehension Intervention

First Presenter: Britta Cook Bresina, University of Minnesota (bresi016@umn.edu)
Second Presenter: Kristen L. McMaster, University of Minnesota (mcmas004@umn.edu)
Additional Authors: Panayiota Kendeou, University of Minnesota (kend0040@umn.edu)

Poster Abstract:
Response to Intervention (RTI) Tier 2 is meant to quickly remediate student difficulties. Unfortunately, little empirical evidence exists regarding the appropriate duration of many Tier 2 interventions (Gersten et al., 2009). In this study, we provide initial evidence for the question: what is the relation between intervention effectiveness and duration for student growth in a Tier 2 inferencing intervention?

Inferencing is foundational to language comprehension and is a general skill—it is necessary for comprehension in both reading and non-reading contexts (Kendeou et al., 2008). To improve inferencing, targeted questions with scaffolding and feedback can be used (McMaster et al., 2012). Using this theoretical foundation, we developed a Technology-Based Early Language Comprehension Intervention (TeLCI), engineered to improve inferencing skills in first- and second-grade students who struggle with comprehension. 24 video modules, both fiction and nonfiction, guide students in learning key vocabulary, responding to inferential questions, and receiving scaffolding and specific feedback. The use of video (i.e., non-reading context) allows students to access intervention content without being limited by decoding skill. Additionally, inferencing is targeted via two questioning methods: during the module (online) or after the module (offline). Online questioning prompts students to create inferences at key points throughout the story while offline questioning avoids repeated interruption.

Participants: Sixty-three first-graders from an urban midwestern school identified as struggling comprehenders were randomly assigned to the online or offline TeLCI module condition.

Materials: Language comprehension. Measured using the CELF-5 subtest Understanding Spoken Paragraphs (Wiig et al., 2003). Students listened to brief passages and answered questions on implicit and explicit passage information. Students performing below a standardized cut score were identified as “at-risk” for comprehension difficulty and included as study participants.

Inferencing ability. Growth was measured using TeLCI modules. Each module includes a five-minute video and five inferencing questions about key events with four possible answer choices presented audio-visually. If a student selected the incorrect answer for a question, they received scaffolding to support the creation of the inference and another attempt to answer the question. If the second attempt was incorrect, students were supplied with the correct response and a supportive explanation. Thus, there was the possibility for students to have one or two attempts at answering each question. Each week, students completed three TeLCI modules (fiction and nonfiction).

Analyses: Two repeated measures ANOVAs assessed students’ growth on TeLCI module performance. The first shows student overall average response accuracy for the inferencing questions by week. The second analysis shows student overall average accuracy adjusted for number of response attempts for the inferencing questions by week.

Results: Results show that, overall, students progressed at a comparable rate in both conditions and it appeared to take about five or six weeks for students to show growth in inferencing. For overall accuracy, there was no main effect of time or time-by-condition interaction, F(2, 44) = 1.63, p > .20. For average adjusted accuracy, however, there was a main effect of time F(2, 90) = 3.29, p < .05. There was no time-by-condition interaction (F = 0.35).

References (if any):


Poster Title: Examining the Effects of Algebra Readiness Modules on Struggling Seventh Grade Students
First Presenter: Brian R Bryant, The University of Texas at Austin (bybryant@austin.utexas.edu)
Second Presenter: Diane Pedrotty Bryant, The University of Texas at Austin (dpbryant@austin.utexas.edu)
Additional Authors: Megan Carroll, The University of Texas at Austin; Rene Grimes, The University of Texas at Austin; Jihyun Lee, University of Wyoming; Meijia Liu, The University of Texas at Austin; Maryam Nozari, The University of Texas at Austin; Soyoun Park, The University of Texas at Austin; Gavin Watts, Texas A&M University-San Antonio

Poster Abstract:
Proposal: The purpose of this presentation is to describe the results of a 2-year efficacy study of seventh grade Integers, Ratios and Proportions 2, and Expressions and Equations 2 modules designed for mathematics interventionist teachers to deliver to Tier 2 students with mathematics difficulties (as determined by performance on the previous year’s high stakes mathematics test).

This Integers study involved 328 treatment and 262 comparison students (those administered a “business as usual” intervention) attending middle schools in six cities in Texas in the fall and winter of 2016-2017 and 2017-2018 academic years. 267 treatment and 191 comparison students attending middle schools participated in the Ratios and Proportion study in the winter/spring of 2016-2017 and 2017-2018. Finally, the Expressions and Equations study was conducted with 80 treatment and 71 comparison students attending Texas middle schools in Spring of 2017 and 2018. (Note: Some schools elected to participate in one or more of the studies.) Trained interventionists employed by the schools delivered the intervention to both treatment students and comparison students who agreed to participate in this study and whose parents/guardians provided written consent in accordance with the University’s Internal Review Board’s procedures.

ANCOVA was used to evaluate group differences obtained on modified associated easyCBM Module Checks at the completion of each module and Benjamani-Hochberg was applied to control for Type 1 error rate. Pretest scores for each easyCBM Module Check were used as covariates. ANCOVA was also used to evaluate group differences on a distal mathematics measure (Group Mathematics Assessment and Diagnostic Evaluation) for those students who participated in the year-long study (across all three modules).

For all three modules across the 2 years, the treatment group outperformed the comparison group on the proximal measure, the related easycbm Module Checks total score. The differences were statistically significant for both intervention modules (p<.02). The Benjamani- Hochberg procedure did not alter the pattern of significant findings. Partial eta squared were computed based on the data; for Integers, the results were small (.032), for Expressions and Equations 2, the resulting Partial eta squared was medium (.163) and for Ratios and Proportions 2, the effect size was small (.012). No significant differences were found between groups for the distal measure (GMADE), which assess a broad array of mathematics skills and concepts, including many areas that are not associated directly with algebra readiness.

Discussion: Findings revealed that students in the treatment condition demonstrated statistically significantly higher scores than comparison students on the easycbm Total Score (proximal measure) for Integers, Expressions and Equation 2, and Ratios and Proportions 2. We were disappointed but not surprised with the findings on the outcome (distal) measure, which is an area to examine further.
Poster Title: An Evaluation of Student Engagement During a Whole-Class Number System Knowledge Intervention

First Presenter: Kaitlin Bundock, Utah State University (kaitlin.bundock@usu.edu)

Poster Abstract:
Weaknesses in symbolic number sense contribute to learning difficulties in mathematics (Geary, Nicholas, Li, & Sun, 2017). Number System Knowledge (NSK), a symbolic number sense construct and predictor of functional numeracy in adolescence (Geary, Hoard, Nugent, & Bailey, 2013; Siegler & Braithwaite, 2017), is the ability to relate quantities to their respective numeral representation, understand relations among numbers, and use that knowledge to manipulate quantities (Geary et al., 2017). Research is needed on effective ways to teach NSK concepts. Recently, high-quality mathematics instruction has been envisioned as ambitious mathematics teaching, which involves orchestration of discussions, responsiveness to all students, collaborative processes of mathematical inquiry, and promoting students to think critically and take intellectual risks (Anthony, Hunter, Hunter, & Duncan, 2015; Kazemi, Franke, & Lampert, 2009). An essential element of ambitious mathematics teaching is how students engage with content and instructional activities. Higher rates of engagement, measured through direct observations, teacher rating scales, or student self-report, are predictive of higher mathematics achievement (Baroody, Rimm-Kaufman, Larsen, & Curby, 2016; Hughes, Luo, Kwok, & Loyd, 2008; Lein et al., 2016). Examining engagement of students with a history of low mathematics achievement is particularly important, as this population is at higher risk for inattentiveness and problem behaviors (Wu, Willcutt, Escovar, & Menon, 2014).

In this poster, we present findings from a sub-set of data collected as part of a multi-classroom intervention study. In this sub-set of analysis, we use a mixed-methods design to evaluate whether student engagement during a whole-class NSK intervention affected the improvement second-grade students made on NSK pre and posttests, and to identify specific behaviors that may have contributed to differences in four students with the highest and lowest rates of engagement. Our specific research questions were:
1. What is the relationship between engagement rates and NSK outcomes over the course of a nine-week NSK intervention?
2. What specific behaviors did students with the highest and lowest rates of active engagement display during the intervention that may have contributed to differences in NSK outcomes?

The participants included four second-grade students with low pretest scores, none of whom were identified with disabilities. We collected NSK pre and post-test data using a reliable and valid NSK assessment (Geary, Bailey, & Hoard, 2009) composed of three subtests: number sets test (Geary et al., 2009), number line estimation tasks (Siegler, Thompson, & Schneider, 2011), and computational fluency (Fuchs, Hamlett, & Powell, 2003). We collected data on student engagement using momentary time sampling, and recorded the percentage of time students were actively or passively engaged, or off-task. We video-recorded each intervention session to facilitate in-depth qualitative analysis.

Results indicate that students with higher rates of active engagement made greater gains on NSK posttests, while students with lower rates of active engagement made the lowest gains on NSK posttests. We are currently qualitatively analyzing video-recordings of intervention sessions to identify specific behaviors of students with the highest and lowest percentages of active engagement. We will present recommendations for teaching and research based on our results.

References (if any):


Poster Title: Does growth mindset predict growth in reading?
First Presenter: Eunsoo Cho, Michigan State University (escho@msu.edu)
Second Presenter: Unhee Ju, Michigan State University (juunhee@msu.edu)

Poster Abstract:
Despite the evidence supporting the relations between reading and motivation (Baker & Wigfield, 1999; Morgan & Fuchs, 2007), how various motivation constructs are related to reading comprehension and the mechanisms that influence these relations are not yet fully understood. One of the strongest motivational predictor of achievement is students’ competence related beliefs, such as self-efficacy. Self-efficacy has shown to make significant contributions to reading comprehension (Conlon, Zimmer-Gembeck, Creed, & Tucker, 2006); and yet, whether self-efficacy relates to growth in reading is unknown. Mindset is another important predictor that might have lasting effects of students growth. Mindset is an implicit belief that students hold about the nature of intelligence- whether it can change with effort or not (Dweck, 1986). Students with growth mindset believe that their intellectual abilities can improve with effort whereas students with fixed mindset believe intelligence is a fixed entity. Research suggests such implicit beliefs are antecedents of students’ achievement-related behaviors and academic outcomes (Elliot & Church, 1997; Dupeyrat & Mariné, 2005), documenting the benefits of growth mindset. However, only a handful of two studies examine relation of mindset to reading comprehension (Petscher, Al Otaiba, Wanzek, Rivas & Jones, 2017; Cho, Toste, Lee & Ju, 2018) and neither of these study show whether growth mindset indeed predict students’ reading growth.

The purpose of this study was to investigate the relation of mindset and self-efficacy to reading development in middle school. Particularly, we examined whether growth mindset and self-efficacy in the beginning of the school year predict students’ reading silent reading fluency growth made during the academic school year. We further examined whether silent reading fluency growth mediates the relation between growth mindset and end-of-year reading comprehension skill. In the beginning of sixth grade (N = 291), students’ word reading fluency was measured and growth mindset and reading self-efficacy were measured using self-report surveys. Students’ reading skill was progress monitored using the Test of Silent Reading Fluency and Comprehension (TOSREC; Wagner, Torgesen, Rashotte, & Pearson, 2012) on a bi-monthly schedule, four times across the school year and Gates Mac-Ginitie Reading Test- 4th (GMRT; MacGinitie, MacGinitie, Maria, & Dreyer, 2002) was administered at the end of school year. Results from latent basis growth curve model (Chi-square = 75.72 df = 57, p = .05; RMSEA = 0.03, CFI = .99, TLI = .98, SRMR = .08) showed self-efficacy predicted initial performance of silent reading fluency (β = .20, p < .01) but not growth (β = .29, p = .06); whereas growth mindset predicted growth rate of silent reading fluency (β = .32, p = .03) but not initial performance (β = .04, p = .47), controlling for initial word reading fluency. Furthermore, both initial performance and slope of silent reading fluency growth predicted end-of-year reading comprehension measures (β = .22, p = .04, β = .61, p < .05, respectively), mediating the relation of self-efficacy and growth mindset to reading comprehension, respectively.

References (if any):


Poster Title: The Evidence Based Reading Interventions for English Language Learners: A Multilevel Meta-Analysis
First Presenter: Younghee Cho, Faith International University (helalj@snu.ac.kr)
Second Presenter: Sora Jeong, Seoul National University (sora501217@snu.ac.kr)

Poster Abstract:
The number of English Language Learners (ELL) has been growing worldwide and lots of ELL has been reported to at risk for reading disabilities due to dual difficulties in linguistic and cultural factors. This raises the necessity for searching practical and efficient reading interventions for ELL to improve the literacy development and English reading skills of ELL. The meta-analysis is useful research methods to find out effective interventions based on the evidence. In particular, it has its significance for bridging the gap between the field of education research and school settings by synthesizing and analyzing the results from the literature. The purpose of this study was to examine the evidence-based effective reading intervention for English Language Learner. This article reviews literature published between January 2008 and March 2018 that examined the effectiveness of reading interventions for ELL. This meta-analysis included 65 studies of ELL. We analyzed the effect sizes of reading interventions programs for ELL and exploring the variables which as an effect on reading inventions using a multilevel meta-analysis. We examined moderator variables just like the group size, duration of the intervention, and interventionist, intervention program, intervention content, whether or not with reading disabilities and at risk in reading. Results indicated that significant moderate to large effect sizes for intervention targeting basic reading skill for English learners who at risk for reading difficulties. However, for normal English learners, reading comprehension interventions is higher effect sizes than ELL with learning disabilities. This result suggests that we should consider the reading problems of English Learner and apply the Tier 2 approach for ELL with reading problems. Small group intervention and progress-monitoring intervention is more important for ELL who at risk for reading disabilities.

References (if any):


Poster Title: Associations between academic engagement and academic achievement: A systematic review and meta-analysis  
First Presenter: Jason Chow, Virginia Commonwealth University (jcchow@vcu.edu)  
Second Presenter: Esther Lindström, Lehigh University (esl417@lehigh.edu)  

Poster Abstract:  
Previous research supports the importance of academic engagement in accessing instruction and long-term educational outcomes (Fredricks, Blumenfeld, & Paris, 2004; Greenwood, Horton, & Utley, 2002; Wang & Eccles, 2013). For this reason, academic engagement and on-task behavior are common proximal measures of effectiveness in intervention studies targeting classroom behavior (Al-Hendawi, 2012), especially among students with emotional/behavioral disorders (EBD) and other disabilities (e.g., Severini et al., 2018). The relation between challenging behavior and academic risk (see Chow & Wehby, 2016; Kauffmann, 2008; Kavale & Forness, 1996) highlights a need for interventions that maximize both access to instruction and eventual learning of academic content for students of all abilities. However, little is known about the relation between academic engagement and more distal measures of academic achievement.  
Thus, the purposes of this systematic review and meta-analysis are to (1) quantify the average association between academic engagement and academic achievement in school-age children, and (2) explore substantive and methodological features that contribute to heterogeneity within and between primary studies. To this end, we searched electronic databases for published and unpublished studies that reported the correlation between engagement and achievement. We propose to estimate an overall weighted mean effect size (r) and a series of meta-regressions via random-effects models, accounting for within-study effect size dependency using robust standard errors. Implications for research, policy, and practice will be discussed in the context of the strengths and limitations of meta-analysis.  
Iterations of preliminary search yielded 9,658 articles for abstract-level screening, currently underway. Initial synthesis of included studies suggests variation in effects across studies, which will provide the means for using moderator analyses to explain variation in these effects. We propose to examine sample-level (age, gender, race/ethnicity, disability status, ELL status), measure-level (e.g., direct observation, rating scales, rater), and content area (e.g., reading, mathematics) moderators of the overall weighted mean effect size.  
We will use random-effects meta-analysis to synthesize eligible studies. In meta-analysis, effect sizes are weighted based on individual study characteristics to maximize statistical reliability. Because of the heterogeneity expected from the population of retrieved studies, we will use random-effects weighting in all models. Following main effects analysis, we will test for between-study heterogeneity and use meta-regression analyses to examine potential moderators. Additionally, we will conduct post-hoc tests to provide information about the robustness of our dataset and contextual information that will inform the interpretation of our findings. To test for publication bias, we will triangulate results of visual analysis of funnel plots, trim and fill analyses (Duval & Tweedie, 2000), Egger’s regression (Eggers et al., 2001) tests to examine for potential bias as a function of effect size and study variance (Chow, in press). Analyses will also include use of selection models (Hedges & Vevea, 2005), a comparison of effects in published and unpublished studies (Chow & Ekholm, 2018), and a series of sensitivity tests to identify study- or design-level features related to the overall mean effect size. Together, these tests will quantify and characterize the robustness of our overall and exploratory analyses.

References (if any):  
Poster Title: A Systematic Review of Independent Evidence-Based Practice Reviews

First Presenter: Lauren W. Collins, San Diego State University (lcollins2@sdsu.edu)

Second Presenter: Bryan G. Cook, University of Virginia (bc3qu@virginia.edu)

Additional Authors: Sara Cothren Cook, University of Hawaii; Amber Ray, University of Hawaii; Lysandra Cook, University of Virginia

Poster Abstract:
A central tenant of evidence-based reforms in special education is the identification and prioritization of evidence-based practices (EBPs). EBPs are identified in systematic reviews of literature (i.e., EBP reviews) by researchers applying standards related to the quantity and quality of research; specifically, these reviews examine the effectiveness of a practice for improving outcomes for a specific population of learners (Cook & Odom, 2013). Various organizations have identified and disseminated EBPs for some populations of students with and at risk for disabilities and scholars have conducted and published independent EBP reviews to classify the evidence bases of instructional practices for various groups of learners with and at risk for disabilities. However, these independent reviews have not been systematically reviewed to fully identify the corpus of EBPs in special education across different learner populations. The specific research question guiding this review was: What practices have been identified as evidence-based, promising, and ineffective in special education; for what outcomes; for which learner populations?

To search for independent EBP reviews, we first conducted a "cited by" search using the Web of Science to identify articles that cited one or more of the following sets of EBP standards: Best Evidence Encyclopedia (n.d.), Council for Exceptional Children (2014); Gersten et al. (2005); Horner et al. (2005); Kratochwill et al. (2010); National Autism Center (2015); Reichow, Volkmar, and Cicchetti (2008), and What Works Clearinghouse (2013). We also conducted an electronic search of EBSCOhost using the following terms: review, special education, evidence-based practice, and the first author's last name or the name of the organization for the aforementioned standards. Timeframes for the electronic searches were 2005 (publication date of first set of standards) to 2017 (when the search was conducted).

Two researchers then screened all titles and abstracts to identify articles that were a review of the literature, a meta-analysis, or a review of methodological quality. All articles identified by either researcher were advanced to a full-article review. In this phase, we identified whether an evidence-based review in special education was reported. We operationally defined an evidence-based review as (a) applied one of the eight sets of aforementioned standards to classify the evidence base of a practice; (b) included one or more studies that had participants who were identified with or at-risk for a disability; (c) applied a systematic procedure for identifying articles for the review; and (d) published in a peer-reviewed journal.

The electronic searches resulted in a total of 2,764 articles. After reviewing titles and abstracts, we identified 410 articles to be included in the full-text review. To date, 196 articles met our screening criteria for (i.e., applied at least one set of quality indicators or standards) and we identified 76 EBP reviews; 51% of articles were independently reviewed by two researchers, with 87% inter-rater agreement (disagreements resolved by consensus discussions with the full research team). We are currently completing coding of the EBP reviews (with at least 50% being coded by two researchers to establish inter-rater agreement), and will summarize our findings in this poster.

References (if any):


Poster Title: A Meta-Analysis of Interventions to Improve Argumentative Writing  
First Presenter: Alyson A. Collins, Texas State University (alysonacollins@txstate.edu)  
Second Presenter: Stephen Ciullo, Texas State University (ciullo@txstate.edu)  
Additional Authors: April Longa, Arizona State University; Steve Graham, Arizona State University

Poster Abstract:
Purpose: Argumentative writing, such as writing about a historical controversy or issue, has been recognized nationally as an important disciplinary literacy skill (e.g., Ferretti & Lewis, 2013). Previous meta-analyses have reported positive effects of providing writing strategy instruction to improve argumentative writing (e.g., Bangert-Downs, et al., 2004; Graham et al., 2012), particularly for students with learning disabilities (Gillespie & Graham, 2014). Few meta-analyses of writing interventions, however, have delineated the effects of genre-specific interventions, such as those specifically addressing writing of argumentative texts, for students with and without disabilities. The present meta-analysis extends the existing literature by focusing on a specific genre: argumentative writing. Specifically, this meta-analysis examines the effectiveness of interventions designed to enhance argumentative, persuasive, and opinion writing for students in Grades K to 12. Findings underscore the effectiveness of writing interventions for argumentative writing and identify areas needing further attention in future research. Findings also provide implications for disseminating writing interventions to improve classroom instruction.

Research Questions: Three research questions will be investigated:
(1) Are argumentative, persuasive, and opinion interventions effective in improving writing outcomes for students in Grades K to 12?
(2) Do participant (e.g., disability status) and intervention (e.g., duration, genre) characteristics moderate differences in study effect sizes?
(3) Do participant (e.g., disability status) and intervention (e.g., duration, genre) characteristics explain heterogeneity in study effect sizes?

Method and Findings: A systematic process was used to identify, code, and analyze eligible intervention studies. Electronic searches of online databases (e.g., ERIC, PsychINFO) identified experimental and quasi-experimental studies investigating the effectiveness of interventions to improve argumentative, persuasive, or opinion writing for students in Grades K to 12. Concurrently, researchers conducted ancestral searches of previously published systematic literature reviews on writing interventions along with conducting author queries and hand searches. Inclusion criteria included: (a) interventions focused on argumentative, persuasive, and opinion writing, (b) genre-specific outcomes reported for students in Grades K to 12, and (d) experimental or quasi-experimental designs. Over 40 studies were identified for inclusion in the present meta-analysis. All studies were double coded to ensure accuracy of coding procedures. Hedge’s g (Hedges, 1981) standardized mean difference effect sizes were calculated to determine the effects of argumentative interventions when compared to control conditions. Robust Variance Estimation (RVE; Hedges, Tipton, & Johnson, 2010) methods were applied to aggregate study effect sizes, when accounting for dependencies resulting from studies reporting more than one effect size. Initial findings suggest studies of argumentative interventions, on average, reported moderate effect sizes, with most studies utilizing researcher-developed measures (e.g., scores of argumentative elements included in an essay). Potential moderators of study effect sizes will also be explored, including disability status, intervention duration, and intervention types, including those with a reading-based component. This poster session will also suggest areas for future research in argumentative writing interventions and summarize implications for improving classroom practices.

References (if any):
Poster Title: Open Science in Special Education

First Presenter: Bryan G. Cook, University of Virginia (bc3qu@virginia.edu)
Second Presenter: William J. Therrien, University of Virginia (wj2c@virginia.edu)
Additional Authors: John Wills Lloyd, University of Virginia (jwl3v@virginia.edu)

Poster Abstract:
Advocates of open science reforms aim to make all aspects of the scientific endeavor more transparent, with the goal of enhancing the trustworthiness and application of research findings (Cook, Lloyd, Mellor, Nosek, & Therrien, 2018). In this poster session, we describe prominent open science reforms and their relevance in special education research, present findings from a review of special education journal policies, and delineate recent developments related to open science in special education.

Prominent open science reforms include, but are not limited to:
1. Data and code sharing: Researchers publicly share their data and analytic code, enabling other researchers to verify analyses independently, conduct novel analyses, and include data in research syntheses.
2. Preregistration: To address reporting and publication bias, researchers publicly register plans for conducting and analyzing studies, enabling the research community to verify whether researchers changed their analyses and fully reported their study.
3. Registered reports: Researchers submit preregistrations to journals for peer review. Importance of research questions and soundness of methods, not direction or significance of findings, is therefore the basis for publication. Under registered reports, peer review is a constructive process rather than a purely evaluative exercise.
4. Preprints: Before they are copyrighted and published in a journal, researchers post manuscript versions of studies on a preprint server where they are freely and openly accessible.
5. Open review: Reforms for making peer review more transparent include unblinding reviewer identify; publishing reviews; and ongoing, post-publication (online) review.

Cook et al. (2018) suggested that open science aligns with the goals of special education researchers to provide trustworthy findings to guide practice and policy, and may be especially relevant given emerging evidence of publication bias (Gage, Cook, & Reichow, 2017; Shadish, Zelinsky, Vevea, & Kratochwill, 2016; Therrien & Cook, 2018) and a strong tradition of advocacy within special education research.

We will present the findings of an in-progress review of special education journals’ (all journals categorized as special education by Journal Citation Reports, 2018, and all journals of the Council for Exceptional Children and its divisions) policies related to open science. Two researchers are presently reviewing and coding content from websites of special education journals to examine policies related to open science reforms as of fall, 2018. Preliminary analyses indicate that although many special education journals have an option for researchers to pay to make articles open access, few have policies regarding the other open science reforms.

We will also describe recent developments in special education related to open science, including (a) a meeting of approximately 40 editors of special education journals to discuss the adoption of open science reforms (taking place in late September, 2018); (b) the adoption of electronic badges to recognize and reward open science practices (i.e., data and code sharing, material sharing, preregistration) in the field’s flagship journal, Exceptional Children (Lloyd & Therrien, in press); and (c) new requirements for researchers to preregister studies funded by the Institutes of Education Sciences.

References (if any):


**Poster Title:** Analysis of an Understanding Procedures Observation Rubric for Math Intervention Instruction  
**First Presenter:** Angela Crawford, Boise State University (angelacrawford1@boisestate.edu)  
**Second Presenter:** Evelyn Johnson, Boise State University (evelynjohnson@boisestate.edu)  
**Additional Authors:** Yuzhu Zheng, Boise State University; Laura Moylan, Boise State University

**Poster Abstract:**
The Understanding Procedures rubric is one of four mathematics instruction rubrics that are part of the Recognizing Effective Special Education Teachers (RESET) observation system. These rubrics reflect mathematics-specific instructional practices that have been shown to be effective for students with or at-risk for mathematics difficulty (SMD): systematic instruction, focus on conceptual and procedural understanding, high student engagement, visual representations, and use of heuristics and cognitive strategies. The purpose of this study was to examine the psychometric quality of the Understanding Procedures rubric for use as an observation instrument to measure a teacher’s implementation of instructional practices in mathematics that are effective for SMD.

**Method:**
**Participants:** Video of mathematics intervention instruction was provided by 16 teachers, three videos per teacher, for a total of 48 videos. All instruction took place in K-8 intervention settings with students with high-incidence disabilities. Teachers reported using a range of curricula, including some teachers creating their own lessons. Ten raters were recruited to score these videos. Raters were education professionals with between 3-20 years of working experience, a range of education levels, and a range of occupations all related to the field of education.

**Instrument and Training:** The rubric includes 17 items rated at three performance levels: 3-implemented, 2-partially implemented, and 1-not implemented. The rubric is accompanied by a training manual that includes detailed descriptions of items and exemplars of the three performance levels. Rater training involved four days of instruction about the instrument, practice scoring, and discussions of how the scoring criteria apply to specific videos. For each assigned video raters were asked to provide a score and an explanation with evidence for the score. Raters were reminded to consult the training manual as they completed their observations.

**Data Analysis:** Data were analyzed through many-faceted Rasch measurement (MFRM) analyses (Eckes, 2011) using the FACETS 3.71 program (Linacre, 2017).

**Results:** The results of the analysis summarized graphically in Figure 1, the variable map for each facet. Tables 1 to 3 provide the fit and separation statistics for the teacher, rater, and item facets. Category statistics that 19% of assigned scores were a 3 (implemented), 57% were a 2 (partially implemented), and 24% were a 1 (not implemented). Overall exact rater agreement was 51%.

This initial psychometric evaluation of the Understanding Procedures rubric indicates that it can provide reliable evaluations of a teacher’s ability to implement instructional practices specific to mathematics. Fit statistics within the acceptable range for all facets indicate that the observed ratings match the expected ratings produced by the model. The separation statistics indicate that the rubric can reliably distinguish between levels of teacher performance. These are important indicators for an observation instrument that aims to provide reliable evaluations of a teacher’s implementation of research-based practices across different lessons and raters.

**References (if any):**
Poster Title: Validating a Framework for Categorizing Quantitative Reasoning Strategies in Elementary School
First Presenter: Lindy Crawford, Texas Christian University (lindy.crawford@tcu.edu)

Poster Abstract:
Purpose and Research Questions: In the series of studies presented in this paper, we attempt to operationalize the construct of mathematical reasoning, and in particular quantitative reasoning, through answering two research questions: (1) Are the quantitative reasoning strategies used by students empirically different? And, if yes, (2) Can we develop, and provide initial validity evidence for, a categorical framework that defines types of reasoning strategies? Cronbach and Meehl's (1955) process of establishing validity evidence informs creation of the framework presented. We proposed that students use a number of different quantitative reasoning strategies when solving problems in the content domain of arithmetic (or Number and Operations). In order to confirm or disconfirm this hypothesis, we collected content-related validity evidence (through knowledge of content experts), criterion-related validity evidence (through use of comparisons with a validated measure of mathematical computation), and construct validity evidence through use of Hierarchical Linear Modeling (HLM), and two cluster analyses (resulting in separate factors). These efforts, discussed herein, provide an initial "nomological network" (Cronbach & Meehl, 1955, p. 290), for the construct of quantitative reasoning, supported through empirical and theoretical evidence.

Method:
Procedures: Students were administered the Math Reasoning Inventory (Burns, 2012), in one-on-one sessions lasting approximately 30 min.. During this session, the examiner read a question to the student, the student replied verbally (without paper, pencil, or calculator), and the examiner entered the student's response onto the MRI website. Next, the examiner asked, "How did you figure that out?" Each response was entered verbatim. Later, these responses were scored using the MRI "key," which provides three to five strategies for each question with different strategies for different items. The examiner must assign one of these strategies to each student response. The MRI includes a total of 36 different reasoning strategies with a limited number of options presented for each item. Students also completed the Mathematics Computation Subtest of the Wide Range Achievement Test-IV (WRAT-IV; Wilkinson & Robertson, 2006).

Participants: The first phase of data collection involved 105 students. All students were reported by teachers as underperforming and were receiving Tier II intervention (30% of these underperformers were diagnosed with a learning disability). We analyzed data at the item level (N = 1,193). The second phase included responses from a normative sample of 418 fifth-grade students (N = 4,000), who had not previously participated.

Results: Responses grouped into three clusters with percentages in each category (Faulty - 28%; Algorithmic - 39%; Plausible - 33%). HLM analyses revealed that 81% of the variance occurred at the item level, and 17% occurred at the student level. Significant differences were found for the WRAT-IV computation subtest and reasoning categories (F(2, 4000) = 199.071, p < .001, ES = 2.60), revealing that students who performed low on computation tasks also employed Faulty reasoning strategies. Using these results as an initial starting point, a final framework for categorizing student reasoning was developed as follows: (1) Absence of reasoning strategies, (2) Faulty reasoning strategies, (3) Partial reasoning strategies, (4) Algorithmic reasoning strategies, and (5) Conceptual reasoning strategies.

References (if any):
Poster Title: The Effects of Writing Interventions on Correct Writing Sequences: A Meta-Analysis of Single-Case Designs
First Presenter: Shawn M. Datchuk, University of Iowa (shawn-datchuk@uiowa.edu)
Second Presenter: Kyle Wagner, University of Minnesota (wagn0524@umn.edu)

Poster Abstract:
Purpose: Students with disabilities tend to struggle with multiple aspects of written expression, including text writing. Text writing, as measured by correct writing sequences (CWS), is the composition of multiple words that follow rules of semantics, syntax, and spelling. This poster presents results from a meta-analysis and systematic review of studies that sought to improve the CWS of students with disabilities and writing difficulties.

There were two primary research questions. First, what effects do interventions have on text writing as measured by CWS? Second, what factors influence the effects of intervention?

Meta-Analytic Methods: We set five inclusion criteria. First, published studies and nonpublished doctoral dissertations were included. Second, studies had to use a single-case design. Third, the independent variable was instructional in nature. Fourth, the dependent variable was CWS or a variation that was handwritten or typed and presented on a figure/graphic. Fifth, demographic variables of age/grade, disability status, and gender needed to be reported. Our electronic search revealed 5,283 articles in ERIC and 7,773 articles in PsychINFO of which 14 articles met the inclusion criteria. Following an ancestral, forward, and handsearch, a total of 18 articles were included.

We used WebPlotDigitizer to extract data from each figure. To aid direct comparison across studies, all CWS data were converted to a rate of CWS per 1 minute. We used mixed-effects regression models to account for non-independence of data points within students and studies. We used an information criterion framework to develop a priori candidate models and find a set of variables and parameter estimates that best explains the data in the literature.

Overall Findings: A total of 18 articles were included for review. The articles included a total of 96 participants. There were 64 males and 32 females. Ages ranged from 7 years old to 17 years old. All of the participants were described as having writing difficulties. The most frequently occurring disability type was learning disabilities (36), followed by emotional-behavioral disorders (11), autism (9), and other health impairments (5).

The model of best fit was a mixed-effects, three-level model (i.e., number of observations within students within studies). The model included main fixed effects of time, intervention, age, dependent variable, and interactions (e.g., time by intervention and intervention by age). The analysis revealed a clear benefit of intervention over time. Specifically, the intercept of the best-fit model was 9.75 CWS per minute. Across time, students receiving intervention gained an average of approximately 0.4 CWS more per intervention session than during baseline/no intervention conditions. Older students tended to score higher during intervention—they wrote approximately 0.5 CWS more during intervention sessions than younger students. Furthermore, interventions that targeted sentence text writing tended to have higher scores: 1.3 CWS more than other types of interventions (i.e., interventions focused on paragraph or essay/story text writing). Other types of factors, such as disability type and gender, did not prove to account for a significant amount of variance.
**Poster Title:** A Pilot Study of a Combined Reading and Self-Regulation Tier 3 Intervention for Grades 2-4

**First Presenter:** Carolyn Denton, University of Texas Health Science Center at Houston (carolyn.a.denton@uth.tmc.edu)

**Second Presenter:** Tricia Zucker, University of Texas Health Science Center at Houston (Tricia.Zucker@uth.tmc.edu)

**Additional Authors:** Janelle Montroy, University of Texas Health Science Center at Houston

**Poster Abstract:**

Even when early interventions are provided to students at-risk for reading difficulties and disabilities (RDs), some students in Grades 2-4 require high-intensity Tier 3 interventions. Students with persistent RDs, especially those with comprehension difficulties, frequently have deficits in self-regulation. The purpose of this pilot study was to examine the feasibility and initial promise for supporting student outcomes of a newly-developed Tier 3 intervention called Idea Detectives (ID) that integrated instruction in self-regulation with instruction in decoding, reading fluency, and comprehension. There is evidence that integrating self-regulation instruction with reading comprehension instruction supports student outcomes.

Participants were 15 teachers and 48 students in Grades 2-4 in 8 schools. The study utilized an underpowered efficacy design to examine initial promise. Teachers, with groups of their students, were randomly assigned to deliver the ID intervention (ID group; N=8 teachers, 26 students) or to a business-as-usual comparison in which students received their typical reading instruction (BAU group; N=7 teachers, 22 students). In the ID group, students' special education or reading intervention teachers were asked to provide ID to groups of 2-4 students for 40 minutes per day, 4-5 days per week, over 26 weeks. The ID intervention provided explicit, systematic instruction in word reading and decoding with application in decodable and non-decodable text, along with instruction in reading comprehension strategies (i.e., paraphrasing, visualization, monitoring meaning, inference generation) and fluency practice. The self-regulation component addressed a growth mindset, self-regulation of emotions during reading, positive self-talk, goal-setting, and self-monitoring. The researchers provided training and coaching to ID teachers. Nearly all BAU group students received supplemental literacy intervention.

ID teachers participated in focus groups on the usability and feasibility of the intervention, and were video-recorded to evaluate implementation fidelity. All teachers completed logs in which they reported student attendance at intervention sessions; ID teachers also reported which ID lessons they taught each day and BAU teachers reported the programs they implemented with their students each day. Focus group results indicated positive attitudes of teachers toward the intervention. Coding of fidelity videos is currently underway; preliminary results indicate adequate fidelity, but with variability among teachers. Program coverage and regularity of implementation also varied among teachers. Program coverage in the ID Word Study/Text Reading lessons significantly predicted word identification outcomes in the ID group (r=.53; p=.02).

Students were administered a pretest-posttest battery assessing word identification, phonological decoding, reading fluency, and reading comprehension, and a researcher-developed survey designed to measure growth vs. fixed mindset in young children. Results detected no significant differences between groups on any student outcome. Descriptive statistics revealed similar mean pretest-posttest change scores for ID and BAU students and indicated considerable variability among students within both groups. Effect sizes were generally small; some were positive and some negative (favoring BAU). Future exploratory analyses will examine within-group variability to identify characteristics of strong and weak responders. Descriptive analysis of the mindset survey results indicated that most students in both groups tended to have a growth mindset at pretest, and there were few changes at posttest.

**References (if any):**


**Poster Title:** Data Mountain: Self-Monitoring, Goal Setting, and Motivation Training to Improve the Oral Reading Fluency of Struggling Readers in the Elementary Grades

**First Presenter:** Lisa Didion, The University of Texas at Austin (lisa.didion@utexas.edu)

**Poster Abstract:**

The ability to read proficiently is critical to school success and academic achievement (NRP, 2000). However, according to the most recent report of the National Assessment of Educational Progress (NAEP, 2017), only 37% of fourth grade students are performing at or above proficiency level in reading. One potential avenue for improving reading outcomes is to teach students’ self-determination skills, such as self-monitoring, goal setting and positive attributions for efficacy and expectancy. The current study examined the efficacy of a self-determined learning program (“Data Mountain”) to improve the oral reading fluency of second through fifth graders with or at-risk for reading disabilities (RD). Data Mountain is a program that includes components related to self-determination (i.e., self-monitoring, goal setting, positive attributions) and has shown promise in enhancing students’ oral reading fluency (ORF; Didion & Toste 2018; Didion, Toste, & Benz, 2018).

The principal aim of this study was to assess the promise of the Data Mountain program for improving the oral reading fluency of elementary students with RD. We sought to compare program delivery format (small group versus individual) to a comparison condition. We address three primary research questions: (1) Do 2nd through 5th grade students with and at risk for reading disability demonstrate increased ORF growth when participating in a self-determined learning program (Data Mountain) as to a comparison condition? (2) Does ORF growth accelerate at a higher rate when the program I delivered in a small group (DM-G) as compared to individually (DM-I)? (3) Are there participant characteristics (i.e., pre-test performance, grade level, language proficiency) which moderate effects of intervention or deliver format?

A randomized controlled trial was used to examine whether there are differential effects on ORF growth rate as measured by the number of words read correct on grade-level Dynamic Indicators of Basic Early Literacy Skills (DIBELS) passages. Students were assigned to one of three conditions: Data Mountain delivered in small groups (DM-G), Data Mountain delivered individually (DM-I), or a reading practice only comparison group. The two treatment groups will allow for comparison of intervention dosage; in a small group, students have additional opportunity for relatedness (i.e., feeling connected to others in social settings; Deci & Ryan, 2012). It is hypothesized that the shared experience of self-monitoring, goal setting, and strategy discourse between students will increase the effectiveness of the program. Teachers nominated second through fifth grade students that demonstrated difficulties in the area of oral reading fluency. These students were screened by the research team on the TOWRE-2 and were included if they had a score below the 25th percentile. Approximately 100 students will be included in the study, which is currently underway. Hierarchical linear models will examine differences in ORF growth. Moderating effects of pre-test performance, grade level, and language proficiency will be considered. The findings from this study will add to the growing discussion on the importance of self-determined learning in elementary school. Discussion will be focused around: (a) research design, (b) effects on oral reading fluency, and (c) future directions for adapting Data Mountain. The generalizability possibilities of the Data Mountain program across academic disciplines and behaviors are extensive.

**References (if any):**


**Poster Title:** Summer Months’ Interventions and Effects on Grades 6-12 Students’ Reading Loss  
**First Presenter:** Jordan Dille, The University of Texas at Austin (jordandille@utexas.edu)

**Poster Abstract:**

The faucet theory suggests that academic loss begins to occur in as little as after two weeks of no instruction (Brekke, 1992; Alexander, Entwisle, & Olson, 2007a). Cooper et al. (1996) synthesized the effects of summer vacation on achievement scores for all students, at-risk students and typically developing peers. They found that lower-income students demonstrate greater losses ($d = -0.21$), while middle-income students and higher showed a gain ($d = 0.06$). However, when during the course of the summer the instruction occurred was not considered or measured as part of the synthesis, nor was the amount of time that had passed without academic instruction occurring prior to the summer school sessions.

While the Lauer et al. (2006) synthesis was published in 2006, it only included interventions through 2003, which places the most recent synthesis on summer interventions at over 14 years old. The purpose of this paper is to conduct an updated synthesis on the effects of interventions implemented during the summer on reading outcomes for secondary students identified as at-risk, in grades 6-12. Because the Lauer et al. (2006) synthesis did not include interventions that exclusively targeted students with disabilities, I am extending the search years to include any intervention published on or after 1965. The following research questions were investigated: (1) What are the effects of interventions implemented during the summer on reading outcomes for students identified as at-risk in grades 6-12? (2) What impact does duration and time of implementation of summer instruction have on student outcomes? An electronic search was conducted using the Education Source, PsychINFO and ERIC databases. A total of 14 interventions met the criteria for inclusion in this synthesis. Included articles appeared in peer reviewed journals, dissertations, and private reports. A total of nine studies provided sufficient data to calculate an effect size. A vote count of effects that were statistically significant ($p < .05$) show that across all outcomes that had sufficient data to calculate a $p$ value, 13/20 outcome gains were statistically significant. The mean effect size (ES) for summer month interventions was $d = .217$ ($k=8, N=1600$). For the at-risk group of students who were identified as already having a diagnosed disability, the ES mean was $d = .999$. Interventions that were 5 weeks and 3-4 weeks in duration reported similar effect sizes with $d = .59$ and .544 respectively. Instruction that took place over a 4-week period reported a negative effect size of $d = -.113$. The longest durations of treatment, 6 weeks ($k=1, N=141$) and 6-8 weeks ($k=1, N=752$), reported effect sizes of $d = .21$ and $d = .11$. Instruction done in June had a larger impact on summer learning than instruction done in July. No study done exclusively in August was reported.

**References (if any):**


Poster Title: Teacher Training in Data Literacy: A Meta-Analysis of the Effects on Teacher Outcomes  
First Presenter: Marissa J. Filderman, The University of Texas at Austin (marissa.filderman@utexas.edu)

Poster Abstract:
Education legislation and policy initiatives have increasingly required teachers to collect, interpret, and use data in order to improve student outcomes (e.g., Every Student Succeeds Act, 2015; Race to the Top Act, 2011). Many teachers report that they require training in order to meet these increasing expectations; however, teachers rarely receive such training (Datnow & Hubbard, 2016; Mandinach & Gummer, 2016). Research suggests broadly that pre-service and in-service training lead to improvements in both teacher and student outcomes (e.g., Desimone, 2009; Kennedy, 2016). Previous systematic reviews have also reported that professional development in areas such as reading, (Basma & Savage, 2018; Didion et al., under review; Yoon et al., 2007) math (Yoon et al., 2007), and science (Blank & De Las Alas, 2009, Yoon et al., 2007) lead to increased student outcomes. To date, no systematic review has been conducted on the efficacy of training that focuses on the development of teachers’ data literacy skills. The present meta-analytic review sought to address two research questions: (1) What are the effects of data literacy training on K-12 teacher outcomes (e.g., data literacy, knowledge, frequency of data use, accuracy of implementation, self-efficacy/beliefs)?; and (2) Do certain factors moderate the effects of data literacy training (e.g., data source, training components, intensity of PD)? A comprehensive search of four online databases resulted in 7,918 potential studies, of which 28 met inclusion criteria. A hand search of five journals that frequently publish studies pertaining to teacher training resulted in 3 additional studies identified for inclusion, for a total of 31 studies included in the present meta-analysis. To be included, studies had to be published in a peer-reviewed journal in English between 1975 and May 2018; involve either pre-service or in-service teachers of students in kindergarten through 12th grade; include training focused on collecting, analyzing, or using student data as a primary independent variable; describe the type of data that was the focus for the training; report a measured teacher outcome (e.g., teaching self-efficacy, data literacy skills, accuracy of data use); and utilize an experimental, quasi-experimental, or single-group design. An adapted coding protocol for educational intervention research was used to identify (a) design features, (b) participant information (i.e., teachers), (c) student information, (d) training components, (e) teacher outcome measures, and (f) effect sizes. Preliminary results yielded a large positive effect on teacher outcomes when comparing treatment and control $g = 1.01$, CI [0.57 - 1.46], and a moderate effect when comparing single-group pre- and post-test scores $g = .57$, CI [.46 - .69]. Moderator analyses will be run to determine what variables may influence the efficacy of training, including the source of data of the training, the content focus of the training, whether training was delivered to special or general education teachers, the duration of the training, and the delivery format of the training. Implications will include how to effectively build teacher capacity for making data-informed decisions in order to promote more equitable outcomes for all learners.

References (if any):
Mandinach, E. B., & Gummer, E. S. (2016). What does it mean for teachers to be data literate: Laying out the skills, knowledge, and dispositions. Teaching and Teacher Education, 60, 366-376.
Poster Title: Improving Students' Vocabulary Skills and Reading Comprehension through Word Learning Strategies
First Presenter: Kylie Flynn, WestEd (kflynn2@wested.org)

Poster Abstract:
Reading is a complex process involving multiple interrelated components, and research has repeatedly shown that vocabulary is one of the most important components (Baumann, Kame'enui, & Ash, 2003; Beck & McKeown, 1991; Davis, 1944; Graves & Silverman, 2010; Hiebert, Goodwin, & Cervetti, 2017; Thorndike, 1917). Rather than learning thousands of words through instruction, students need to become adept at deciphering the meaning of unknown words independently in order to face the huge vocabulary learning task. The Word Learning Strategies (WLS) supplementary curriculum includes many facets of explicit instruction and the gradual release of responsibility model, including verbal explanations, modeling, guided practice, and then independent practice. The purpose of this study is to test the educational efficacy of the WLS curriculum in increasing 4th grade students' vocabulary learning and reading comprehension.

The study used a multi-site cluster randomized, experimental design, which randomly assigned a total of 92 4th grade classrooms (n=2558 students) from 2 cohorts to a treatment or control group. The majority of students received free-and-reduced lunch and many were English Learners. Classrooms randomly assigned to be in the treatment group implemented the WLS supplementary curriculum for 15 weeks; whereas classrooms randomly assigned to be in the control condition implemented their usual English Language Arts practices. Student outcome measures included: 1) the WLS Test, created by the developer of the intervention, as the proximal measure; and 2) the standardized, norm-referenced Gates MacGinitie Reading Test of reading achievement (GMRT: MacGinitie, MacGinitie, Maria, & Dreyer, 2002) and the Vocabulary Assessment Study in Education (VASE: Scott, Flinspach, Vevea, & Castaneda, 2012) as the distal measures. VASE results identify strengths and weaknesses in the breadth and depth of students' academic vocabularies. To analyze the impact of the program, a two-level hierarchical linear model (HLM) was applied to analyze student outcomes. Qualitative data collected from open-ended survey questions, teacher logs, classroom observations, and interviews were analyzed using grounded theory, or constant comparative analysis (Strauss & Corbin, 1998). Qualitative analyses provided descriptions of: 1) how teachers implemented the WLS program; and 2) how the WLS curriculum, along with its digital lessons, may increase teachers' instructional practice and support of their students' vocabulary learning and reading comprehension. The preliminary results indicate that the program was statistically significant and positively associated with gains in students' vocabulary learning as measured by Word Learning Strategies Test, after accounting for differences in baseline measures. The impact of the program was also positively associated with gains in students' vocabulary knowledge and reading comprehension as measured by the VASE and GMRT respectively, after accounting for differences in baseline measures, although the difference is not statistically significant. The use of the WLS program also led to increases in teachers' awareness of strategies to support their students' vocabulary and reading comprehension. The majority of the teachers were able to teach all of the WLS lesson components, use the appropriate materials, display adequate subject-matter knowledge, and keep students engaged. They also felt the curriculum was easy to learn and to implement, and was beneficial to students.

References (if any):


Poster Title: School Engagement and Support for the Transition to High School for Students with Learning Disabilities
First Presenter: Lindsay Foreman-Murray, Vanderbilt University (lindsay.r.james@vanderbilt.edu)

Poster Abstract:
School engagement is a strong predictor of academic success and school completion for all students, and may be particularly important for students with disabilities. Recent research has indicated that school engagement is malleable across grade levels, and that there are many effective approaches to increasing it. A critical moment in students’ educational careers is the transition from middle to high school, when school engagement, grades, and attendance tend to decline while misbehavior and reports of depression and loneliness rise. One promising area of research is the potential of school efforts to support students’ transition from middle to high school as a means to boost school engagement in 9th graders. The present study investigates the association between different types of support for transition to high school and students’ school engagement and grades in grade 9, as well as the relation of transition support and graduation outcomes. Using data from the High School Longitudinal Study 2009, and specifically examining data from students with LD, the study has a sample of approximately 800 students. Analyses incorporate covariates common to studies investigating school engagement and graduation outcomes. Results are discussed in terms of implications for future research and practice.
Poster Title: Using Trade Books to Teach Mathematical Language from Preschool to Second Grade
First Presenter: Suzanne R. Forsyth, The University of Texas at Austin (srforsyth@austin.utexas.edu)
Second Presenter: Sarah R. Powell, The University of Texas at Austin (srpowell@austin.utexas.edu)

Poster Abstract:
Many current mathematics standards require students to discuss mathematical concepts, explain their reasoning, and justify problem solutions. To be successful, students must be familiar with the language of mathematics; that is, they must be able to use mathematics-related terminology in an increasingly structured manner. This mathematics register can be difficult to master (Rubenstein & Thompson, 2002; Schleppegrell, 2007) and research indicates that many students struggle with the language demands of mathematics (Forsyth & Powell, 2017; Riccomini, Smith, Hughes, & Fries, 2015). Shared reading of mathematics-focused storybooks appears to increase student understanding of mathematical language and concepts (Hassinger-Das, Jordan, & Dyson, 2015; Purpura, Napoli, Wehrspann, & Gold, 2017). We were interested in examining the body of literature available to support the mathematical language and conceptual development of children from preschool through second grade. Purpose: To determine what early mathematics concepts and terminology are covered in available trade books developed for children from preschool through second grade.

Research questions:
1. Are there trade books available to address mathematics standards from preschool through second grade?
2. What mathematics-related terminology is most common in the books we coded?
3. What categories of mathematics-related terminology are present in these books?
4. What book characteristics determine the categories of mathematics-related terminology used in the text?

Number/grade of participants: We analyzed 200 books appropriate for children from preschool to second grade. General Research Method: We compared the mathematics objectives across four states (California, Minnesota, Pennsylvania, and Texas) and developed an inclusive list of the objectives from prekindergarten through second grade. We performed online searches for recommendations for books on each objective and purchased a total of 200 books for examination. We coded the mathematics concepts addressed in each book and examined appropriateness for use with children from preschool to second grade. We used NVivo software to analyze the mathematical language used in the books.

Findings:
1. There are trade books available for most of the state mathematical standards, but some gaps remain.
2. The most commonly used mathematics-related terms were spatial, comparative, or described inclusion or exclusion from a group.
3. We define thirteen categories of mathematic-related terminology we found in this collection of books.
4. Books coded as storybooks (i.e., the mathematics occurred within a story with characters and a plot) contained more terminology related to: a. sequencing and time (e.g., day, night, before, after, later, soon, suddenly, etc.) and b. imprecise quantity (e.g., everyone, some, many, a lot, things, nothing, etc.) than books coded as informational (i.e., non-fiction presentation of mathematics concepts) or blended text (i.e., predominately informational text with concepts taught by characters). The books coded as informational and blended text, however, contained more precise and technical mathematical vocabulary terms related to numbers, mathematical operations, geometry, and measurement. Children’s mathematics-focused trade books are an available resource for exposing children to early mathematics concepts and related terminology. To ensure student exposure to all categories of mathematics-related terminology, care should be taken to include both fiction and non-fiction when selecting books.

References (if any):


**Poster Title:** English and Spanish Profiles of Oral Language Growth Trajectories of Dual Language Learners and Monolingual
English Speakers

**First Presenter:** Matthew E Foster, University of South Florida (mefoster@usf.edu)

**Poster Abstract:**
Given that risk for academic failure is not eliminated by programs currently provided to many dual language learners (DLLs; i.e., children who come from a home where a language other than English is spoken), it is important to gain a stronger understanding of the heterogeneity among DLLs and the characteristics of classrooms in which different subgroups of DLLs receive instruction. There were four aims of this study. One, identify subgroups of Spanish-English speaking DLLs and evaluate whether differences in initial status and rates of growth for Spanish and English vocabulary proficiencies differed across subgroups. Two, compare identified subgroups of DLLs across several classroom variables obtained by teacher report. Three, identify subgroups of monolingual English speakers (monolinguals) and evaluate whether differences in initial status and rates of growth for English vocabulary proficiency differed across identified subgroups. Four, examine commonalities (i.e., initial status and rates of growth) between identified subgroups of DLLs and monolinguals for English vocabulary.

To achieve the aims of this study, we used latent profile analyses to evaluate whether differences in levels and rates of growth for vocabulary proficiencies differed across subgroups of Spanish-English DLLs and monolinguals. Participants included 551 Spanish-English DLLs and 562 monolinguals who were enrolled in Title 1 schools. The DLLs completed measures of Spanish and English vocabulary and the monolinguals completed a measure of English vocabulary at four equidistant time points during kindergarten. Latent profile analyses indicated that DLLs could be classified into four distinct groups, each with unique patterns of initial status and rates of growth in Spanish and English vocabulary. Most DLLs were represented in a group with higher Spanish than English vocabulary (i.e., Spanish dominant), followed by balanced high language ability in English and Spanish, stronger English than Spanish (i.e., English dominant), and balanced low language ability, respectively. With regard to the characteristics of classrooms, the most notable differences among the subgroups of DLLs were that English dominant DLLs received all of their classroom instruction in English, received instruction in classrooms comprised mainly of native English speakers and few native Spanish speakers, and their classmates mainly used English rather than Spanish. The remaining subgroups received the majority of their classroom instruction in Spanish with some instruction in English, received instruction in classrooms comprised mainly of native Spanish speakers and some native English speakers, and their classmates mainly used Spanish rather than English.

With respect to monolinguals, latent profile analyses indicated that these children could be classified into two distinct groups, which differed in English vocabulary growth. Most monolinguals were represented in a group that showed stable growth in English vocabulary; however, the other group of monolinguals showed substantially steeper rates of English vocabulary growth across kindergarten. Among the DLLs, the English dominant group entered kindergarten with similar levels of English vocabulary and evidenced similar rates of English vocabulary growth compared to monolinguals. These findings have implications for future research and educational practice focused on defining bilingualism and aligning instruction to children's educational needs.
Poster Title: Impact of DBI-Focused PD on Teacher’s DBI Expertise: A Meta Analysis
First Presenter: Samantha A. Gesel, Vanderbilt University (samantha.gesel@vanderbilt.edu)

Poster Abstract:
Purpose: A strong evidence-base exists supporting the use of curriculum-based measurement (CBM; Deno, 1985) as an assessment tool to inform using data to make instructional adaptations to improve student achievement (Jung et al., 2017; Stecker, Fuchs, & Fuchs, 2005). Teachers need proper preparation to effectively use CBM for data-based decision-making (i.e., data-based individualization; DBI) in practice (Deno, 2014). The purpose of this meta-analysis was to synthesize research on the impact of PD aimed at improving teacher outcomes related to CBM/DBI processes.

Research Questions:
(1) What is the effect of CBM/DBI-focused PD on teachers’ knowledge, skills, reported behaviors, and/or self-efficacy related to CBM/DBI?
(2) Is the effect of CBM/DBI-focused PD moderated by study quality?
(3) What is the effect of teacher implementation of CBM/DBI processes on students' academic achievement?

Research Method: I conducted a systematic literature search to identify published and unpublished studies that: (a) were written in English, (b) included as participants in-service or pre-service general or special education teachers of students in kindergarten through twelfth grade, (c) included a treatment condition that explicitly taught teachers to implement CBM/DBI (e.g., data collection, analysis, or data-based adaptations) in an academic area, (d) Included a dependent variable related to teachers’ knowledge, skill, and/or self-efficacy related to CBM/DBI, (e) Used an empirical, group design (i.e., randomized control trial [RCT] or quasi-experiment), and (f) included sufficient data to calculate an ES (e.g., post-test means and standard deviations).

A total of 26 studies met the inclusion criteria for the descriptive review, accounting for 23 unique teacher participant samples. I coded studies across categories: (a) Context and Setting, (b) Participants, (c) Intervention Agent, (d) Treatment Conditions and Fidelity, (e) Outcome Measures, (f) Design and Data Analysis, and (g) Supplemental: Student Participant Information. I assessed each study’s quality using the CEC (2014) quality indicators.

Twenty-three studies (20 unique samples) were included in the meta-analysis. Of those, 13 included student data and were included in the secondary meta-analysis of student outcomes. For the purpose of this meta-analysis, I used Hedges’ g (Hedges, 1981) as the ES metric and a random effects robust variance estimation as the meta-analysis method (Hedges, Tipton, & Johnson, 2010; Tanner-Smith & Tipton, 2014).

Findings: Overall, the meta-analysis results indicated a significant average effect of CBM/DBI PD on teacher-level outcomes (g=0.47, p=0.003). Quality did not significantly moderate these results. Furthermore, sensitivity analyses did not reveal significant differences in estimates when accounting for potentially important study characteristics (e.g., subject area, outcome measure type, or teacher characteristics). Results showed significant heterogeneity across studies, indicating that there are some characteristics of these studies - not captured by any of the sensitivity or moderator analyses - that could account for differences in ES across studies. As a secondary question, I also examined the effect of teacher’s use of CBM/DBI processes on student participants' academic achievement. The results of this secondary analysis showed that CBM/DBI did not have a significant effect on student-level achievement data. Implications for research and practice are discussed.

References (if any):


Poster Title: Are Students with Disabilities Accessing the Curriculum? A Meta-analysis of Achievement Gaps
First Presenter: Allison F. Gilmour, Temple University (allison.gilmour@temple.edu)

Poster Abstract:
Since passage of PL 94-142 parents, researchers, policymakers, and others concerned about the academic outcomes of students with disabilities (SWDs) have argued over what defines educational "access." Access was initially conceptualized in PL 94-142 as "location," for example, neighborhood schools or general education classrooms. It is currently understood as access to grade level curriculum and is measured by students' academic progress. In other words, students are considered to have access to a curriculum only if they are making progress in that curriculum (L. Fuchs et al., 2015).

The achievement gap between SWDs and their peers without disabilities describes the extent to which SWDs are accessing the curriculum. Despite accountability policies that rely on reporting achievement gaps, existing estimates of the gap between students with and without disabilities provide limited information about access. We cannot make statements about SWDs' access to the curriculum without accurate estimates of the size of the achievement gap and a better understanding of variables that influence it. In this study, we conducted a meta-analysis of studies exploring the gap in reading achievement between students with and without disabilities. Our research questions were (1) What is the average size of the reading achievement gap between school-aged students with and without disabilities in the U.S.? and (2) To what extent is the gap moderated by sample characteristics (type of disability, school level, and whether testing occurred before or after No Child Left Behind [NCLB]) and assessment characteristics (high- or low-stakes tests and whether "reading" was defined as reading comprehension or as a composite of various reading skills)?

We searched titles and abstracts in 14 databases for terms including special education, the disability categories outlined in IDEA, reading, achievement gaps, grade levels and students without disabilities. We limited these searches to studies in English that were published between January 1, 1997 and April 26, 2016. We conducted forward and backward citation searches of each manuscript identified as addressing achievement gaps, hand-searched three journals, and searched government, non-profit organization, and advocacy organization reports. Twenty-three studies with 180 effect sizes met the inclusion criteria. We double-coded each study for assessment and sample characteristics. We conducted random effects meta-analyses and meta-regressions with robust variance estimation to address each research question and conducted sensitivity analyses.

The average reading achievement gap between students with and without disabilities was 1.17 SD with SWDs performing poorer than their non-disabled peers. The achievement gap varied in size across disability categories, with the gap appearing smallest when SWDs were considered as a single group. The achievement gap was not moderated by school level, reading constructs addressed by assessments, or whether samples were constituted prior to or following implementation of NCLB. Considerable heterogeneity across effect sizes remained after we included the moderator variables, further supporting the importance of meta-analysis to combine estimates to obtain an accurate understanding of the achievement gap. We discuss what these results suggest regarding SWDs' access to effective interventions and if closing achievement gaps is a realistic goal.

References (if any):
Poster Title: The Influence of Classmates on the Academic Outcomes of Students With and Without Disabilities
First Presenter: Allison F. Gilmour, Temple University (allison.gilmour@temple.edu)

Poster Abstract:
Students' classroom learning experiences are influenced by the their classmates (Burke & Sass, 2013; Hanushek et al., 2003) and recent studies using data from the Early Childhood Longitudinal Study suggests that students without disabilities' (SWoD) academic and behavioral outcomes may be influenced by having classmates with disabilities, particularly students with emotional/behavioral disorders (EBD; Fletcher, 2009; Fletcher, 2010; Gottfried, 2014; Gottfried et al., 2016; Gottfried & Harven, 2015; Thomas et al., 2011). This prior research has notable limitations. First, studies only examined the influence of students with disabilities (SWDs) on the outcomes of their peers without disabilities. Second, many of the studies used a single dataset and focused on students in kindergarten and first grade. In this study we ask: (1) Is having a classmate with a learning disability (LD), speech/language impairment (SLI), EBD, intellectual disability (ID), or autism associated with the math and reading outcomes of fourth and fifth grade SWoDs?; (2) Is having a classmate with LD, SLI, EBD, ID, or autism associated with the math and reading outcomes of fourth and fifth grade SWDs?; and (3) Do SWDs perform better in math and reading when educated in classrooms with high-performing peers? We used North Carolina (NC) administrative data from three school years to address these questions. The sample included 457,210 SWoDs and 53,908 SWDs. The dependent variables were standardized performance on the regular NC math and reading assessment. The independent variables were dummy variables that indicated that the student had one or more classmate with LD, SLI, EBD, ID, or autism and dummy variables indicating the student had one or more classmate in the first or fifth quintile of achievement. We fit regression models that included student, teacher, and classmate control variables and school fixed effects.

Preliminary results suggest that the classmates of SWDs and SWoDs were not associated with students' math outcomes, except for students with ID. In reading, all else held equal, SWoDs score slightly lower in reading when they had one or more classmate with LD (-0.01 SD, p<.01) or SLI (-0.004 SD, p<.05). SWoDs scored 0.01 SD higher in math when they had one or more classmates with autism. The reading results regarding SWDs were more variable. Students with LD scored .02 SD lower in reading when they were in a class with at least one other peer with LD or ID (p<.05). Students with autism, on average, scored .13 SD lower in reading when they had at least one classmate with ID. For students with SLI, having a classmate with LD was associated with a -0.02 SD change in reading outcomes. Finally, we found that students with ID scored substantially higher in math when they had at least one very low scoring classmate, but about .3 SD worse in reading when they had at least one very low scoring classmate. We discuss how the findings relate to the changing academic content as students progress through school and changes in which SWDs are included in general education classrooms.

References (if any):


Poster Title: Making Middle School Matter: Professional Development Model to Improve Content Learning
First Presenter: Diane Haager, Meadows Center for Preventing Educational Risk, The University of Texas Austin (dhaager@calsatele.edu)
Second Presenter: Elizabeth Stevens, Meadows Center for Preventing Educational Risk, The University of Texas Austin (elizabeth.stevens@utexas.edu)

Poster Abstract:
The middle school years are viewed as a critical juncture between students' development of literacy skills and the high literacy demands of content learning. Students who struggle with content acquisition are more likely to experience academic failure and even school dropout (Allensworth & Easton, 2005; Balfanz, 2011; Balfanz et al., 2012). Though content teachers are powerful mediators of academic outcomes, they rarely receive high-quality professional development (PD) to improve literacy instruction within content teaching. A deep research base of effective literacy practices for middle school content teachers exists, yet these practices are not widely implemented. Ongoing, intensive, and sustained PD is more likely to improve student achievement than isolated PD that educators typically receive (Wei et al., 2009).

This poster presents findings from the first phase of a 3-year, IES-funded Goal 2 development grant. This project aims to develop a multi-component PD model to improve middle school teachers' content literacy instruction and students' reading comprehension and content understanding. Fuchs and Fuchs (2011) recommend ongoing researcher-practitioner collaboration during the development phase to "promote sustained implementation of innovative, validated practices in the schools." In Year 1 of this project, we worked with one middle school in central Texas through focus groups, meetings with school leaders and written feedback. An advisory board of national experts also informed the process. This project extends the work of the Middle School Matters Institute, which supported the development of high-quality resources and tools for implementing evidence-based practices (Meadows Center for Preventing Educational Risk & George W. Bush Institute, 2016). This 3-year project will subject the PD model to empirical study in an iterative development process. PD processes and content are being developed in three phases, with the final phase including a quasi-experimental study of the impact of extended and embedded PD on teachers' instruction and students' reading outcomes. The study reported here represents the development of PD content and process for two evidence-based reading strategies (main idea and self-questioning), using four PD components: initial PD session with collegial planning and practice opportunities, high-quality resources and materials, follow-up "booster" sessions, and site-based coaching.

The purpose of this poster is to present the iterative development process, including data from focus groups and planning sessions. This initial phase involved teachers, school leaders and district administrators in providing feedback on PD components, content, and teacher resources.

This poster will also present the model components and content that resulted from the initial phase of collaboration along with model revisions planned for the second phase of development that is currently under way with three middle schools (two assigned to treatment and one to BAU). Discussion will highlight the importance of collaboration with practitioners as part of the development process along with the need for deep, sustained and embedded PD to achieve implementation of evidence-based practices.

References (if any):


Poster Title: Narrative Language Instruction in Elementary School Classrooms: An Observation Study
First Presenter: Colby Hall, The University of Texas Health Science Center at Houston (colby.s.hall@uth.tmc.edu)
Second Presenter: Phil Capin, The University of Texas at Austin (pcapin@utexas.edu)
Additional Authors: Sharon Vaughn, The University of Texas at Austin; Ron Gillam, Utah State University; Sandi Gillam, Utah State University; Jordan Dille, The University of Texas at Austin

Poster Abstract:
This observation study reports narrative language instructional practices implemented in elementary grade English language arts classrooms. Researchers conducted 121, 30-minute observations of 40 English language arts teachers using an observation tool adapted from the Instructional Content Emphasis (ICE) observation form (Edmonds & Briggs, 2003). Instructional categories and sub-categories were derived from national and state standards and research on best practices in narrative language instruction (Petersen, 2011).

Observations were conducted in one near-urban school district in the southwestern United States, one rural school district in the western United States, and two public charter schools in the southwestern and western United States. Of the 40 elementary-grade teachers who participated, 6 taught Grade 1, 13 taught Grade 2, 9 taught Grade 3, and 11 taught Grade 4. One teacher taught students in Grades 1 and 3; we observed 3 lessons for this teacher in her third-grade classroom and one lesson in her first-grade classroom. Each of the other teachers was observed on three occasions, and they were asked to teach a "typical lesson around understanding literary text or creating stories."

Observers included two professors of communication sciences and disorders, one doctoral-level researcher, and seven research assistants with master’s degrees. Observers were required to reach 90% agreement with a gold standard prior to conducting classroom observations. In addition, 37% of sessions were double-observed; agreement ranged from 88% to 100% for all double-observed sessions (M = 96%).

Data yielded by the observations included the prevalence of (a) broad domains of story instruction (i.e., story comprehension, oral language storytelling, story writing), (b) story grammar and story language instruction conducted during within each instructional domain, (c) student grouping arrangements, and (d) instructional materials. Forms also included global rating scales of instructional quality, behavior management, and student engagement.

Of the total minutes of instructional time observed, 42.7% was spent in story comprehension instruction, 41.5% in academic instruction not focused on narrative comprehension or production (i.e., “academic other,”), 10.3% in story writing instruction, and 4.7% in non-academic activities. Teachers provided no instruction in oral language storytelling. The majority of observed lessons included some discussion of character (52.1%), and at least a quarter of observations included instruction around setting (30.6%), characters’ internal responses to events (i.e., thoughts, feelings; 29.8%), and temporal language (e.g., first, next, then, finally; 27.3%). Many fewer observations included instruction around initiating events in stories, characters’ plans to address the initiating event, and the actions and consequences that unfold next. Some lessons (17.4%) addressed the importance of using causal language (e.g., because, since) to connect actions and consequences in stories. A smaller percentage of lessons touched on the role of dialogue (11.4%). Very few lessons taught students to appreciate or employ elaborated noun phrases or dependent clauses in order to achieve more clarity and descriptive detail in stories.

Students spent the vast majority of instructional time in a whole class grouping (74.2%), with only 10% of instructional time devoted to small group work.

References (if any):

**Poster Title:** Utility of an Implementation Tool for Small Group Instruction  
**First Presenter:** Beth Harn, University of Oregon (bharn@uoregon.edu)

**Poster Abstract:**
Research indicates that quality of implementation can be improved only through frequent feedback to teachers (Fixsen, Blase, Metz, & Van Dyke, 2013). While multiple observation tools have been developed for general education, fewer have been developed for monitoring small group intervention (Johnson & Semmelroth, 2013). Current tools often require extended time (e.g., 60 minutes, multiple observations, etc.) that limit their utility. Practitioners need tools that are valid, efficient, and target instructional practices related to student outcomes. This study examines the validity and utility of the Quality of Intervention Delivery and Receipt (QIDR; Harn, Forbes-Spear, Fritz, & Berg, 2011), an implementation measure specifically designed for monitoring the quality of small group intervention. The QIDR has 3 sections: instructional behaviors (e.g., pacing, models, etc.), group response (e.g., understanding expectations, follows instructions, etc.), and individual student response (e.g., emotional engagement, self-regulated behavior, etc.). For each item a behavioral rubric was created to rate the quality displayed on a 0-3 scale.

Prior efforts have demonstrated that the QIDR correlates with other commonly used measures (i.e., CLASS and OTR) and accounts for significant variance in student outcomes (Forbes-Spear, 2014). To gather additional validity information, a survey was distributed to a wide range of respondents. For each item, respondents were asked how important the item was for effective small group instruction. Additionally, respondents were asked how clear the descriptors were on the rubric. Finally, we asked if any items were redundant or missing from what the respondent considered quality small group intervention as well as overall impressions and utility of the tool. The survey was completed anonymously by teachers, specialists, administrators, researchers and teacher preparation faculty from a range of urban and rural settings. Results will be presented with implications for tool modification with a focus on how to improve intervention monitoring efforts in the field.
Poster Abstract:
In this meta-analysis, we systematically reviewed research on reading interventions for students at risk for reading difficulties in Grades 1-3. To locate potentially eligible studies, a comprehensive literature search was conducted using (a) a keyword search of electronic databases, (b) recommendations of studies likely to meet eligibility criteria solicited from key researchers, and (d) references of meta-analyses, literature reviews, and What Works Clearinghouse (WWC) intervention reports were reviewed and cross-referenced. The search resulted in the identification of 2,423 publications that were screened for eligibility. Ultimately, a set of 33 rigorous experimental and quasi-experimental studies conducted between 2002 and 2017 that met WWC standards were examined. Hedges’ g was calculated, and random-effects models were used to analyze the effect sizes and compute estimates of mean effects and standard errors. The majority of the studies in the meta-analysis included multiple measures, and fifteen percent of the studies included multiple comparisons. Since including statistically dependent effect sizes in a meta-analysis can create a serious threat to the validity of the results, we opted to use robust variance estimation (RVE) (Hedges, Tipton, & Johnson, 2010). RVE is a contemporary statistical technique that adjusts the standard errors of the effect sizes to account for the dependence (Tanner-Smith & Tipton, 2014).

Results revealed a significant positive effect for reading instruction on reading outcomes, with a mean effect size of .39 (SE = .04, p < .001, 95% CI [.32 -.46]), indicating that the reading interventions were, in general, moderately effective across students, settings, and measures. Largest effects were found on word and decoding reading outcomes (.41, p < .001). Slightly smaller effects were found on reading comprehension outcomes (.32, p < .001), followed by passage reading fluency outcomes, which generated the smallest mean effect size (.31, p < .001).

Single-predictor meta-regression models were used to explore potential moderators of the effect sizes. Results indicated:
• Across all grade levels, studies with reading interventions that were delivered individually yielded larger effect sizes than studies of interventions that were delivered in small groups of students (-.13, p = .07). However, this effect was significant for only Grade 1 (-.16, p < .05).
• Studies of scripted reading interventions generated smaller effect sizes than studies with unscripted interventions (-.13, p = .09). However, note that this was only marginally significant.
• Across all reading outcomes, the type of interventionist (i.e., paraprofessional or certified teacher) did not significantly affect the impact (.06, p = .15).
• However, for reading comprehension outcomes, interventions implemented by certified teachers yielded higher average effect sizes (.21, p = .03) than interventions implemented by paraprofessionals.

References (if any):

Poster Title: Predicting Poor Readers' Responsiveness to a Multi-Component Reading Comprehension Intervention
First Presenter: Emma L. Hendricks, Vanderbilt University (emma.l.hendricks@vanderbilt.edu)

Poster Abstract:
This study's primary purpose was to identify predictors of response to a multi-component reading comprehension intervention in a sample of 249 poor readers in grades 4-5. Additional study aims were to explore (a) the utility of various methods of operationalizing responsiveness (e.g., use of near-transfer versus far-transfer measures of reading comprehension); (b) whether these various methods identified similar or dissimilar groups of children; and (c) criteria by which to classify students as responsive (i.e., growth versus final status). Logistic regression analyses will be used to investigate the predictors of response for each combination of outcome measure and response criteria. The proportion of students classified as responsive by each method and the predictors of response for each method will be compared. Preliminary findings indicated that higher pre-treatment scores on outcome measures, vocabulary, and attention were associated with a higher likelihood of response under the normalization criterion. In contrast, lower scores on the pre-treatment outcome measures tended to be associated with a higher likelihood of response under the growth criterion.
**Poster Title:** Early Childhood Special Education Teams: Practice Selection To Address Challenging Behavior  
**First Presenter:** Maria Lemler Hugh, University of Minnesota (LEMLE008@umn.edu)

**Poster Abstract:**
For young children, deficits in language, communication, cognitive, adaptive, and/or social-emotional skills may contribute to the emergence of challenging behaviors. Hence, team-based services and problem solving that support children's development and incorporate behavioral practices that modify the environment around the child to teach pro-social behaviors (Dunlap et al., 2006) are essential. With a wide range of effective practices available, there is a need to explore how early childhood special education (ECSE) teams select practices to address specific challenging behaviors of their students. Therefore, the purpose of this poster presentation is to explore, (a) practice selections of four ECSE teams as discussed during weekly problem-solving meetings, (b) factors related to those practices based on practice type (antecedent or consequent-based), (c) reasons stated by teams to explain why challenging behavior may occur, and (d) factors that may relate to which practices teams chose to implement following problem solving discussions.

Data were collected as part of a professional development study promoting team initiated problem-solving (TIPS) for ECSE teams based on the TIPS model for School-Wide Positive Behavior Intervention Supports (Todd et al., 2011). Four teams that each consisted of four to six members, including one ECSE teacher, related service providers, and paraeducators, participated in a multiple probe study across teams. During intervention, teams participated in web-based training and electronic performance feedback following team meetings. For the purposes of this study, we explored what “solutions” teams selected to address challenging behaviors, which was not a component addressed through the training and feedback. Meetings were recorded via WebEx™ through private virtual meetings between the researchers and the school team, who logged in to the meeting using their school laptop or tablet. All meetings were coded through the use of the video and audio from these recordings by a combination of two of the four authors, all blinded to condition. Training consisted of group coding on four randomly selected videos with discussion and independent practice. We used a modified version of the Decision Observation, Recording, and Analysis-II (DORA-II; Algozzine et al., 2016; Todd et al., 2011) to code the teams’ meeting components. The variables of interest in this study were; a) problem (i.e., challenging behavior), b) problem attributions (the "why" describing to what/whom the problem is attributed; external, environment/school, student, instruction, modified from Shildekamp, Poortman & Handelzalts, 2015), c) solution description (categorized based on antecedent or consequent-based from Johnson, Reichle & Monn, 2009), and d) intent to implement solution.

Final analyses of these data are in progress. Results will be summarized to share what practices ECSE teams select and implement as well as what factors relate to the practice selections. Exploring these relations can help to better understand how and why certain practices may be selected and used by ECSE teams. These findings will support researchers, professional development providers, and teacher educators in identifying practices ECSE teams are likely to use to address challenging behavior and matching practices to not only why a behavior is occurring, but also the context in which it is occurring.

**References (if any):**

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  https://doi.org/10.1080/09243453.2015.1056192

  https://doi.org/10.1080/15377903.2011.540510
Poster Title: Bring STREAM Education on Stream

First Presenter: Jiwon Hwang, California State University Bakersfield (jhwangpsu@gmail.com)
Second Presenter: Stephanie Morano, University of Virginia (s.m.morano@gmail.com)

Poster Abstract:
There has been increased attention paid to science, technology, engineering, and mathematics across diverse fields of research and practice, framed as the acronym "STEM" (Hwang & Taylor, 2016). Although researchers have started to pay attention to how meeting students' special needs can fit into the design of instructional plans (Basham & Marino, 2013; Kennedy & Wexler, 2013; Israel et al., 2013), there is a critical lack of research about STEM education for students with disabilities. In order to better promote student performance in STEM disciplines, the current study re-conceptualizes STEM education to emphasize instruction in STEM content knowledge (i.e., "what you know") and generalization of that knowledge (i.e., "what you can do with what you know"). In addition, the proposed research will focus and expand STEM to STREAM interdisciplinary approach by additionally adding reading goals and embedding arts. Arts components will further promote the motivation, creativity, critical thinking, reasoning, and problem-solving skills students need to prepare to enter the STEM workforce. This study is significant because it seeks to identify an effective instructional approach to promote STEM achievement for students with LD. The overall goal of the proposed research is to introduce and develop a package of lesson plans with aligned math, science, and reading objectives. Researchers are in the early stage of the research which is expected to be completed by March 2018 with the following timeline: development of lesson plan packet (Sep. - Oct. 2018), expert review and revision (Nov. - Dec. 2018), and data collection and analysis (Jan. - March 2018). In the PCRC conference meeting, researchers desire to share our on-going procedures and findings and interchange of ideas. We also wish to connect with other researchers who are interested in this topic for future collaboration. Lesson goals and objectives will be anchored in national standards, and instruction will use an interdisciplinary approach, “STREAM” (Science, Technology, Reading, Engineering, Arts, and Mathematics) with integration of technology and arts components to promote math, science, and reading achievement for elementary school students with learning disabilities (LD). The specific goals are to increase, (a) math, science, and reading achievement, (b) rich exposure to technology, (c) generalization of math and science content knowledge and reading ability through hands-on activities, and (d) student motivation through arts integration. The study will employ a mixed methods research design to assess the quantitative impact of participation on student outcomes the qualitative impact on student motivation and attitudes about STEM and teacher perspectives. Researchers hypothesizes that participation will increase student achievement and motivation, and will result in more positive attitudes towards STEM careers. Ultimately, we see participation as a way to prepare and motivate students with LD to enter the STEM workforce.

References (if any):


Poster Title: Analysis of Syntactic Complexity and Writing Quality for Informative and Narrative Essays
First Presenter: Thilagha Jagaiah, University of Hartford (jagaiah@hartford.edu)

Poster Abstract:
Writers who are able to craft well-constructed and syntactically complex sentences are able to effectively translate thoughts and ideas into writing (Saddler, Behforooz & Asaro, 2008). Studies have shown that as students mature, they have a natural ability to construct complex sentence structures (Beers & Nagy, 2009, 2011; Hunt, 1970). However, this is not true for less-skilled or struggling writers (Saddler & Graham, 2005). The inability to construct syntactically complex sentences may result in producing poorer quality texts. The need for students to be skillful in constructing complex sentences is emphasized in the Common Core State Standards (CCSS). School children are expected to have mastery in complex sentence structures by third grade for various genres. Little is known about complex sentence construction and its impact on writing quality. However, Author (2017) found the use of complex sentences in argumentative essays explained 30% of the variability in writing quality. Increased use of syntactically complex sentences had a greater impact on writing for at-risk compared to not-at-risk students. The purpose of the current study is twofold. First, to determine if the selected 28 syntactic complexity measures (SCMs) in Author’s (2017) study are a good fit to the four hypothesized latent variables: Sentence Pattern, Sentence Length, Sentence Connector, and Sentence Sophistication. Second, to examine if there is a relationship between the four latent variables and writing quality and did the relationship differ by student type (at-risk and not-at-risk). Participants The number of eighth-grade students from a Northeastern region of the United States who responded to informative prompts was 687 and to narrative prompts was 216.

Research Methods: Data for this study were drawn from the 2012-2013 spring semester of a Benchmark Writing Assessment System (BAS-Write) from a northeastern state. The participants were classified as at-risk or not-at-risk students based on the number of high, average, and low--scoring essays. The current study will analyze four latent variables: Sentence Pattern, Sentence Length, Sentence Connector, and Sentence Sophistication and 28 SCMs as measures of syntactic complexity using a large number of eighth-grade informative and narrative essays. A confirmatory factor analysis (CFA) will be used to test the goodness of fit of the 28 SCMs to the four latent variables. If a good fit is achieved, a multiple regression model will be constructed to examine the relationship between the latent variables with writing quality and if this relationship differed by student type (at-risk and not-at-risk).

Findings: The current study builds on the Author’s (2017) study that demonstrated a relationship between syntactic complexity and writing quality for argumentative essays. This finding suggests that the SCMs grouped under the four latent variables in the Author’s (2017) study could also be used to examine the use of complex sentences in informative and narrative essays. Data has been collected and the analysis is ongoing. The final results will add to a small but growing body of research on sentence construction skills and writing. This study will highlight the impact of the four latent variables that contribute to writing quality.

References (if any):


Poster Title: Social Cognition and Narrative Comprehension: A Research Synthesis
First Presenter: Jerae Kelly, University of Maryland- College Park (jkelly17@umd.edu)

Poster Abstract:
Social cognition is a term that can be used to describe a range of socio-cognitive constructs that measure one's capacity for social inferencing (Meltzoff, 2011). Noting the social nature of narratives, scholars have begun to examine the role social cognition plays in narrative comprehension. For example, Dore and colleagues (2018) posit that because narrative processing skills and Theory of Mind (ToM) develop concurrently, socio-cognitive skills could be an overlooked component in frameworks of reading comprehension. Indeed, an essential skill in narrative comprehension is the ability to make inferences based on the emotions and intentions of the characters (Gygax & Gillioz, 2015). Thus, skilled readers of narrative texts employ socio-cognitive skills such as perspective taking while reading and, therefore, must exhibit a ToM.

A synthesis of the research corpus on social cognition and narrative comprehension is needed to better understand the role social cognition plays in narrative comprehension and expand reading comprehension frameworks to include abilities beyond linguistic comprehension and decoding. Therefore, the purpose of this synthesis is to review the current research base to investigate the relation between social cognition and narrative comprehension. A secondary purpose is to examine the relation across special populations such as English language learners and those with disabilities.

Qualified studies included in the synthesis were published between 1987 and 2017. All studies included were non-experimental, used regression analysis or structural equation modeling, and were conducted among a K-12 sample. Social cognition was the independent variable, and reading or narrative comprehension was the dependent variable. Based on these criteria, the final analysis includes 20 studies. Results are reported in two sections: 1) results on ToM, and 2) results on perspective-taking. This distinction is made because ToM is predominantly examined in early and middle childhood and perspective-taking is predominantly examined in adolescence.

Based on the findings of this synthesis, there is a moderately positive correlation between social cognition and narrative comprehension. That is, children with stronger socio-cognitive skills exhibit better narrative comprehension. However, the significance of the variance in narrative comprehension explained by social cognition is unclear. A divergence in findings occurs among the ToM studies with typically developing samples, in their primary language. Variation in statistical significance could be the result of different control variables, since socio-cognitive constructs, such as ToM, are related to a variety of other skills, or different assessment measures, given that predicting reading comp outcomes can depend on the type of assessment (Cutting & Scarborough, 2006).

A small subset of studies reviewed disaggregated their findings by language or disability status. Across these studies, the relation between social cognition and narrative comprehension is significant. This finding indicates that struggling readers with higher socio-cognitive scores perform better on narrative comprehension tasks than their peers with lower socio-cognitive abilities, often scoring as well as strong readers with weak social cognition. Further, this finding is consistent across all studies with disaggregated data, despite variation in control variables and assessment measures, providing a substantial avenue for future experimental studies and intervention development for struggling readers.

References (if any):


**Poster Abstract:**

Observer Rating Scale of CISA-2 (Community Integration Skills Assessment - 2) is an adaptive behavior observer rating assessment tool designed to inspect the level of adaptability of children. With the underlying notion that Children with developmental delay tend to show a high level of deficiency in adaptive behaviors, it is necessary and meaningful for assessor to identify subjects’ actual behavioral performance and obtain sufficient information for planning early intervention services. Therefore, the purpose of this study was to verify the discrimination validity of the Scale for screening Developmental Delay (DD). The following research questions guided this study. First, examining the difference between the general group (upper, middle, lower) and DD. Second, verifying the discriminant accuracy between general group and DD by calculating AUC domains of sensitivity and specificity.

A total of 151 of children from preschool and elementary school (1st, 2nd and 3rd grade) participated in the study. 91 subjects were of general education track, and 60 subjects were diagnosed with developmental delay. As for the observers, a total of 151 teachers participated as observers with a minimum of three months of successful interaction with the subject. Then, one way ANOVA was utilized in order to examine the difference between the general group and DD. The results indicate that in the case of kindergartners, the difference between general group (upper, middle, lower) and DD group was significant. However, for preschoolers, the difference within the general group (upper, middle, lower) were significant when compared to the DD. ROC (Receiver Operating Characteristics) Analysis was also used to examine the discrimination validity of the Scale, and the result yielded a high level of accuracy over 90% in almost every sub-factors of the Scale.

Both strengths and limitations regarding practical usage of the Scale for assessing adaptive behavior and screening possible developmental delay in children are also discussed.
Poster Title: Cognitive Predictors of Reading and Reading Difficulty Subtypes of Korean Language

First Presenter: Ae Hwa Kim, Dankook University, Korea (aehwa@hanmail.net)
Second Presenter: Ui Jung, Korea Nazarene University (uijungkim@kornu.ac.kr)
Additional Authors: Hyun Seung Jung

Poster Abstract:
Previous research evidence suggests that the cognitive processes underlying reading achievement differs depending on the reading outcome measures and the orthographic depth. Thus, we were interested in examining the similarities and differences in the relationships between cognitive processes and reading outcome measures (i.e., word recognition, reading fluency, and reading comprehension) of Korean language. Also, we were interested in identifying the reading difficulty subtypes and comparing the cognitive profiles among the subgroups.
Poster Title: Teachers' Perspectives on the Identification of and Intervention for At-Risk Students
First Presenter: Woori Kim, Chonnam National University (rnell777@jnu.ac.kr)
Second Presenter: Jiyeon Kim, Korea National Sport University (jykim@knsu.ac.kr)

Poster Abstract:
This study aimed to integrate teachers' experiences and perspectives on the identification of and educational support for students at risk for learning disabilities; the goal of this study was to develop a model that theoretically explains how to identify and intervene for those students in practice.
A total of 12 general education teachers and 19 special education teachers participated in the study. Three focus groups of general education teachers and four of special education teachers were conducted separately using open-ended interview questions. The interview data collected were analyzed using a grounded theory methodology, which is the most appropriate design to address this study's purpose. Two levels of coding-open coding and axial coding—were conducted. To establish trustworthiness, we utilized peer debriefing, triangulation, and member checking. The results, based on axial coding, revealed emergent themes about how at-risk students are identified and how they receive intervention, the barriers to the identification and intervention processes, and the strategies to improve them. We developed a theoretical model of how these themes are related, under the following five categories, identified by Strauss and Corbin (1988): core phenomenon, contextual conditions, causal conditions, action, and consequences. In the model, all participants mentioned the vicious circle of referral, identification, and intervention as a core phenomenon. They reported that many at-risk students do not receive support in school because they were not identified as students with special needs. Further, they indicated that the current intervention system is not only efficient but also effective. In addition, contextual conditions that sustain the vicious circle were found to depend on these six factors: (a) parental denial, (b) families with low SES or families with vulnerability, (c) negative effects of labeling, (d) general education teachers' workload, (e) ambiguity of special education teachers' role, and (f) poor collaboration between general and special education teachers. The key factors needed to switch to the virtuous circle (i.e., causal conditions) were identified as the accountability and competence of teachers. However, only some teachers have put their ideas into practice with high accountability and competence for the benefit of these students. The action strategies that remove the barriers and facilitate the referral, identification and intervention processes were summarized under three approaches: (a) valid and reliable identification procedures, (b) a schoolwide preventative intervention system, and (c) comprehensive family support. All the interviewed teachers confirmed that early identification and intervention would prevent at-risk students from failing at school. Most teachers expressed their willingness to participate in the identification and intervention process if the barriers are removed.
Poster Title: Reading Instruction for Children with Down Syndrome: Extending Research of Behavioral Phenotype Aligned Interventions

First Presenter: Seth King, Tennessee Technological University (saking@tntech.edu)

Poster Abstract:
A behavioral phenotype is a probabilistic pattern of performance across multiple domains that may provide guidance for academic intervention (Daunhauer & Fidler, 2011). Recent studies support phenotypically-aligned instruction in improving basic reading skills for children with Down syndrome (Lemons et al., 2015; 2017; 2018). However, studies improved participants’ performance on proximal basal literacy dimensions rather than distal curriculum-based measurements. Target skills did not include more difficult letter-sound correspondences (i.e., blends, diagraphs).

The present study evaluated the influence of phenotypically-aligned reading instruction on the acquisition of digraphs and blends by children with DS. Research questions included: (1) What is the effect of instruction on proximal reading measures and (2) To what extent does the intervention influence student performance on distal reading measures (e.g., oral reading fluency)? Participants and Setting. Participants included four students with DS (ages 7-8; grade 1-2). All participants spoke English as their primary form of communication and exhibited no visual or hearing impairments. Instruction was administered by typical personnel (e.g., paraprofessionals) in a 1:1 arrangement.

Design. A multiple-probe across lessons design evaluated the relation between the intervention and target skills. We addressed distal measures using a delayed multiple-probe across participants design. These designs establish the effect of intervention by demonstrating changes in responding upon introduction of the intervention.

Dependent variable. Students’ acquisition of intervention reading concepts was assessed using daily lesson mastery probes (e.g. lesson targets presented on flash cards). Distal measures and pertained to fluency of targeted skills. Assessments included Letter Sound Fluency (LSF) and Word Identification Fluency (WIF) probes developed specifically for the intervention as well as the 1st grade assessment levels of the DIBELS ORF and First Sound Fluency (FSF) CBM. Interobserver agreement was collected for all both proximal and distal measures across 20% of sessions and was 97% and 88%, respectively.

Independent variable. The intervention addressed words and sounds of digraphs and blends. Key word instruction involved pairing sight words with pictures. Three partner words featuring targeted sounds also appeared in each lesson. These words served as the building blocks of lesson components targeting phonological awareness, decoding, and fluency. Instructional procedures consisted of modeling a skill, then providing additional prompting as necessary. Average implementation fidelity assessed across 27% of sessions was 93%.

Results and Discussion. Results for lesson mastery probes suggested the intervention was effective for all students. Average weighted Tau-U effect size across participants was indicative of a robust effect (M .84; R = .73 -.96). Results for distal measures were mixed. Average Tau-U for LSF was indicative of a large effect (Tau-U: M = .9; R = .8 - 1). Effects for WIF (Tau-U: M = .55; R = .47 -.73) and ORF (Tau-U: M = .36; R = .07 -.6) were moderate. FSF effect sizes were negligible (Tau-U: M = .13; R = -.47 -.57). Findings provide additional support for phenotypically-aligned instruction and reveal potential avenues for future research, including the integration of connected text into the intervention.

References (if any):


Poster Title: A Multimedia Module for Teaching Dialogic Reading Strategies
First Presenter: Hannah Krimm, Vanderbilt University (hannah.krimm@gmail.com)

Poster Abstract:
Dialogic reading is an approach to shared book reading that promotes language development (Lonigan and Whitehurst, 1998). Because dialogic reading supports language development in children with language delays (Dale et al., 1996) it is a useful intervention strategy for speech-language pathologists (SLPs). The purpose of this study was to evaluate a multimedia learning module for increasing SLPs’ knowledge of dialogic reading strategies.

Participants: Participants were 28 school speech-language pathologists. All participants had a master's degree; one participant reported having earned an advanced degree beyond a master's degree. Mean age across participants was 38 years (SD = 11 years) and mean years of experience working as an SLP was 10 years (SD = 7 years). Experience did not differ significantly between groups (t(25.28) = 0.12, p = 0.90).

Measures: We used a 10-item experimental measure to assess dialogic reading strategy knowledge. The measure included declarative multiple-choice questions that evaluated knowledge of the CROWD prompts. It also included application questions where participants were presented with images of book pages and asked to provide an example of each prompt type. Participants also completed an optional demographic questionnaire.

Procedures: Participants were attendees at a conference for school speech-language pathologists. Participants chose to attend a conference session entitled “Strategies for Supporting Language and Literacy.” The session was offered twice; participants who attended the first session completed an explicit phonemic awareness module (control condition; n = 13) and participants who attended the second session completed the dialogic reading module (experimental condition; n = 15). Participants did not know which module they would complete prior to attending the session and no participants attended both sessions.

The dialogic reading module was designed to increase participants’ knowledge of dialogic reading strategies. The module specifically targeted the five dialogic reading prompt types: completion, recall, open-ended, wh-, and distancing questions (Whitehurst et al., 1994). The module followed a teach-model-coach-review approach (e.g., Roberts et al., 2014). Each prompt type was defined and an example was given (teach). The module included a video of an adult engaging in dialogic reading with a preschool-aged child (model). Participants then were prompted to generate a prompt of each type for given book pages. Feedback included examples for each page (coach). Finally, the CROWD acronym and definition of each prompt type was reviewed (review).

Participants completed the experimental measure immediately prior to and immediately after completing the module. The measure and modules were completed online using desktop computers and headphones; a research assistant was present to coordinate technological questions but did not discuss the content of the modules with participants.

Results: Data were analyzed using ANOVA. Testing time, group, and the time by group interaction were all statistically significant (p < .01 for all). These results suggest that the multimedia learning module effectively increased strategy knowledge among school speech-language pathologists.

References (if any):


Poster Title: Understanding effects of reader-text interactions on reading comprehension: Explanatory item response study
First Presenter: Paulina A Kulesz, University of Houston (Paulina.Kulesz@uh.edu)
Second Presenter: David J Francis, University of Houston

Poster Abstract:
Reading comprehension is generally viewed as the end product of complex interactions between a reader, text, and activity that is determined by the skills that the reader brings to the task, the demands that the text places on the reader, and the challenge posed by the specific activity in which the reader is engaged. Surprisingly little research has been conducted at the interface of these three elements. The current study addresses this general gap by investigating the effects of reader-text interactions on comprehension measured with the Gates-MacGinitie reading comprehension subtest across a wide-ranging grade span. We used archival data from several previously completed, federally funded projects by IES participating in the Reading for Understanding network, namely projects from grants awarded to the University of Texas - Austin, Ohio State University, and Florida State University. The used sample covered grades 1 through 12 and varied in size from 1,000 to 8,500 depending on the project. The explanatory item response modeling framework was used to construct an empirical model of the joint interactions among reader, text, and activity, the end product of which is reading comprehension. Examined reader characteristics included word reading, reading fluency, vocabulary, background knowledge, and working memory. Test questions were coded for their processing demands, specifically the need to recall information from test and to form text-based inferences, while text passages were measured on narrativity, average word frequency, average sentence length, word concreteness, referential and deep cohesion. The results suggested that better vocabulary and background knowledge were the most important reader characteristics in accounting for reading comprehension. The processing demands of test questions were not highly predictive of item difficulty. Rather, narrativity was the most important text feature in explaining item difficulty. Reader-text interactions were present, but were not pronounced. The current study illustrates which factors are most influential and which are least influential in impacting students' comprehension as measured across a wide-ranging grade span, and how those factors interact with students' component skills to develop the deepest level of text comprehension. Better understanding of malleable factors that affect comprehension may aid intervention researchers in identifying those factors that are the best targets for intervention for specific individual students given their constellation of component skills and the specific developmental stage at which they are intervening.
Poster Title: A Study on Teachers’ Perception and Current Diagnostic Issues of LD in Korean Elementary Inclusive Classrooms
First Presenter: Jaeho Lee, Kwangju Women’s University, Korea (edu4ld@gmail.com)
Second Presenter: Jaehyun Shin, Gyeongin National University of Education, Korea (edusjh01@ginue.ac.kr)
Additional Authors: HyeYun Gladys Shin, Seoul National University (gladysshin@snu.ac.kr)

Poster Abstract:
This study aims to examine the present decline rate of students diagnosed as learning disabilities (LDs) in Korea through an analysis of recent statistical data and interviews regarding elementary school inclusive classroom teachers’ perception of the current diagnostic issues of LDs. We reviewed prior literature and the teacher interview questions include three major topics as follow. (1) The possible reasons for an increased number of cases referred for the diagnosis of low-achievement or learning difficulties over LDs, (2) The scope of special education whether to include low-achievement and learning difficulties, and (3) Other effective methods to assess LDs, learning difficulties, and low-achievement beyond through teacher observations, parent interviews, and formal assessments designed to screen LDs. Through this qualitative analytic procedure, the current trend and diagnostic issues regarding LDs are discussed for the educators and researchers to consider.
Poster Title: Adapting Instruction to Reduce Challenging Behavior: A Systematic Review
First Presenter: Lauren LeJeune, Vanderbilt University (lauren.m.lejeune@vanderbilt.edu)

Poster Abstract:
Rationale  When students with disabilities engage in challenging behavior during academic instruction, there can be far-reaching negative impacts for both the students (e.g., reduced instruction; Wehby, Lane, & Falk, 2003) and their teachers (e.g., burnout; Ozdemir, 2007). Adapting instruction may be a promising method to reduce aversive qualities of instruction; however, previously published reviews were limited in methodology or scope. Thus, there was a need for a comprehensive review that systematically evaluated the quality of this body of research. Purpose and Research Questions  The purpose of this review was to expand upon findings from previous reviews by systematically evaluating the quality and effects of a broader range of research literature than was previously synthesized. Our research questions were the following: (1) For whom and under what conditions were adaptations examined, (2) Which instructional adaptations have researchers examined, and (3) Is adapting instruction an evidence-based practice for reducing challenging behaviors of students with disabilities? Participants  This review focused on students with disabilities in grades K-12 who were receiving academic instruction in an educational setting. Research Method  We used multi-stage search and screening processes to locate both published and unpublished literature that met our inclusion criteria. We then coded descriptive characteristics, applied quality indicators (Council for Exceptional Children, 2014), and evaluated single-case research results with visual analysis (Horner, Swaminathan, Sugai, & Smolkowski, 2012) and a success estimate (Reichow & Volkmar, 2010). Results  Our search process resulted in the inclusion of 29 studies, 21 of which were published in peer-reviewed journals. There were 117 total participants across studies, emotional or behavioral disorder was the most commonly reported disability category (52%), and school personnel were the most common implementers (66%). Researchers implemented one of the following adaptations: (a) difficulty modifications, (b) incorporating student preferences or interests, (c) increased student response rates or options, (d) providing student choice, (e) changes in instructor, (f) timing changes, and (g) multi-component adaptations. Thirteen of the 29 studies met all quality indicators, and six of those 13 studies demonstrated functional relations with at least 75% success estimates. We will discuss the implications of these results for practitioners and researchers.

References (if any):


Poster Title: The Domain-general and Domain-specific Profiles of Computation and Problem-Solving Difficulties
First Presenter: Xin Lin, University of Texas at Austin (lxjy1105@hotmail.com)

Poster Abstract:
The current study aims to add to the MD profiling literature by studying the deficit profiles of computational difficulties (CD) and word problem-solving difficulties (PD) on a variety of domain-general and domain-specific skills among the Chinese population. Although many prior studies used either computation or word problem-solving as screening measures to study subtypes of MD (CD and PD), few studies, except for Fuchs et al. (2008), used both computation and word problem-solving as screening measures to simultaneously study CD and PD. In addition, important domain-specific skills such as mathematics vocabulary were not included in previous MD profiling studies. Moreover, few studies studied CD and PD among Chinese children. By directly comparing the deficit profiles of CD and PD using multivariate analysis, we want to examine whether CD and PD are distinct MD subtypes or not. Such investigation can help us better understand the nature of MD and provide implications for the identification and intervention for children with different MD types among Chinese children (e.g., Fuchs et al., 2008; Peng et al., 2018). Three domain-general measures (working memory, processing speed, and reasoning), and three domain-specific measures (language comprehension, mathematics vocabulary, and numerical facts retrieval) were completed among 237 Chinese 4th grade students, among whom 28 were classified as students with only computational difficulties (CD), 34 were classified as having word problem-solving difficulties (PD), 20 were classified as students with computational and word problem-solving difficulties (CPD), and 43 were matched typically developing (TD) peers. Multivariate analysis showed that, compared to TD, CD was associated with weakness in numerical working memory; PD was associated with weakness in language comprehension; both CD and PD were associated with weakness in mathematics vocabulary. These findings, taken together, suggest that CD and PD represent distinct MD deficit among Chinese students. Implications for understanding mathematics competence and identification of mathematics difficulties are discussed.

References (if any):

Poster Title: Effects of behavior interventions on reading outcomes: A synthesis
First Presenter: Esther R. Lindström, Lehigh University (esl417@lehigh.edu)
Second Presenter: Emma Gratton-Fisher, Lehigh University (eeg314@lehigh.edu)

Poster Abstract:
Previous research supports the correlation between language disorders and behavior problems (see Chow & Wehby, 2016), noting that students who exhibit one of these challenges often experience difficulties in the other. Furthermore, students exhibiting difficulties in one or both of these areas are more likely to also experience academic challenges, including difficulties in reading and math (Lane, 2008). That is, students identified as having emotional/behavior disorders (EBD) are likely to also exhibit learning difficulties, and those identified with learning disabilities may be more likely than typically developing peers to exhibit challenging behaviors (Kavale & Forness, 1996). Given the relation between behavior and academic challenges and their tendency to co-occur in students across disability categories, recent research has investigated ways to meet the academic and behavioral needs of struggling students. A recent synthesis by Roberts and colleagues (2015) investigated the role of reading interventions in improving behavior outcomes for students in grades K-12. Findings from the synthesis revealed that although reading-focused intervention studies tended to result in positive reading outcomes, they yielded minimal to negative behavioral effects. Their findings indicated that high-quality reading instruction, alone, was insufficient for improving student behavior. The present study extends the existing literature to examine the relation between behavior and academics achievement. Specifically, we synthesize findings from school-based interventions to determine the extent to which behavior interventions improve reading outcomes for students with disabilities. In the review, we summarize findings from studies that (a) solely target behavior (i.e., "behavior-only") or (b) behavior and reading, and (c) report reading outcomes for students with disabilities in grades K-12. Of the studies meeting inclusionary criteria (K=27), a majority of studies (k = 17) used single-case design to determine intervention effectiveness, and half (k = 13) included training in metacognitive awareness. Studies were published between 2000-2017 and included students with learning disabilities (LD; k = 12), ADHD/other health impairments (k = 10), EBD (k=5), speech-language impairment (k = 2), autism spectrum disorders (k=2), intellectual disability (ID; k = 1), and hearing impairment (k = 1). Findings indicate some improvement in reading skills and retention of skills for combined reading/behavioral interventions, and some improvement in behavior. Of the behavior-only studies reporting reading outcomes (k = 3), only one reported improved reading achievement among participants following treatment. Findings suggest that in general, behavior intervention alone may be insufficient for improving reading outcomes for students with disabilities. As in the review by Roberts et al. (2015), these findings support further development and refinement of interventions addressing both reading and behavior, and reporting of both outcomes in intervention research. In particular, more research is needed on populations identified by language and behavior characteristics (e.g., ID), as well as examination of individual learners' characteristics within those designations. Further investigation of instructional methods such as data-based individualization may provide more precise methods for identifying and supporting students' individual academic and behavioral needs in research and practice.

References (if any):
**Poster Title:** Special Education Pre-service Teachers’ Knowledge of Geometry Instruction  
**First Presenter:** Meijia Liu, The Meadows Center for Preventing Educational Risk, The University of Texas at Austin (meijia.liu@utexas.edu)  
**Second Presenter:** Diane Pedrotty Bryant, The Meadows Center for Preventing Educational Risk, The University of Texas at Austin (dpbryant@austin.utexas.edu)  
**Additional Authors:** Maryam Nozari (maryam.nozari@utexas.edu); Rene Grimes (renegrimes@utexas.edu); Brenda Zaparolli (brenda.zaparolli@utexas.edu); Jiyeon Park (jpark99@utexas.edu)  

**Poster Abstract:**

**a. Rationale and Research Questions.** Students with mathematics disabilities exhibit low mathematics performance and for many of them, learning geometry can be challenging at best. However, geometry is an important topic that is taught throughout the grades and is emphasized on national standards and assessments; thus, teachers must be adept at understanding and teaching geometric concepts and skills. Teaching geometry is essential but challenging for many special education teachers. For the past 40 years, compared with other mathematics topics such as early numeracy and algebra, geometry has been understudied. Thus, calls for further research on students with mathematics disabilities are becoming more prominent (Bergstrom & Zhang, 2016). It is important to understand the perceptions of special education teachers regarding geometry instruction for students with mathematics disabilities. The purpose of the current study was to examine the perspectives of special education student teachers about teaching geometry, their knowledge of geometry topics, and the support and resources available. Special education student teachers who were enrolled in a special education master’s program were recruited for this study. The research questions that guided this study were:

1. What are special education student teachers’ perspectives about teaching geometry to students with mathematics disabilities?
2. What is the student teachers’ perspectives on their knowledge of geometry topics?
3. What evidence-based practices are special education student teachers familiar with for teaching students with mathematics disabilities?
4. What resources do the student teachers have when they need support?
5. What are the special education student teachers thoughts about and suggestions to improve the geometry skills of students with disabilities?

**b. Research Design.** A qualitative design using in-depth interviews was employed for the current study. A total of 6 participants were recruited from the master’s level student teaching course. Participants responded individually to a series of questions related to geometry learning and teaching. The interview was approximately 45 min. Data were coded and analyzed for themes across the participants.

**c. Results.** Findings from this study will be reported using cross-case analysis.

**d. Discussion and Future Research.** By interviewing the student teachers currently enrolled in a teacher preparation program, a picture of their future teaching practice can be drawn from their answers related to geometry teaching. Because they were attending a special education teacher preparation certification program, examining their current perspectives and knowledge can contribute to how geometry is taught to pre-service teachers.
Poster Title: Patterns of Growth in Reading-related and Math Skills during Elementary School  
First Presenter: Christopher J. Lonigan, Florida State University (lonigan@psy.fsu.edu)

Poster Abstract:
Purpose: Reading and math skills develop rapidly during the elementary school years (e.g. Little et al., 2016); however, less is understood about the developmental patterns of change in these skills during this time period (e.g. Bailey et al., 2014; Pfost et al., 2014). Longitudinal studies of reading and math development have yielded mixed evidence for whether inter-individual developmental patterns are stable or vary from early to late elementary school. The purpose of this study was to examine patterns of growth across elementary school for a variety of reading-related and math skills and to determine if these patterns reflected stable, compensatory, or cumulative growth.

Method: Data from 921 children (45% girls) who were assessed yearly from kindergarten through 5th grade were used for this study. At the kindergarten assessment, children ranged in age from 5.08 to 6.92 years (M = 5.98, SD = 3.72 months). The sample was diverse in its racial and ethnic make-up (i.e., 48% white, 42% black/African American, 4% multiracial, 2% Asian, 2% other/unknown; 3% Hispanic/Latino). Children completed a variety of standardized measures of phonological awareness, word- decoding, reading comprehension, and math skills in each year of the study in the spring of the school year. Latent-growth-curve models were conducted to examine the development of reading and math skills and to investigate individual differences in developmental patterns for these skills.

Results: There were large increments in growth in reading-related skills between kindergarten and third grade; however, between third and fifth grades these increments were smaller, suggesting that differential growth patterns were occurring across this time frame. Therefore, two sets of latent-growth-curve analyses were conducted for all outcomes: One set for grades K-2 and one set for grades 3-5. Model fit indices revealed good-to-excellent fit for all outcomes. For the majority of reading-related outcomes, the variances of the slope parameters were statistically significant for outcomes between kindergarten and grade 2 but not for outcomes between grades 3 and 5. Across most reading-related outcomes, the intercept-slope correlations were negative, indicating compensatory growth. For math outcomes, a pattern opposite to that of reading-related skills was observed, with variances of the slope parameters statistically significant for outcomes between grades 3 and 5 but not for the outcome between kindergarten and grade 2. For math outcomes, the intercept-slope correlations were either positive, indicating cumulative growth, or not significant, indicating stable growth.

Conclusions: Results of this study demonstrated different patterns of growth for reading-related and math skills. There were substantial individual differences in growth of reading-related skills during early elementary school that represented compensatory growth, perhaps because of the early instructional focus on reading. For math skills, substantial individual differences in growth occurred later and represented either cumulative or stable growth, perhaps due to an increased instructional focus on math in later elementary school. These results provide evidence for influences of broad learning domain, developmental time period, and domain-specific skill on patterns of development throughout elementary school. These results also highlight these potential developmental changes in response to intervention as important directions for future research.

References (if any):


Poster Title: Cognitive Moderators of Math Intervention: A Systematic Review
First Presenter: Amanda Martinez-Lincoln, The University of Texas at Austin (amanda.martinezlincoln@utexas.edu)
Second Presenter: Marcia Barnes, Vanderbilt University (marcia.barnes@vanderbilt.edu)
Additional Authors: Anne Sinclair, Vanderbilt University; Chris Lemons, Vanderbilt University; Peng Peng, The University of Texas at Austin

Poster Abstract:
Background. Cognitive variables such as working memory, attention, and language are related to math development and performance (LeFevre et al., 2010; Peng et al., 2016). Variations in these cognitive abilities sometime impact response to mathematics intervention as evidenced by "aptitude by treatment interactions" or ATIs (e.g., Fuchs et al., 2014; Swanson, Lussier, & Orosco, 2015). ATIs are of interest to intervention science because they suggest that taking into account the child's level of certain cognitive abilities could lead to more effective, individualized math interventions for students with severe and persistent learning needs. ATIs are also of interest for making more explicit the cognitive processing requirements intrinsic to particular interventions. However, such information is unlikely to be easily inferred from considering findings from single studies.

Purpose. To conduct a systematic review of the literature to synthesize findings on ATIs from mathematics interventions for children with or at-risk for disabilities to answer the following research questions: 1) What cognitive moderators have been studied in the context of math interventions? 2) What cognitive abilities have been found to produce ATIs? 3) What are the characteristics of interventions and students for which ATIs have been reported (e.g., age/grade, nature of disability, math domain, intensity/dosage)?

Method. Teams across two universities employed the same search terms with 5 databases. Titles were screened for the presence of: math intervention; participants age 3 to 18 years/pre-kindergarten to 12th grade; a cognitive moderator; data disaggregated for at-risk or disability. 2769 titles went forward for abstract review (IRA = 89.2%) and coding additionally for study design (to eliminate single case studies), resulted in 533 abstracts (IRA = 88.4%). Next, the studies were closely read to determine inclusion/exclusion criteria. IRA for the full-text review was 94.24%, resulting in 16 studies that met eligibility criteria. A hand search resulted in two additional studies. A total of 18 studies fit the inclusion criteria and were coded with final overall IRA of 97.8%.

Results. Preliminary findings are as follows: all of the studies were conducted with elementary students; half of the studies focused on word problems; 13 of the studies came from two research groups; and working memory was the most common moderator investigated. Classroom attention behaviors, language comprehension, nonverbal reasoning, inhibition, phonological awareness, and processing speed were also examined in some studies. In general, students with relatively higher working memory showed larger math intervention effects; however, working memory also showed a nuanced pattern of effects. For example some treatment variations were associated with larger intervention effects for children with lower working memory while other treatment variations were associated with greater effects for children with higher working memory. Findings across other cognitive moderators will also be discussed.

Conclusion. A systematic review of ATIs in mathematics interventions for children with or at-risk for learning disabilities is needed to better understand the conditions under which these interactions are found. Such information maybe helpful for conducting hypothesis-driven research on ATIs with the intention of finding ways to better match interventions to students.

References (if any):


Poster Title: Best science, poorest publication opportunities: Why don’t replications get respect?
First Presenter: Erica N. Mason, University of Missouri (ensz7c@mail.missouri.edu)
Second Presenter: Samantha A. Gesel, Vanderbilt University (samantha.gesel@vanderbilt.edu)

Poster Abstract:
Purpose: Scholars from the field of special education have recently called for increased attention towards reforms within academic publishing (Cook, 2016), specifically related to the role of replication studies (Cook, 2014). Makel et al. (2016) reported a “relative scarcity” of studies that were explicitly identified as replications (p. 210), even though replications are necessary in order to validate claims asserted by one research effort (Coyne, Cook, & Therrien, 2016).

In response to this increased focus on replication, special education researchers have formed the Consortium for the Advancement of Special Education Research (CASPER). CASPER seeks to expand the openness and improve the quality of special education research. The proposed study aligns with CASPER’s initial project goals of replicating recently published special education research studies.

The purpose of this poster is to advocate for open science and replication in special education research and describe current efforts to enact these goals, across two CASPER teams, through replications (one direct, one conceptual) of a recently published study (Jenkins, Schulze, Marti, and Harbaugh, 2017). Jenkins et al. used curriculum-based measurement (CBM; Deno, 1985) to monitor students’ progress in oral reading fluency. The authors used a "true growth" estimate to (a) compare the decision-making accuracy of six different progress-monitoring (PM) schedules and (b) descriptively assess the effect of each schedule on decision-making timeliness.

Method: Both replication studies are currently in the initial planning stages. Both studies from CASPER will be preregistered through the Open Science Network with the intention of negating publication bias, in which studies with statistically significant findings are privileged over null findings (Cook, 2016).

One CASPER team from Vanderbilt University (VU) will conduct a direct replication of the Jenkins et al. (2017) study. VU will use the same (a) number (n=56) of elementary-age students receiving special education services for high incidence disabilities and (b) data collection/analysis plan to assess the relative accuracy of each PM schedule with a different participant sample. The only notable difference between the original and the VU replication will be a slightly different procedure for addressing the limited number of equated CBM passages.

In addition to the VU effort, another CASPER team from the University of Missouri (MU) will conduct a conceptual replication of the Jenkins et al. study, with the primary difference being the use of mathematics CBMs in the area of computation. Other than the content of the CBMs, all other aspects of the MU study will directly replicate the Jenkins et al. study.

Participants: Original: 56 students, Grades 2-6 VU (direct replication): 56, Grades 2-4 MU (conceptual replication): 56, Grades 2-4

Findings: We anticipate completing data collection by January 2019. We will use the results to determine the extent to which the findings of the Jenkins et al. study have been replicated across different samples (VU and MU) and subject areas (MU).

References (if any):


Poster Title: Regression discontinuity and internal validity: Simulated comparisons of RD and RCTs
First Presenter: Jeremy Miciak, University of Houston (jeremy.miciak@times.uh.edu)

Poster Abstract:
Regression discontinuity design (RDD) is a quasi-experimental research design that utilizes a cutoff on an assignment variable (AV; e.g. a test score) above or below which intervention is provided (Shadish, Cook, & Campbell, 2002). The causal inference within RDD relies on a discontinuity between the regression lines of individuals assigned to the intervention and individuals not assigned to the intervention close to the AV cutoff. RDD is accepted as evidence for efficacy by the What Works Clearinghouse and is an appealing design for educational research with struggling learners because it allows the researcher to provide intervention based on academic need rather than random assignment (Gersten & Dimino, 2004).

Few studies have evaluated the internal validity of treatment effect estimates from RDD in comparison to those emerging from randomized control trials (RCT), particularly in a special education context in which assignment to treatment occurs toward the tail of the distribution. Such comparisons are important, as RDD requires statistical assumptions about the distribution of observed (and unobserved) data. However, it is unknown to what extent violations of these statistical assumptions introduces bias and/or inflates Type I or Type II error rates for RDD in comparison to an RCT utilizing the same underlying data.

We compare simulated treatment effect estimates from an RCT and RDD experiment across multiple data distribution scenarios. Tang et al. (2016) identified two assumptions required for valid causal inferences within RDD that utilizes pretest in addition to the AV: (1) that the period effect (i.e., growth between pretest and posttest) is independent of the AV and (2) that the relationship between untreated outcomes does not change in relation the treatment assignment cut off on the AV. We simulate data sets that systematically violate these statistical assumptions about the distribution of the underlying data in order to investigate the impact on treatment estimates emerging from an RDD analysis and RCT analysis. For each distribution, we sample according to RCT and RDD procedures and estimate a treatment effect. The RCT estimate serves as a “gold standard” to evaluate whether the RDD estimate is biased or exhibits elevated error rates.

The results of these simulations provide evidence about the internal validity of RDD under different data distribution scenarios. If RDD is to play a role in producing rigorous evidence for effective practice, it is critical that researchers and methodologists better understand its assumptions and robustness.

References (if any):


Poster Title: Developing a Comprehensive Decoding Special Education Teacher Observation Rubric

First Presenter: Laura Moylan, Boise State University (lauramoylan@boisestate.edu)
Second Presenter: Evelyn Johnson, Boise State University (evelynjohnson@boisestate.edu)

Poster Abstract:

Reading is a complex process that relies upon the reader’s ability to integrate, coordinate, and execute multiple skills and processes in order to extract meaning from text (Cain, Oakhill, & Bryant, 2004; Cain, 2009; Kendeou, van den Broek, Helder, & Karlsson, 2014; Perfetti, Landi, & Oakhill, 2005). While the ability to accurately and efficiently read words does not ensure that comprehension will occur, proficiency with word reading is an essential skill (Cain et al., 2004; Denton & Al Otaiba, 2011; Ehri, Nunes, Stahl, Willows, 2001; Perfetti & Hogaboam, 1975; National Institute of Child Health & Human Development, 2000). Students with high incidence disabilities (SWD) tend to have significant achievement gaps in their ability to decode and comprehend text when compared to their peers in general education (Judge & Bell, 2011; Vaughn & Wanzek, 2014). One potential explanation for this gap is the lack of evidence-based reading instruction provided to SWD. Observational studies of classroom practices have concluded that the quality of reading instruction in both general and special education settings is inadequate to meet the intensive instructional needs of students with reading disabilities (Swanson, 2008; Vaughn & Wanzek, 2014). One way to improve reading instruction is to create a teacher observation instrument aligned with the instructional practices found to improve word reading skills for SWD. Emerging analyses of general teacher observation systems suggest that when teachers are objectively evaluated and supported to improve instruction, there is a positive impact on student growth (Biancarosa, Bryk, & Dexter, 2010; Taylor & Tyler, 2012). To impact instructional practice, an evaluator must be able to use an observation instrument to provide accurate, reliable ratings and feedback about the specific instructional adjustments teachers need to make (Hill & Grossman, 2013).

The Comprehensive Decoding Rubric is part of the RESET (Recognizing Effective Special Education Teachers) observation system and captures the salient elements of effective decoding instruction for SWD. The purpose of this study was to examine the psychometric quality of the Comprehensive Decoding Rubric for use as an evaluative observation instrument of a teacher’s ability to effectively teach decoding to SWD. Twenty teachers from three states each provided three video recorded lessons for a total of 60 videos. Twelve raters from six states were recruited and participated in rater training. Raters were provided with a training manual, along with examples of observations that would be considered ‘Implemented’, ‘Partially Implemented’, or ‘Not Implemented’. Over the course of a four day training raters scored three videos with project staff and scores were reviewed and discussed. Raters were assigned a randomly ordered list of videos. We created a rating scheme that allowed for connection of rating across rater pairs and across teachers (Eckes, 2011). Raters were given a timeframe of six weeks to complete their ratings. Data is currently being analyzed through the many-faceted Rasch measurement (MFRM) using the FACETS 3.71 program. Analysis of the item, teacher, lesson and rater facets will be discussed along with implications for research and practice.

References (if any):


Poster Title: The Relation between Mathematics Anxiety and Mathematics Performance among School-Aged Students
First Presenter: Jessica Namkung, University of Nebraska-Lincoln (jessica.m.namkung@gmail.com)
Second Presenter: Peng Peng, University of Texas at Austin (kevpp2004@hotmail.com)

Poster Abstract:
The purpose of present meta-analysis was to examine (a) whether there is a significant correlation between MA and mathematics performance and what the strength of the correlation is for each subcategory (i.e., gender, grade level, temporal relations), (b) whether the relation between MA and mathematics performance is affected by dimensions of MA measures, types of mathematical tasks, perceived importance of mathematical tasks, and temporal relations, and (c) whether working memory and attitudes toward mathematics explain the relation between MA and mathematics performance. A total of 130 studies, including 107 peer-reviewed articles, 21 dissertations, and two reports, were identified through electronic and hand search based on predetermined eligibility criteria. We used Pearson's r, the correlation between MA and mathematics performance was used as a measure of effect size. This resulted in 467 effect sizes with 171 independent samples. We first estimated the overall weighted mean correlation between MA and mathematics performance. We then estimated the overall weighted mean correlation between MA and mathematics performance each subcategory: gender (girls and boys), grades (primary and secondary), temporal relations (concurrent, longitudinal, and retrospective), MA dimensions (cognitive, affective, both, and mixed), types of mathematics skills (foundational and advanced), and perceived importance (important and unimportant). Metaregression analyses were used to examine moderating effects of dimensions of MA measures, types of mathematics skills, perceived importance, publication types, grade level, and temporal relations. For the analysis on the effect of working memory and mathematics attitude on the relation between MA and mathematics performance, we calculated partial correlations based on the correlation matrices provided by the studies. We then synthesized these partial correlations to indicate the effects of working memory or mathematics attitude on the relation between MA and mathematics performance using the random effects robust standard error estimation. Our findings indicated that overall, MA and mathematics performance had a significant negative correlation, $r = -.33$. However, the strength of the correlation differed across the subcategories. After controlling for publication type, grade level, types of mathematics skills, temporal relation, and perceived importance, MA measures tapping both cognitive and affective dimensions were more strongly (negatively) related to mathematics performance than were affective MA or mix/unspecified MA dimensions, $\beta = -.05/- .12$, $p < .05$, $\tau^2 = .02$. After controlling for all other variables in the model, MA was more strongly (negatively) related to mathematics performance when the mathematics tests were perceived as important (i.e., affecting students' grades) than unimportant, $\beta = -.07$, $p = .02$, $\tau^2 = .02$. There were no significant moderation effects of grade level, types of mathematics skills, and temporal relations after controlling for all other variables in the model. Furthermore, when working memory was partialled out, the correlation between MA and mathematics performance was no longer significant, $r = -.04$, 95% CI [-.14, .05]. When only mathematics attitudes were partialled out, the correlation between MA and mathematics performance decreased but still significant, $r = -.22$, CI95[-.30, -.13]. Findings are discussed in terms of implications for theories and practice.
**Poster Title:** Effect of cognitive learning principles on the mathematics performance of students with mathematics difficulties in first grade

**First Presenter:** Maryam Nozari, The Meadows Center for Preventing Educational Risk, The University of Texas at Austin  
(maryam.nozari@utexas.edu)

**Second Presenter:** Diane Pedrotty Bryant, The Meadows Center for Preventing Educational Risk, The University of Texas at Austin  
(dpfbryant@austin.utexas.edu)

**Poster Abstract:**

The purpose of this study is to test the effectiveness of the early numeracy intervention with interleaving practice on the mathematics performance of students with mathematics difficulties in first grade. We examined interleaving practice as a cognitive learning principle that has been shown to have positive consequences for long-term retention and transfer. The hypothesis is that the integration of interleaving practice into the early mathematics interventions improve learning in students who have not responded to current instructional practices. The education research community, and the special education research community have not purposefully tested this principle in applied intervention settings. The intervention sessions will be 4 days per week, for 25-30 minutes sessions, over 5 weeks. The investigators will examine interleaving practice as a cognitive learning principle that has been shown to have positive consequences for long-term retention and transfer. The research questions for the study are:

1. What effect will early mathematics intervention with interleaving practice have on the mathematical performance of first-grade students with MD?
2. Does the early mathematics intervention with interleaving practice result in improved performance on number line and approximate number system for students with MD?
3. To what extent do first-grade students who receive the proposed intervention maintain their mathematics performance, two and four weeks after the last intervention session?
4. To what extent is mathematical performance generalized, as measured by a distal measure for first-grade students who receive the proposed intervention?
5. What is the students' perspective about the content and instruction of the intervention?

Participants in the current study will be recruited from a public elementary school in Austin Independent School District (AISD). Multiple-gating procedures will be utilized as cost-effective stepwise screening mechanisms to identify six eligible participants. A multiple baseline design across participants (Kennedy, 2005) will be implemented to evaluate the efficacy of the early mathematics intervention with interleaving practice on mathematics performance of four first-grade students with MD, utilizing progress monitoring measures. The investigator will adapt the 3-tier mathematics intervention that includes mathematical concepts and skills that are aligned with the first grade Texas Essential Knowledge and Skills (TEKS). The following mathematical concepts and skills will be chosen from the 3-tier mathematics intervention: number sequences, magnitude comparisons, and relationships of ten. Students will receive an ordered sequence of interleaving practice every session before each lesson. Each interleaving practice includes example problems, practice problems, and test problems, although the order of the examples and practice problems are different each day. Each set of three consecutive problems include one problem of each kind, and any two problems of the same kind will be separated by at least one problem of another kind. The interventionist will administer a paper-based progress monitoring check (TEMI-AC) every week, which consists of four subtests. The Methodological considerations associated with assessment and intervention processes and the result of the study will be discussed. The presenters will also address the role of interleaving practice, and the value added to the early mathematics intervention for first graders.
Poster Title: Improving Diagnostic Accuracy of Kindergarten Reading Screening with Skill Will Assessment

First Presenter: Breda V. O'Keeffe, University of Utah (breda.okeeffe@utah.edu)
Second Presenter: Kristen Stokes, University of Utah (Kristen.Stokes@utah.edu)

Poster Abstract:
This study evaluated the effects of a simple "skill will" procedure (aka, "can't do, won't do) following Kindergarten reading screening measures on the predictive validity of the measures. Early reading screening measures in Kindergarten have lower predictive validity than measures used with older students and connected text. Two stage, "gated screening" processes (e.g., Compton et al., 2010) and progress monitoring during intervention (e.g., McAlenney & Coyne, 2015) have shown promise in reducing the number of student identified for Tier 2 supports in screening who may not need it (i.e., false positive risk status). Early screening measures in Kindergarten include prereading tasks, such as Phoneme Segmentation Fluency (PSF), and early decoding tasks, such as Nonsense Word Fluency (NWF) from DIBELS Next (Good & Kaminski, 2011). These tasks are relatively new and abstract for most Kindergarten students. We evaluated whether extra practice in the form of progress monitoring or adding a goal, reward procedure improved the sensitivity and specificity of a widely used screener, Dynamic Indicators of Basic Early Literacy Skills (Next edition; Good & Kaminski, 2011). Research questions included: 1. To what extent does continued progress monitoring (i.e., exposure to the assessment) after screening improve the sensitivity and specificity of PSF and NWF when compared to the screening measure alone? 2. To what extent does using a simple goal setting and reward procedure (skill will) after screening improve the sensitivity and specificity of PSF and NWF when compared to the screening measure alone and compared to progress monitoring? We included 240 kindergarten students with scores spanning the range of scores (well below, below, at or above benchmark) on the middle of year (MOY) benchmark for NWF and PSF. Students who scored well below or below benchmark (128) were randomly assigned to one of three groups: (a) no progress monitoring (42), (b) progress monitoring only (accelerated, with 3 data points within 3-7 days; 42); or (c) goal, reward with progress monitoring (same schedule as progress monitoring only group; 44). Then, all students, including those above benchmark (112), were assessed with outcome measures: an additional NWF and PSF probe (as a proxy for end of year benchmarks probes), a letter identification measure (Woodcock Reading Mastery Test, 3rd ed. [WRMT3], - Letter Identification; Woodcock, 2011) and a phonemic awareness composite (Comprehensive Test of Phonological Processing, 2nd ed., Wagner, Torgesen, Rashotte & Pearson, 2013). On the MOY benchmarks, overall correct classification on outcome measures ranged from 74.2 to 82.5 percent correctly classified. After progress monitoring (with or without goal/reward), correct classification increased on all outcome measures to a range of 81 to 95.8 percent correctly classified. Group membership for goal reward or progress monitoring was not found to significantly contribute to the models. In addition, specificity increased across all outcome measures, but this improvement came at the expense of decreased sensitivity on NWF and WRMT3 letter identification.

References (if any):


Poster Title: Proposing an Integrative Vocabulary Framework Across Language Domains
First Presenter: Natalie G. Olinghouse, University of Connecticut (natalie.olinghouse@uconn.edu)
Second Presenter: Mike Coyne, University of Connecticut (mike.coyne@uconn.edu)
Additional Authors: Thilagha Jagaiah, University of Hartford (Jagaiah@hartford.edu)

Poster Abstract:
Vocabulary is an important aspect of language proficiency. Most state standards and the Common Core include vocabulary as an essential part of grade-level expectations in the language domains of reading, listening, writing, and speaking (Common Core State Standards, 2010; Troia & Olinghouse, 2013; Troia et al, 2018). However, the lack of an integrated framework for studying vocabulary across these language domains inhibits the field. The purpose of this study is to develop and pilot a vocabulary framework that integrates key vocabulary constructs across language domains but within the student. The student, as a gatherer, keeper, retriever, and processor of vocabulary and language in its entirety, must be treated as whole rather than the sum of each language domain. As such, the student acquires and uses vocabulary for a specific purpose (e.g., to understand what is read or spoken, to communicate ideas, to develop relationships with others). We are currently in a piloting phase of developing and refining the vocabulary framework including: a) developing the initial vocabulary framework, b) reviewing vocabulary studies (preK-grade 5) across language domains, and c) revising the vocabulary framework based on the literature review and consolidate constructs and measures. The proposed vocabulary framework will address receptive and expressive language as well as oral and printed language. Most importantly, to better support vocabulary research, the vocabulary framework will identify and define key constructs and associated measures within each language domain. For the review of literature, we will select studies that use descriptive, correlational, and quasi/experimental designs and include instruction and/or assessment to a) describe and/or measure vocabulary usage with a language domain, b) determine relationships between vocabulary and one or more language domains, and c) identify a causal link between vocabulary instruction and improvements in one or more language domains. From each study, we will record vocabulary constructs and measures, including tasks, assessment methods, and definitions. In the revision of the vocabulary framework, we will compare and contrast constructs and measures to identify those which are relevant across two or more language domains (e.g., writing, reading). For PCRC, we anticipate presenting a working draft of the vocabulary framework and illustrative constructs and measures across language domains. Preliminary results demonstrate a few similarities, but mostly a lack of congruent constructs and measures across different language domains. As an example, each language domain includes a construct for diversity or breadth (number of different words), although the measurement and specific calculation differs across domains and studies. In more extreme cases, researchers across each language domain have developed and defined constructs and measures that are not studied in other language domains. The overarching goal of this work is to provide language researchers a method for learning from and integrating vocabulary constructs and measures across each language domain.

References (if any):
Poster Title: Learning Together: Practicing Culturally Responsive Pedagogy from Pre-K to 12 grade  
First Presenter: Anna Osipova, California State University, Los Angeles (aosipov3@calstatela.edu)  
Second Presenter: Ya-Chih Chang, California State University, Los Angeles (ya-chih.chang27@calstatela.edu)  

Poster Abstract:  
The poster presents results of a mixed methods pilot study that used Culturally Responsive Pedagogy (CRP) as a common instructional focus for a Pre-K-12 grade inclusive literacy program. The poster showcases CRP's approaches that promoted collaboration among teachers across grades and examines qualitative and quantitative shifts in teacher participants' CRP knowledge and skills. The purpose of this study was two-fold: a) to design and pilot implementation of beginning teacher training that focuses on across grade level activities with a common instructional emphasis on CRP that would promote collaboration for special education credential candidates teaching in an inclusive intensive literacy program for diverse youth with and without disabilities at-risk for academic failure; and b) to further teacher candidates' expertise in culturally responsive teaching and measure the change in their CRP knowledge and skills. The study participants included 25 special education credential candidates (17 participants studying to obtain a K-22 education specialist credential and teaching in K-12 grades, and 8 early childhood special education credential candidates teaching in preschool classrooms) enrolled in an early directed teaching practicum in a large urban CA university. The study participants took part in a training that focused on extending their existing CTP knowledge and skills during a semester of an early directed teaching practicum. The training consisted of an opening seminar that contained a presentation/discussion of CTP principles, followed by three consecutive across-grade-level collaborative activities that the participants co-planned and co-delivered, and a booster seminar on CTP. Participants' CRP knowledge and skills were measured by pre- and post- survey. The collaborative activities were observed by trained independent observers who rated the levels of CRP in the observed lessons. Participants' reflective journals and peer-feedback were examined for qualitative shift in their CTP knowledge and skills. Preliminary findings indicate that CRP principles and instructional approaches serve as an effective vehicle for bringing together special educators teaching in a wide range of grade levels with varying curricula serving the needs of diverse Pre-K-12th grade learners with and without disabilities. The findings also show that active participation in co-planning, co-designing, and co-delivery of CRP literacy centered activities effectively increases participants' CTP knowledge and skills in the context of a relatively short training. The findings also highlight specific strands of CTP knowledge and skills that were especially sensitive to training and those that remained unchanged. The implications for further research and practice are discussed.

References (if any):


Civil, M. (2016). "This is nice but they need to learn to do things the U.S. way": Reactions to different algorithms. In D.Y. White, S. Crespo, & M. Civil (Eds.). Cases for Mathematics Teacher Educators: Facilitating Conversations about Inequities in Mathematics Classrooms (pp. 219-226). Charlotte, NC: Information Age Publishing.


**Poster Title:** The Characteristics of Testing Accommodations for Students with Learning Disabilities  
**First Presenter:** Soyoung Park, The University of Texas at Austin (soyoungpark@utexas.edu)  
**Second Presenter:** Diane Pedrotty Bryant, The Meadows Center for Preventing Educational Risk, The University of Texas at Austin (dpbryant@austin.utexas.edu)

**Poster Abstract:**  
Testing accommodations have played a big role in providing more access to students with learning disabilities. Building from previous research, this study focuses on the characteristics of students with learning disabilities who receive these waivers, as opposed to focusing on the negative consequences of testing waivers in the long term. This research will illuminate why students place in testing accommodation groups versus testing waiver groups and emphasizes equitable access and quality of administration. In addition, this study will suggest frameworks for providing testing waivers for groups of students with learning disabilities to improve educational settings overall.

**Research Question 1.** What student demographic characteristics predict receiving test accommodations (Grade, SES, Ethnicity, Urbanity, and Learning Disability)?

**Research Question 2.** To what extent does student academic achievement in reading and math predict the testing accommodation group?

**Method:** The Special Education Elementary Longitudinal Study (SEELS) was used to provide a comprehensive national picture of the experiences and outcomes of students in special education as they moved from elementary school to higher grade levels (Wagner, Kutash, DUCHNOWSKI, & Epstein, 2005). The sample of 605 participants was selected from Grade 6 to Grade 8. After the selection of grades, we selected students who, (a) belonged to any one of the following races/ethnicities: White, African American, Hispanic, or Asian/Pacific Islander; (b) had participated in the direct assessment; and (c) had SES information; and (d) had primary disability information. As a result, three sub-samples from Grade 6 to Grade 8 were created with the information above. Testing accommodations, demographic variables, academic achievement were used as measures.

**Data Analysis:** I conducted a Logistic Regression analysis to determine a set of student characteristics (Grade, Ethnicity, SES, Urbanity, and Primary Disability) and a set of student academic achievement (Reading, and Math). Testing accommodation was the criterion variable (0 = Non-testing accommodation, 1= Testing accommodation). Logit(p)=B1+B2 GRADE+B3 ETHNICITY +B4 URBANICITY + B5 INCOME + B6 DISABILITY + B7 READING + B8 MATH

**Results:** Student Characteristics of Testing Accommodation and Non-Testing Accommodation Groups  
SES, ethnicity, urbanity, disability, and academic achievement are statistically significant and predict the testing waiver group. To be specific, controlling for the other variables, grade does not statistically predict the testing waiver group (Chi-Square = -1.43, df = 586, P-value > 0.05; Chi-Square = -1.32, df= 5.5, P-value > 0.05). For low SES students, the odds of being diagnosed as being eligible for a testing waiver are 16.66 times higher than for students of average SES, controlling for the other predictors (Chi-Square = -2.03, df = 586, P-value = 0.042). For Hispanic students, the odds of being diagnosed as eligible for a testing waiver are 5.11 smaller than for White students, controlling for the other predictors (Chi-Square = -2.20, df = 586, P-value = 0.028). Holding constant other variables, for those living in rural condition, the odds of being diagnosed as being in the testing waiver group are 4.81 times than those living in suburban conditions (Chi-Square = -3.42, df = 586, P-value < 0.001).

**References (if any):**


Poster Title: The Attitudes and Misconception toward Assistive Technology of Pre-service General Education Teachers.

First Presenter: Jiyeon Park, The University of Texas at Austin (jpark99@utexas.edu)
Second Presenter: Ashley Bagwell, The University of Texas at Austin (afbagwell@utexas.edu)
Additional Authors: Diane Pedrotty Bryant, The University of Texas at Austin

Poster Abstract:
Recent advances in technology have liberated people with disabilities from many limitations in their lives. Concurrent with this improvement in technology, services for students with disabilities have moved from contained classrooms toward more inclusive settings as a result of social change. Advancements in assistive technology (AT) have increased the benefits students with disabilities can receive in inclusive environments. When provided with appropriate AT devices, students with disabilities are more productive and successful in general education classrooms (Bell & Blackhurst, 1997). Despite these advantages, many teachers face obstacles in acquiring and implementing AT. These difficulties come from the burden of overwhelming, rapid technological advancements, misconceptions regarding AT devices, and lack of knowledge necessary to effectively accommodate AT (Parette & Scherer, 2004). Although the attitude of teachers toward the use of AT is a key factor in determining successful inclusion, many general education teachers are not informed or aware of assistive technologies (Hasselbring & Bausch, 2005/2006). The purpose of this study is to assess the attitudes and misconceptions of preservice general education teachers toward AT and to evaluate the effectiveness of assistive and instructional technology (AIT) orientation. The following research questions guided this study: (1) To what extent does the AIT orientation influence the attitudes of preservice general education teachers toward usage of technology to promote the independence of individuals with disabilities?; (2) To what extent does the AIT orientation influence the misconceptions of preservice general education teachers toward assistive technology?; (3) Are there differences in the perception of AT correlated with the pre-service educators’ individual factors (e.g., teaching experience, major, gender, education level, etc.)? To investigate these research questions, this study employed a quasi-experimental design, implementing pre- and post-orientation surveys. Approximately 200 college students have participated in this study. Before attending the AT orientation, participants completed the pre-orientation survey including five demographic questions (e.g., gender, major, teaching experience) and 12 questions assessing their level of knowledge, attitudes, and misconceptions regarding AT. The AT orientation was delivered by researchers at the AIT lab which had over 300 AIT devices in the areas of the classroom, home, workplace, early childhood, and augmentative and alternative communication. During the 2-hours AIT orientation, college students (a) learned the legal definition of AT; (b) participated in empathic user activities; (c) learned about the AT decision process; (d) observed and participated in AT demonstrations; (e) learned about Universal Design for Learning; and (f) utilized mobile device apps designed for students with disabilities. After attending the AIT orientation, participants completed a post-orientation survey including the same 12 questions in the pre-survey and additional six open-ended questions (e.g., concerns about using AT, the most interesting/beneficial AT devices). Preliminary results indicated that preservice general education teachers reported higher levels of concern about preparedness for implementing AT devices and misconceptions on AT devices in the pre-orientation survey. After the AIT orientation, the attitudes of preservice teachers toward AT improved at statistically significant levels, but misconceptions on AT devices, while lower, did not show a statistically significant decrease.

References (if any):
Poster Title: Creating and Using Transfer Measures to Evaluate a Nonfiction Reading Comprehension Intervention

First Presenter: Sam Patton, Vanderbilt University (sam.a.patton@gmail.com)

Poster Abstract:
In evaluating intervention efficacy, commercially-available “far transfer” measures are typically considered the gold standard (What Works Clearinghouse, 2017; American Educational Research Association, American Psychological Association, National Council on Measurement in Education, & Joint Committee on Standards for Educational and Psychological Testing, 2014). However, the additional inclusion of experimenter-created measures of “near transfer” and/or “mid transfer” measures can provide potentially valuable information in judging intervention efficacy. But after recently conducting a systematic literature review examining the use of experimenter-created measures in reading comprehension intervention studies, I found many research groups did not appear to be collecting data on these kinds of measures in a systematic or thoughtful manner. The purpose of this poster is twofold. First, I will describe the systematic process in the creation of measures of near, mid, and far transfer for our research group’s randomized control trial this past school year (2017-18). This description will presented in a table, displaying the dimensions and criteria for distinguishing among measures at the three levels of transfer that guided our process. Second, I will present the methods and results from this study, the aim of which was to develop two effective nonfiction comprehension interventions for poor comprehenders in grade 3 and in grades 4-5. The activities in both interventions addressed many key components of comprehension instruction previously identified by researchers, such as summarization and inference-making. Results will be presented with a focus on the use of the experimenter-created measures of near, mid, and far transfer measures of comprehension, which will be contrasted with those found from several commercial comprehension tests administered concurrently. The research questions are as follows:
1. For the reading comprehension measures created for the present study, what criteria guide and distinguish among the tests of near, mid, and far transfer?
2. How does the apparent efficacy of the interventions at grade 3 and grades 4-5 vary as a function of the data collected from the experimenter-created and commercial measures?

735 students were screened, and eligible students were randomly assigned to one of three groups: Reading Comp alone (RC), Reading Comp with Transfer (RC+T), and business-as-usual Control. Students in grade 3 were assigned only to RC or Control, and the RC intervention for these students was altered in an effort to meet the needs of slightly younger students; students in grades 4-5 within the same assigned group received the same treatment. All students who met inclusion criteria on the screening measures were administered additional commercial and experimenter-created tests of reading comprehension before and after the intervention period.

Generally speaking, results aligned with previous findings in the literature and in previous studies of earlier iterations of the present interventions: effect sizes were positively correlated with closer proximity between measurement and treatment. Essentially no difference was found between the difference in treatment and Control students on the commercial comprehension tests compared with the experimenter-created far transfer measure. Some evidence suggests that students receiving the RC+T intervention in grade 4 performed better on the transfer measures than their RC and Control counterparts.

References (if any):

Poster Title: Early Word Reading and Reading Comprehension Development among At-Risk Readers
First Presenter: Peng Peng, University of Texas at Austin (Kevpp2004@hotmail.com)
Second Presenter: Doug Fuchs, Vanderbilt University (Doug.Fuchs@vanderbilt.edu)

Poster Abstract:
This study explored the developmental trajectories of word reading and reading comprehension and their predictors among young at-risk readers. In fall of first grade, 185 students identified as at-risk for reading difficulties were assessed on measures of domain-specific skills (phonological awareness, letter knowledge, and vocabulary), domain-general skills (working memory, non-verbal reasoning, and processing speed), and word reading and reading comprehension. Word reading and reading comprehension skills were assessed again in spring of grades 1-4. Individual growth curve modeling showed that at-risk readers demonstrated decelerated growth on word reading and linear growth on reading comprehension across grades, although performances on both word reading and reading comprehension were consistently below average on national norms. After controlling for word reading and reading comprehension in fall of first grade, letter knowledge predicted growth in word reading, whereas vocabulary and non-verbal reasoning predicted growth in reading comprehension. Taken together, our findings indicated that word reading and reading comprehension showed different developmental trajectories and had different sets of predictors among at-risk young children. Implications are discussed for theory and practice in regards to early reading instructions for at-risk children.
Poster Title: A Meta-analysis on the Relation between Fluid Intelligence and Reading/Mathematics: Effects of Tasks, Age, and Social Economics Status

First Presenter: Peng Peng, University of Texas at Austin (kevpp2004@hotmail.com)

Poster Abstract:
This study aimed to determine the relations between fluid intelligence (Gf) and reading/mathematics and possible moderators. A meta-analysis of 680 studies involving 793 independent samples and over 370,000 participants found that Gf was moderately related to reading, $r = .38$, 95CI [.36, .39], and mathematics, $r = .41$, 95CI [.39, .44]. Synthesis on the longitudinal correlations showed that Gf and reading/mathematics predicted each other in the development even after controlling for initial performance. Moderation analyses revealed the following findings: 1) Gf showed stronger relations to mathematics than to reading, 2) within reading or mathematics, Gf showed stronger relations to complex skills than to foundational skills, 3) the relations between Gf and reading/mathematics increased with age, and 4) family social economic status (SES) affected the relations between Gf and reading/mathematics in the early development stage. These findings, taken together, are partially in line with the Investment theory but are more in line with the Mutualism theory and the Gene-SES interaction theory of cognition and learning. More importantly, these findings imply an integration model of these theories from an educational perspective: Children may rely on Gf to learn reading and mathematics early on, when high family SES can boost the effect of Gf on reading/mathematics performance. As children receive more formal schooling and gain more learning experiences, their reading and mathematics improvement may promote their Gf development. During development, the negative effects of low family SES on the relation between Gf and reading/mathematics may be offset by education/learning experiences.
**Poster Title**: How do Teachers Prioritize Time during Literacy Instruction? A Multi-grade Exploration

**First Presenter**: Beth M. Phillips, Florida State University (bphillips@fcrr.org)

**Poster Abstract:**
Growing evidence suggests that how teachers allocate literacy instructional time has an impact on student gains in reading comprehension (Carlisle, Kelcey, Berebitsky, & Phelps, 2011; Connor, Morrison, & Petrella, 2004) and instructional time is an important factor in effective literacy instruction and intervention (Foorman, Dombek, & Smith, 2016). Although it is apparent that a complex interaction exists between instructional practices and student skills (Connor, Morrison, & Katch, 2004; Foorman, Francis, Fletcher, Schatschneider, & Mehta, 1998), little is currently known about how teachers allocate this time. The primary research question in this study is: How do teachers allocate and prioritize instructional time across literacy instruction activities?

Within the context of four large-scale tier 2 intervention studies, the tier 1 classroom teachers from whose classrooms children were recruited were asked to complete self-report surveys toward the end of the school year. Across studies, 615 completed the relevant items. These teachers represented 107 schools in 15 districts in two states. Participants included teachers in prekindergarten (57, 9%), kindergarten, (139, 23%), first grade (104, 17%), second grade (194, 32%), third grade (55, 9%), and fourth grade (66, 11%). In addition to personal background information teachers were asked to indicate approximately how much time they allocated in a typical day to the following 11 literacy instruction activities: reading to students, students reading aloud, students reading silently, reading comprehension, text structure, phonological/phonemic awareness, phonics, spelling, writing, vocabulary and grammar. Teachers also reported on their typical instructional groupings (i.e., whole-group teacher-managed instruction, small-group teacher-managed instruction, teacher-managed individual instruction and child-managed instruction).

Data reveal that teachers' self-reported time estimates were not mutually exclusive but rather included frequent dual- or multiply-focused activities. Example average allocations included 27.00, 11.24, 15.75 and 15.01 minutes for comprehension, spelling, phonics and vocabulary, respectively. Results indicate substantial and significant variability between teachers in how much time they typically allocate to these instructional activities and regarding whether they taught in whole- or small-group settings. Both grade and school district account for mean differences in many of the 11 activities and 4 settings. Correlations among the 11 activities all are significant and range from small (e.g., rReading Aloud-Writing = .18) to very large (e.g., rPA-Phonics = .86), which may indicate both a dual prioritization of these activities and overlap in the time estimations. Given teachers' reporting strategies and the goal of identifying meaningful patterns, the absolute amounts of time are not of as much interest as are the relative allocation of time between different instructional priorities. To further this exploration, latent profile analyses are planned to determine whether teachers differ in their relative prioritization within literacy instruction. Once profiles are identified, additional analyses predicting class membership from both teacher-level (e.g., grade, education and experience) and school-level (e.g., curricular mandates, population served, district and school size) variables will be conducted. Results from this study will help us to understand factors related to how teachers prioritize literacy instructional activities in classrooms from prekindergarten to fourth grade.

**References (if any):**


Poster Title: Use of Numeracy Read-Alouds in Classrooms of At-Risk Prekindergarten Children

First Presenter: Sarah Powell, The University of Texas at Austin (srpowell@austin.utexas.edu)
Second Presenter: Suzanne Forsyth, The University of Texas at Austin (suzannerf@sbcglobal.net)

Poster Abstract:
In the spring of 2018, we recruited 10 preschool educators and the children in their classrooms to participate in a pilot study investigating the use of read-alouds focused on mathematics. A read-aloud is a children's book that an educator reads with children to encourage discussion and learning about a specific topic. We provided preschool educators with a collection of children's books focused on mathematics content to encourage greater discussion about mathematics in the preschool classroom and to develop a stronger mathematics vocabulary in preschool children.

To select the books, we reviewed over 180 children's books in five mathematics domains: counting; adding to or taking away; geometry and spatial sense; measurement; or classification and patterns. After a coding of the 180 books, we identified 50 books from all five domains to use within the study that used preschool-appropriate mathematics language and content. Each educator received a 2-hour training session in which the read-aloud routine was introduced and practiced with the educators. Our read-aloud routine involved selecting three key mathematics vocabulary to emphasize when reading the book, reading the book three times over three separate days, and including one hands-on classroom mathematics activity to accompany the book. Each educator received 10 children's books across the five mathematics domains. Educators used one book each week for the 10 weeks of the program. At the end of each week, educators provided feedback on the week's book, the selected vocabulary used with the week's book, and the mathematics activities used alongside the week's book.

During the pilot study, teachers selected mathematics vocabulary related to time (e.g., months, years, midnight), ordering (e.g., middle, third), spatial sense (e.g., over, into, around, behind), quantity (e.g., some, one), or comparison (e.g., larger, smaller, biggest). In our poster, we will present the most commonly-selected words and how teachers selected targeted vocabulary and provided hands-on activities to accompany specific vocabulary terms. As reported by the educators on a scale of 1 to 100, educators reported read-aloud materials as helpful with an average score of 88.14. Interestingly, the educators rated the interest of children with each book as 81.89. Educators also reported ease of use with the read-aloud materials as being 90.60 (on a scale of 1 to 100). Based on this data, we revised the read-aloud routine and are conducting a randomized-control trial in 20 preschool classrooms in the fall of 2019.
Poster Title: School-wide Implementation of Self-Regulated Strategy Development for Informative Writing in Kindergarten-5th Grade

First Presenter: Amber B. Ray, University of Hawaii at Manoa (amberray@hawaii.edu)

Poster Abstract:
Purpose: Many students, including students with disabilities and English Language Learners (ELLs), struggle to incorporate ideas from source text while writing informative essays. Self-regulated strategy development (SRSD) is an effective approach to writing instruction; however, very few studies have reported on teacher implementation of SRSD in the general education classroom. Furthermore, no studies have investigated the differences in effectiveness for students with disabilities and ELLs when taught using SRSD from a classroom teacher in an inclusive setting.

This study was conducted to benefit historically marginalized groups, students with high-incidence disabilities and ELLs attending a Title 1 school. I provided Practice-based Professional Development (PBPD) and support to teachers as they implemented informative writing strategies using SRSD. This study provides important guidance for educators teaching students with high-incidence disabilities and ELLs and teacher educators and coaches supporting teachers to address these challenges.

Summary of Research Literature: Research indicates SRSD for writing is effective with students who represent the full range of writing ability in a typical elementary class (Graham, Kiuhara, McKeown, & Harris, 2012). PBPD offers promise to help teachers learn how to effectively teach strategies using SRSD through collaboration, modeling, contextualization of lessons, and receiving feedback (Ball & Forzani, 2009; Harris et al., 2012).

Research Questions:
1. What are the effects of SRSD writing instruction for informational essays on students' genre elements, quality, length, and number of transition words in informative writing?
2. What differences in effects are there for students based on general education, special education, or ELL status?

Research Design: In this quasi-experimental, pretest post-test design study, 20 teachers at a Title 1 elementary school engaged in PBPD. They then taught informative writing strategies to their students in kindergarten through fifth grade (N = 330).

Results: This study evaluated the impact of PBPD in SRSD on teachers' writing instruction and students' writing performance. Implementation of the writing instruction by classroom teachers positively impacted the quality of students' number of informational elements, quality, length, and number of transition words in informational essays. Student performance will be analyzed to see if there are different effects for students based on general education, special education, or ELL status.

Discussion of Research Findings: Results indicated that the informative writing instruction was effective for teachers who received PBPD and taught their students in inclusive classrooms. When using the writing strategy, students improved on: informational elements, quality, length, and number of transition words.

References (if any):


Poster Title: Vocabulary and Main Idea Treatment Utilizing Preference to Support Improvements in Reading Comprehension for Students with High Functioning Autism Spectrum Disorder

First Presenter: Colleen Reutebuch, The Meadows Center for Preventing Educational Risk, The University of Texas at Austin (ckreutebuch@austin.utexas.edu)

Poster Abstract:
Current school-based reading instruction does not adequately support students with high functioning autism spectrum disorders (HFASD) (McIntyre et al. 2017). Specifically, reading comprehension, more than word recognition, presents more of a challenge for this population of learners (Ricketts et al., 2013). We investigated a multicomponent reading intervention (approximately 35 session/30 min each) for three students with HFASD in grade 4. A single-case design study was utilized, using multiple probes across groups. We were interested in documenting the effects of a multicomponent reading intervention on reading comprehension and vocabulary outcomes for students with HFASD in middle grades when implemented by research staff. Research questions included: 1) Is a multicomponent reading intervention associated with improved outcomes on CBM reading measures under tightly controlled researcher-implemented conditions in authentic school settings? (student data); and 2) Is a multicomponent reading intervention feasible for implementation under tightly controlled researcher-implemented conditions in authentic school settings? (fidelity data). The features of a multicomponent reading intervention showing promise for improving students’ reading comprehension, as well as increasing verbal discourse and engagement among students, will be highlighted. The effect of student preference of reading materials on outcomes is also discussed. Brief recommendations for resolving realistic challenges of delivery of reading strategy instruction are also presented.

References (if any):

Poster Title: Relationships Between Kindergarteners’ Executive Functioning Skills and Third Grade Learning Disability Status
First Presenter: Laura Rhinehart, UCLA, CSULA (lrhinehart@gmail.com)

Poster Abstract:
Many of the skills required for academic success are related to executive functioning (EF) skills. Although the components of EF are debated, most researchers agree that EF skills are comprised of several skills, including working memory, attention shifting, and inhibition (Miyake et al. 2000). Children with learning disabilities generally have significant problems with EF skills (Reiter, Tucha, and Lange, 2005). Studies have shown that children’s early EF skills are related to and predictive of literacy and math skills in elementary school, middle school, and even later (Duncan et al., 2007; McClelland et al., 2007; Moffitt et al., 2011; Nesbitt et al., 2015). Taken together, these findings suggest that EF skills make a unique contribution to the development of school readiness and success, and low EF skills could serve as an early indicator of risk of developing LD. The current study performs a secondary data analysis using data from the Early Childhood Longitudinal Study, Kindergarten Class of 2010-2011, known as the ECLS-K 2011. The ECLS-K 2011 includes data from over 18,000 children who attended one of the 1,300 sampled schools. Data analyzed includes students’ demographic characteristics (e.g., age, gender, race/ethnicity, parent socioeconomic status, and primary home language) and their EF skills. Data on students’ EF skills were collected from direct assessments. First, the Numbers Reversed Task measured students' working memory. In this task, children were asked to repeat orally presented numbers in reverse order. Children were first given two-number sequences, and, if they answered correctly, the sequences became increasing longer. Additionally, students' performance on the Dimensional Change Card Sort (DCCS; Zelazo, 2006) was analyzed. The DCCS measures children's cognitive flexibility, which includes their attention shifting, and inhibition. In this task, children are asked to sort cards into two trays, but the rules for sorting (e.g., by color, share, border) changed several times. Although data was collected at several time points, this study examines children's EF and demographic characteristics at school entry, fall of kindergarten. At a second time point, spring third grade, I examined LD status (yes or no). Results of a logistic regression suggest that student’s performance on the DCCS and the Numbers Reversed Task were both related to LD status in 3rd grade. This was true, even when I controlled for important covariates. Additional analyses indicate EF skills were related to both math and reading skills, suggesting EF skills underlie reading and math skills. This relationship could explain why EF skills are related to LD identification.

There are several limitations to the findings here. As with any large-scale data collection, there is missing data, and data is not missing at random. Additionally, the data I have ends at 3rd grade, and some students are identified with LD after 3rd grade. Despite these limitations, the findings here have important implications for including measures of EF in early assessments. Specifically, screenings of children’s EF skills at kindergarten entry could determine which students are good candidates for early intervention.

References (if any):


Poster Title: Predicting Sentence and Discourse Writing in First Grade
First Presenter: Kristen D. Ritchey, University of Delaware (kritchey@udel.edu)
Second Presenter: David L. Coker, University of Delaware (dcoker@udel.edu)

Poster Abstract:
First grade sets the stage for writing development. At this level, formal writing instruction focused on sentence and discourse writing, which becomes important as writing development occurs at different levels of language (Whitaker, Berninger, Johnston, & Swanson, 1994). Developing skill across levels of language (i.e., word, sentence, and extended discourse) contributes to later writing achievement. As a result, difficulty learning to write in first grade can serve as a powerful predictor of future writing disabilities. Writing development is thought to depend on a range of factors, including transcription, language proficiency, and executive functions in a working memory environment (Berninger & Swanson, 1994). Little is known about the combined importance and role of oral language, reading, and transcription skills in understanding writing proficiency and students’ risk for writing disability. The purpose of this poster presentation is to explore predictors of end-of-first-grade writing at two levels of language. Specifically, we are interested in whether handwriting fluency, word reading, vocabulary, oral syntax, and memory predict sentence-level and discourse-level writing outcomes. Approximately 150 first grade students were administered a set of predictor measures (CBM and norm-referenced) in the Fall and/or Winter of first grade. At the end of first grade, the students were administered sentence writing and story writing measures. Analysis is pending, but we plan to use multilevel modeling (to account for shared variance at the school and/or classroom level) to predict writing outcomes.

References (if any):


Poster Title: Reading Interventions for Students with Behavior, Hyperactivity, or Attention Difficulties: A Meta-Analysis

First Presenter: Garrett J. Roberts, University of Denver (garrett.roberts@du.edu)

Second Presenter: Eunsoo Cho, Michigan State University (escho@msu.edu)

Additional Authors: Justin D. Garwood, University of Vermont (justin.garwood@uvm.edu); Grant H. Goble, University of Denver (grant.goble@du.com); Taryn Robertson, University of Denver (taryn.robertson@du.com)

Poster Abstract:
This meta-analysis systematically identified reading intervention research for students with or at-risk for an emotional and behavioral disorder (EBD) and/or an attention-deficit/hyperactivity disorder (ADHD) in Grades K-12 to determine (1) the impact of these reading interventions on reading and behavioral outcomes and (2) the extent to which reading and behavioral outcomes varied based student characteristics (e.g., grade, disability), intervention characteristics (e.g., group size, additional behavioral supports), and quality indicator characteristics (Institute of Educational Sciences, 2017). Follow-up analyses investigated two of the hypothesized causal mechanisms underlying the high co-occurrence rate between reading difficulties and problem behaviors: (a) reading difficulties lead to future problem behaviors and (b) a bi-directional relationship exists between reading difficulties and problem behavior (Hinshaw, 1992). Nine studies were identified. A series of random-effects models were used to estimate mean effect size across the studies. There was a statistically significant main effect of reading on reading (g = 1.20, p = .04) but not on behavior (g = -0.48, p > .05) outcomes, suggesting an improvement in reading and a decrease in appropriate behavior. No significant moderation effects were identified. Additionally, we conducted a series of analyses to indirectly test the hypotheses explaining the mechanisms of co-occurrence of reading and behavior problems. To test whether behavior problems result from reading difficulties, we examined the main effects of reading interventions provided without any behavioral support (compared to control condition without behavior support) on behavior. If supported, we expect reading only intervention will improve behavior outcomes. To test the hypothesis of bi-directional relations, we compared the two sets of studies: (a) reading and behavior intervention compared to a comparison group who did not receive reading or behavior support and (b) reading only intervention to a comparison group who did not receive reading or behavior support. If supported, the first set of studies would show larger effect sizes on reading and behavior compared to the second set of studies. There was a lack of evidence to suggest that reading difficulties led to behavior difficulties or a bi-directional relationship between reading difficulties and problem behaviors exists. The primary limitation of this study was a need for additional reading intervention research (n = 9) for students with behavior and/ or attention difficulties. Findings suggested that for younger students with reading difficulties and co-occurring EBD or ADHD in the elementary grades, a systematic, explicit, foundational reading-based reading intervention delivered in a small group setting could yield improved early reading and word reading outcomes. Although, collateral effects of improved reading on improved behavioral outcomes were not supported from this meta-analysis. Future research is needed to better understand how to provide efficacious interventions to older students with reading and behavioral difficulties as well as to better understand the conditions under which reading interventions are most likely to lead to improved reading and behavioral outcomes.

References (if any):


**Poster Title:** Culturally Relevant Pedagogy: A systematic Review of Literature  
**First Presenter:** Taryn Robertson, University of Denver (taryn.robertson@du.edu)  
**Second Presenter:** Grant Goble, University of Denver (grant.goble@du.edu)  
**Additional Authors:** Garrett Roberts, University of Denver  

**Poster Abstract:**  
To locate all studies pertaining to the effects of culturally relevant teaching approaches on student level quantitative and qualitative outcomes, a literature search was conducted using a successive three-phase design. Each phase was conducted by both members of the research team. The successive three-phase design included an electronic database search, hand search and reference review.  

**Inclusion criteria:**  
1. K-12 US-based school (potentially include other countries?)  
2. Implementation of a broad definition of culturally relevant teaching practice  
3. Student level outcome (e.g., surveys, interviews, observations, grades, test scores)  
4. Quant, qual, mixed, case study, and SCD  
5. Peer-reviewed articles  

**Exclusion:**  
1. Online learning  
2. Exclusion criteria:  
   1) "Culturally relevant" or "multicultural" or "culturally responsive" or "social justice" or "critical race theory" or "cultural competence" or "critical consciousness" AND  
   2) student AND  
   3) Instruct* or curriculum* or pedagogy  
Studies were excluded if they did not include a student level outcome within a K-12 environment. Additionally, studies were excluded if their primary focus was within an online learning environment.  

Electronic database search. The first phase of the search procedure was an electronic database search of ERIC and Sage. The search started January 1, 1998 through May 31, 2018. We searched a combination of the following search terms: "culturally relevant", "multicultural", "culturally responsive", "social justice", "critical race theory", "cultural competence", and "critical consciousness", student, and instruct*, curriculum*, and pedagogy. Six articles were excluded as duplicates, and 5,049 were excluded on the abstract review. 28 articles were excluded on the full text review for the following reasons: research to practice articles (n=9), review of literature (n=4), outside of inclusion age range (n=11), did not report a student level outcome, or focused on teacher outcomes (n=4). A hand search also yielded 1 one article not originally located in electronic database search.
Poster Title: Writing to Learn in Elementary Classrooms: Results of a National Survey
First Presenter: Amy Gillespie Rouse, Southern Methodist University (agrouse@smu.edu)
Second Presenter: Sharlene Kiuhara, University of Utah (s.kiuhara@utah.edu)
Additional Authors: Jason Chow, Virginia Commonwealth University

Poster Abstract:
We conducted this investigation to understand more about elementary teachers' use of writing to learn in their classrooms. To do so, we surveyed a random sample of elementary teachers (grades K-5) from across the United States, asking about their use of writing to support students' learning of classroom content in English/language arts, math, science, and social studies. We also asked about teachers' preparation to teach students to use writing to learn and teachers' beliefs about the suitability of writing to learn in specific subject areas and for specific types of students. To conduct a preliminary examination of teachers' responses, we computed simple descriptive statistics and examined bivariate correlations between teachers' demographic information, their class/students' characteristics, and responses to questions about their teaching practices and beliefs. Of the 154 teachers who completed the survey, more than one-half reported using 26 or more writing-to-learn practices in their elementary classrooms. The most commonly used writing-to-learn practices were: writing a list, writing a description, writing a story, free writing to generate ideas for learning, writing to compare and/or contrast, completing a graphic organizer or concept map, and writing short answer responses to questions. While teachers reported using a variety of writing-to-learn practices, they predominantly applied writing-to-learn practices in English/language arts, not across the curriculum as the Common Core State Standards (or other comparable state writing standards) prescribe. Teachers reported using 22 of the 26 commonly applied writing-to-learn practices in English/language arts, with the remaining practices used most often in math (n = 3) and social studies (n = 1). An additional concerning finding was that a majority of teachers (67%) reported they received little to no college preparation to teach their students to use writing to learn. When teachers received more college preparation to use writing to learn with their students, they were more likely to spend class time using writing-to-learn practices, to report that they liked writing and thought of themselves as good writers, and to differentiate instruction for some students when they were learning how to use a new writing-to-learn practice. The number of students with disabilities in teachers' classes (regardless of subject area) was not significantly correlated with teachers' beliefs about the effectiveness of writing to learn in specific subject areas or with specific populations. We did find, however, that teachers with more students with disabilities in their classes were more likely to remind students to generalize writing-to-learn practices to other settings. Additionally, teachers who reported having more ELLs in their classrooms were more likely to agree that writing to learn about classroom content was effective for not only ELLs but also for students with disabilities and students with below average writing skills. Teachers with more ELLs were also more likely to agree that their students had the skills needed to use writing as a tool for learning classroom content. Based on our findings, we discuss implications for teacher training, use of writing to learn across the curriculum, and use of writing to learn with diverse student populations.
**Poster Title:** Implementing Intensive Reading Intervention: Professional Development a Systematic Review

**First Presenter:** Katherine Sargent, Vanderbilt University (katherine.sargent@vanderbilt.edu)

**Second Presenter:** Kristen McMaster, University of Minnesota (mcmas004@umn.edu)

**Additional Authors:** Maria Hugh

**Poster Abstract:**

Approximately 88% of students who receive special education are identified as not proficient in reading (U.S. Department of Education, 2015). Many of these students require systematic, individualized and intensified instruction. Delivering intensive intervention requires advanced understanding of students' needs, intervention content, data-based decision-making, and pedagogy (Fuchs, Fuchs & Malone, 2018). Though research has established the effectiveness of intensive reading interventions, a research-practice gap exists, and efforts are needed to empower teachers to use them consistently (Connor, Alberto, Compton & O’Connor, 2014). The current research on professional development (PD) suggests ongoing PD including features like modeling and performance feedback tends to more effectively support teachers’ use of interventions than workshops (Brock & Carter, 2017). Which components of PD support teachers’ implementation of intensive reading interventions specifically has not been explored.

The purpose of this systematic review was to explore how researchers have supported school-based implementers’ intensification of intervention for struggling readers in preschool-12th grade and the extent to which PD aligns with essential elements of PD identified by Desimone (2009): content focus, active learning, coherence, collective learning, and ongoing training. The aims of this study were to (a) identify how researchers supported teachers' implementation of intensive and intensified reading interventions through PD, (b) identify to what extent the PD aligns with elements identified by Desimone, and (c) explore how researchers measured changes in teacher practice.

To identify literature for this review we searched for terms related to implementer, student disability, PD, reading intervention, and intensive intervention in the following databases: Academic Search Premier, Education Source, ERIC, and PsycINFO. An initial search identified 830 articles for title and abstract screening, 242 articles were identified for full screening. Twenty studies were identified that met inclusion criteria. Articles were coded for descriptive information, PD practices, and alignment with essential elements of PD (Desimone, 2009). Interrater reliability was calculated for 20% of articles (M=93.3%; range= 60%-94%).

Results showed the majority of researchers conducted professional development through workshops (n=15) and supplemented PD with ongoing coaching or training (n=14). The extent to which studies aligned with with Desimone's (2009) essential elements of PD varied, ranging from no alignment described, to one study (Dingle, Brownell, Leko, Boardman, & Hager, 2011) which aligned with all six elements (M=2.9; range = 0-6). Many studies lacked a clear description of PD; the elements of content focus, coherence, and professional development being over 20 hours were unclear in at least half of the studies reviewed. The majority of studies measured changes in teacher practice through implementation fidelity (n=14) using audio recordings or direct observation. Some studies measured teacher opinion (n=4) using questionnaires or record reviews. Only two studies measured teacher effectiveness using direct observation. Overall, our review showed a mixed use of essential PD practices, with the limitation that much of the literature lacked description of what PD strategies were used. Changes in teacher practice were generally measured using implementation fidelity. Future researchers should consider including more robust descriptions of their training practices to enhance the field’s knowledge of effective PD practices.

**References (if any):**


doi:http://dx.doi.org.proxy.library.vanderbilt.edu/10.11
**Poster Title:** Parents Plus: An Examination of Feasibility, Usability and Fidelity  
**First Presenter:** Brook Sawyer, Lehigh University (brooksawyer@lehigh.edu)

**Poster Abstract:**
Language impairment (LI) is the most prevalent disability in preschool populations (Carlson et al., 2006). Because children with LI are at risk for lower outcomes in literacy development as well as later risk for mental health illness and diminished economic opportunity (Law et al., 2009), it is critical that they receive early intervention to facilitate more positive developmental trajectories. Without specialized training, many parents of children with LI lack the skills necessary to enhance the language outcomes of their children (e.g., Conti-Ramsden, Hutcheson, & Grove, 1995; Vigil, Hodges, & Klee, 2005). Yet, evidence suggests that parents can be taught to effectively implement Focused Stimulation (FS) to support their children’s language development (e.g., Fey et al., 1993; Girolametto et al., 1996). Given the need to empower parents of preschool children with LI and the promising evidence on the effectiveness of FS to improve the language skills of young children with LI, we have developed a parent intervention, Parents Plus. Specifically, Parents Plus teaches parents through training modules made available through an app. Additionally, parents receive individualized coaching via teleconferencing and periodic face-to-face home visits. The benefit of this technology-enabled intervention is to increase parent access and cost effectiveness. This poster will present data related to parents’ perspectives of usability and feasibility of Parents Plus as well as examine the degree to which Parents Plus successfully supported parents’ implementation of FS with their children. Eleven parents of preschoolers with LI are participating in the pilot study across two beta testing rounds. Four parents completed beta testing round 1. Seven parents are currently participating in beta testing round 2 and will be finished implementation in September 2018. Parents have varying levels of education, ranging from some college to a master’s degree. Children range in age from 3.3 to 5.6 years of age. Nine children are males. Four children are Caucasian, 4 are Latinx, and 3 are African American. Feasibility and usability data is collected through (a) periodic surveys in the app about the helpfulness and clarity of the content and visual appeal, (b) comprehension checks to ensure parents are learning content, (c) records of app usage, and (d) coaching logs, including parent reports of the ease of implementation. Fidelity of implementation data is collected via weekly video-recorded interactions of parents implementing FS. Preliminary findings from beta testing round 1 indicate that Parents Plus is a usable and feasible approach to teach parents to promote their children’s language development. Parents reported that content presentation is enjoyable and parents were able to effectively learn (over 90% correct on comprehension checks). Additionally, parents had a positive perception of the Parents Plus app and their coach. All parents implemented FS regularly. For the majority of FS components, fidelity improved over time. Analyses will be conducted across all 11 parents once beta testing round 2 is completed.

**References (if any):**


Poster Title: Teacher Candidate Structured Language Literacy Training
First Presenter: Nora W. Schlesinger, Kennesaw State University (nschlesi@kennesaw.edu)
Second Presenter: Briana Davis, University of Illinois at Chicago, College of Education Center for Literacy (bmdavis7@uic.edu)

Poster Abstract:
The purpose of this study, Teacher Candidate Structured Language Literacy Training, was to compare two conditions of teacher candidate structured language (SL) instruction. The study used independent-samples t-test to compare pre and post candidates' knowledge of language structure. In the control group candidates received SL instruction supplemented with traditional children's literature (SLT; N=18) and in the experimental condition candidates received SL instruction supported with decodable books (SLD; N=19). It is predicted that candidates in the experimental group will have better SL knowledge than candidates in the control group. In a structured language approach to literacy, the structure of the English language is taught directly and explicitly (Birsh, 2006) using systematic phonics. In systematic phonics instruction, letter sound correspondence and spelling patterns are taught in a planned and sequential manner (National Reading Panel [NRP], 2000). A structured language approach to teaching basic literacy skills to early and emergent readers is an evidence based teaching practice (e.g., Adams, 1990; NRP, 2000). Importantly, a structured language pedagogy is critical for individuals who struggle to learn to read (e.g., Berninger, Lee, Abbot, & Breznitz, 2013; Torgesen et al., 2001). Over four decades of empirical evidence support and emphasize the importance of phonological awareness and the alphabetic principle to overall reading achievement (e.g., Adams, 1990; Bradley & Byrant, 1983; Liberman, 1973; NRP, 2000). However, literature over the last 20 years has reported a research to practice gap in how well prepared in-service and preservice teachers are able to provide instruction and support in these skills (e.g., Joshi et al., 2009; Moats, 1994; Sayeski, Earle, Eslinger, & Whitenton, 2017). In this study, teacher candidates received SL instruction in their introductory literacy course concerned with teaching literacy grades PreK through second. The control group received SL instruction supplemented with group discussion and the utilization of traditional children's trade books. The experimental group received the same SL instruction; however, the instruction was supplemented with decodable books and direct instruction on the concepts within the decodable books, and group discussion. Time on task was controlled in each condition. Research has shown the incorporation of structured language concepts in teacher candidate preparation deepens candidates' depth of language understanding related to literacy (e.g., Bos et al., 2001; Otaiba, Lake, Greulich, Folsom, & Guidry, 2012). However, research on SL in teacher training frequently concerns grapheme to phoneme correspondence taught in isolation rather than contextualized to facilitate generalization (Sayeski et al., 2017). This study will address teaching SL within contextualized discourse.

References (if any):
**Poster Title:** The Technical Adequacy of a Measure of Word-Problem Comprehension: Operations and Language

**First Presenter:** Pamela M. Seethaler, Vanderbilt University (pamela.m.seethaler@vanderbilt.edu)

**Second Presenter:** Caitlin Craddock, Vanderbilt University (caity.craddock@vanderbilt.edu)

**Additional Authors:** Lynn S. Fuchs, Vanderbilt University; Doug Fuchs, Vanderbilt University

**Poster Abstract:**

Primary-grade students with comorbid mathematics and language comprehension difficulty respond poorly to classroom word-problem (WP) solving instruction relative to typically developing peers. One reason for this may be a lack of understanding of the WP-specific language used in the prevalent primary-grade WP types (combine, compare, and change word problems), leading to errors in selecting appropriate operations for problem solving. These students may benefit from additional instruction targeting the language specific to WP types, with the intent of improving WP performance. The purpose of this study was to evaluate the technical adequacy of a measure assessing first-grade students' skill with selecting an appropriate operation (i.e., addition or subtraction) for solving WPs, based on relevant text-specific language. Students were identified as at-risk (AR) or not-at-risk (NAR) at the start of first grade for poor WP and calculation skill. Outcome measures administered in the spring address growth in mathematics skill. Analyses include data from 455 AR and NAR students across 4 years to address the following research question: What is the technical adequacy of a measure of first-grade students' understanding of WP text, Operations and Language? Results will be discussed for the full sample as well as disaggregated by risk status.
**Poster Title:** The Relations between Working Memory and Writing Performance: A Meta-Analysis  
**First Presenter:** Jaehyun Shin, Gyeongin National University of Education (edusjh01@gmail.com)  
**Second Presenter:** Kristen McMaster, University of Minnesota (mcmas004@umn.edu)  
**Additional Authors:** Britta Bresina, University of Minnesota (bresi016@umn.edu); Erica Mason, University of Missouri (ensz7c@mail.missouri.edu)

**Poster Abstract:**  
Well-developed writing skills play an important role in overall literacy development and contribute to successful educational outcomes (McMaster, Ritchey, & Lembke, 2011; Parker et al., 2011). Given the importance of writing, many cognitive factors have been investigated in relation to student's writing performance, and research has shown that working memory (WM) is essential to writing (McCutchen, 1996; Olive, 2004). According to a capacity theory of writing (Just & Carpenter, 1992), skilled writing requires efficient management of WM by adequately organizing writing processes. Thus, automatized processing of writing is the key to obtaining more available resources (McCutchen, 1996). Until grade 3, children's writing performance is mainly constrained by demands of transcription (e.g., handwriting, spelling). In grades 4 to 6, WM resources are shared between processes such as revising and planning because transcription becomes more automatized (Berninger & Swanson, 1994). For children with severe writing difficulties, however, transcription continues to exert large resource demands through adolescence period, which may hinder them from developing strategies for planning or revising (McCutchen, 1996). Therefore, it is important to empirically investigate the effect of WM on children's writing performance and how the effect differs by grade level or student characteristics (e.g., different types of disabilities). Specific research questions are: (1) What is the strength of the relation between WM and domains of writing (e.g., handwriting, spelling, composition)? (2) Is there a moderating effect of grade level (e.g., primary vs intermediate) or student characteristics on this relation? To answer these questions and quantitatively synthesize findings of the literature, a meta-analysis will be conducted. This meta-analysis will include an unconditional model, which estimates the mean correlations between WM and each domain of writing, and a conditional model, which investigates the effects of moderators (e.g., grade level, student characteristics). Previous studies have reported somewhat competing conclusions. In Berninger et al. (2010), there was a unique contribution of word-level WM to handwriting and composition in grades 2 and 4, and to spelling in grades 2, 4, and 6, whereas in Berninger & Swanson (1994), WM did not contribute to writing until grade 4. The present study will contribute to the literature by quantitatively synthesizing existing research and providing converging evidence.

**References (if any):**  
Berninger, Abbot, Swanson, et al. (2010)  
Berninger & Swanson (1994)  
McCutchen (1996)  
McMaster, Ritchey, & Lembke (2011)  
Parker, McMaster, Medhanie, & Silbergliit (2011)
**Poster Title:** Examining the Stability of Kindergarten literacy profiles for English language learners and English only speaking children

**First Presenter:** Emily Solari, University of Virginia (ejs9ea@virginia.edu)

**Second Presenter:** Ryan Grimm, University of Virginia (rpg5hu@virginia.edu)

**Additional Authors:** Anita McGinty, University of Virginia; Jill Pentimonti, AIR

**Poster Abstract:**
This study utilized state level data (N = 72,516) from a mid-Atlantic state to consider patterns of English literacy performance across the kindergarten year for two different subgroups of children, those identified as English language learners (ELL) and those who are monolingual English only (EO) speakers. Research evidence is clear that young children’s emergent literacy development has a profound and lasting impact on their later reading and school success (Whitehurst & Lonigan, 1998). While data show that risk for reading difficulties at school entry is not equally shared by all students, longitudinal work suggests that gaps over time—across 1998 to 2010 in school entry skills, including literacy, are narrowing, with a 40% reduction in income-inequality and a 14% reduction in Hispanic-White gaps (Reardon and Portilla, 2016). These patterns are noted despite growing income inequality and childhood poverty rates during the same period. Although these trends suggest that investments in early childhood and early literacy are making general shifts to patterns of school and reading readiness, these data provide little suggestion to the specific ways that schools and divisions can intentionally address these gaps.

Utilizing latent profile analyses (LPA), empirically derived profiles of emergent literacy at two timepoints, kindergarten entry and the end of kindergarten will be presented; separate LPAs will be conducted for the ELL subgroup and the EO subgroup to determine if different profiles emerge based on classification status. Next, a latent transition analysis (LTA) will be conducted to determine how students transitioned between profiles from kindergarten entry to the end of the kindergarten year in each subgroup. The extent to which young children’s performance on subdomains of literacy (i.e., rhyme, beginning sound, alphabet knowledge, concept of word and developmental spelling) differ as a function of their language classification status is something that has been previously researched, however, no study to date has compared empirically derived profiles across two timepoints to directly examine the heterogenous nature of emergent literacy both within and across subgroups of young learners.

Initial results support the emergence of multiple distinct profiles within each subgroup based on differential performance across skills. This finding occurred at both kindergarten entry and the end of kindergarten. Additionally, similarities and differences in the profile-specific performance levels across skills can be examined with respect to language classification to determine its impact on the emergent literacy profiles. LTA will provide information as to the stability of profile membership over time and the potential malleability of lower-performing students; these results will be specific to language classification. The utility of examining emergent literacy profiles to make instructional decisions will be discussed.

**References (if any):**


**Poster Title**: Interest-based reading and vocabulary intervention for middle grade students with autism  
**First Presenter**: Michael Solis, University of California Riverside (msolis@ucr.edu)  
**Second Presenter**: Zaira Jimenez, University of California Riverside (zjime001@ucr.edu)  
**Additional Authors**: Danielle Cravalho, University of California Riverside

**Poster Abstract**:

**Background**: Recent findings from a 10-year longitudinal study of reading achievement revealed that students with ASD are developing reading skills at a much slower pace than students with learning disabilities (LD) (Wei et al., 2011). Students with low-incidence disabilities such as ASD are not performing well in reading with rates of nonresponse to interventions being reported as high as 50% (Al Otaiba & Fuchs, 2002). Teachers, parents, and educational administrators expressed concerns about the adequacy of reading instruction for students with ASD almost two decades ago (Koppenhaver et al., 1995). While there are still many unanswered questions, there appears to be general agreement by many researchers that many individuals with ASD have difficulties with reading comprehension (Fleury et al., 2014). These difficulties may also be impacting postsecondary outcomes, which continue to be problematic with college enrollment for individuals with ASD among the third lowest of all 11 disability categories (Newman et al., 2011) Improved performance with reading comprehension is critical for students with ASD by potentially enabling attendance in college and obtaining meaningful employment.

**Study purpose and research questions**: The purpose of this study is to report the findings of an interest-based reading comprehension and vocabulary intervention for middle grade students with autism spectrum disorder. Utilizing a multiple baseline with alternating treatments design, the study addressed the following question(s): To what extend does a multi-component reading intervention for students with ASD with low comprehension impact reading comprehension outcomes? To what extend does a multi-component reading intervention for students with ASD with low comprehension impact vocabulary outcomes?

**Participants**: Students with ASD (N= 4) grades 4-8 with average cognitive performance and a history of not passing the state reading test. Measures: TOWRE, TOSREC, AIMS web R-CBM (ORF), preference assessment, Woodcock-Johnson IV (WJ-IV), Kaufman Brief Intelligence Test (KBIT), The Clinical Evaluation of Language Fundamentals (CELF), Test of Listening Comprehension (TLC), Gilliam Autism Rating Scale (GARS), daily reading and vocabulary CBM probes.

**Data collection procedures**: Students were administered a battery of tests to help determine their reading level. Text was selected for each student based on the conversion of raw scores on the TOWRE to GE fluorescence test. Following the baseline phase, the intervention phase consisted of alternating treatments of preferred (QuickREADS) versus non-preferred (Interest-based) reading intervention which included vocabulary instruction and a main-idea summarization strategy (Gist). Interobserver agreement (IOA) was calculated daily.

**Data analysis**: Mean scores per phase will be calculated across participants. Visual analysis will be used to analyze the findings including level, trend, variability, immediacy of effect, and overlap.

**Results and Discussion**: Preliminary results indicated a high degree of variability in performance during the baseline phase for both CBM probes particularly with vocabulary. There continued to be high variability during the intervention phases with upward trends and more stability in performance over time. There were no discernable differences between the alternating treatments.

**References (if any)**:


Poster Title: Preservice Educators’ Perceptions About Vocabulary Matching and Selection Measures for Progress Monitoring
First Presenter: Pamela M. Stecker, Clemson University (stecker@clemson.edu)
Second Presenter: Catherine A. Griffith, Clemson University (cgriffi@clemson.edu)
Additional Authors: Frigitta Johnson, Clemson University; Michelle Popham, Clemson University

Poster Abstract:
The purpose of this study was to contrast the use of two types of progress monitoring measures in a university introductory course about special education taught face to face across 15 weeks. Researchers used curriculum-based measurement (CBM) methodology to develop vocabulary-matching (see Espin, Busch, Lembke, Hampton, Seo, & Zukowski, 2013) and vocabulary-selection probes. Each alternate form sampled words from the larger pool of approximately 150 special education-related terms from the textbook glossary (Hallahan, Kauffman, & Pullen, 2015). Research questions focused on examination of participant feedback about the two probe types and participant growth in vocabulary knowledge as well as their knowledge of progress monitoring practices. General and special education preservice teachers (n = 29) scored higher on the matching probes compared to the selection probes on seven out of eight occasions, with significant differences detected between matching and selection probe scores on five out of eight total probes (p ≤ .01). Significant growth was detected on the vocabulary pre-/posttest measure [t(28) = -8.66, p < .001] and on the CBM knowledge pre-/posttest measure [t(28) = -6.80, p < .001], indicating that students grew in their course-related vocabulary knowledge and in their knowledge of CBM across the semester.

Survey results indicated that participants preferred the matching probes (72.4%) to the selection probes (21.0%) and specified that the matching probes (89.7%) were good indicators of their knowledge in the course compared to the selection probes (51.7%). Although more than three quarters of participants felt the graphs for both types of measures were useful for seeing their progress in course vocabulary knowledge (matching 93.1%, selection 75.9%), less than a quarter of participants reported that taking the probes and seeing their progress caused them to alter their study habits for the course (24.1%). However, 90% of participants thought using data from vocabulary measures may improve their future students’ academic performance. Participants reported that participating in the vocabulary measures helped them understand how progress monitoring tools can be used to assess content area knowledge (93.1%) and thought it would be feasible (89.7%) and beneficial (98.7%) for them to use with their future students. Additionally, in an extension of this study, a subset of vocabulary matching and vocabulary selection probes were administered to preservice educators during a subsequent section of the same course offered online during a shortened summer term. Participants (n=9) took vocabulary pre/posttests online as well as four alternate forms of each probe type across the 5-week course. Then, they rated their preferences regarding the probe types. Interestingly, this group preferred the selection probes (100%) to the matching probes, primarily due to its ease in completing the measure online. They also indicated that the selection probes (77.7%) were good indicators of their knowledge in the course compared to the matching probes (11.1%). Implications for using CBM vocabulary measures in face-to-face and online university coursework will be discussed.

References (if any):

Teacher Expectations of Reading Ability for Students with Disabilities

First Presenter: Paul K. Steinle, The University of Texas at Austin (paulksteinle@utexas.edu)

Poster Abstract:
There is strong evidence to suggest that teacher expectations affect student achievement (Jussim & Eccles, 1992). Teacher expectations may be based on or influenced by a variety of student characteristics, including race, gender, socioeconomic status, and behavior. (Jussim, Eccles, & Madon, 1996; Rubie-Davies, Hattie & Hamilton, 2006; Tenenbaum & Ruck, 2007). Some studies have suggested a relationship between a student's disability and teacher expectations. (Hornstra et al., 2010; Cameron & Cook, 2013; Shifrer, 2013) These expectations surrounding students with disabilities also appear to influence teacher practice (Cook, 2001; Klehm, 2014). It is hypothesized that such expectations may influence student achievement, making knowledge about teacher expectations a crucial potentially malleable factor in improving outcomes for students with disabilities. The purpose of the study is to address the relations between student characteristics, prior academic achievement and behavior on teacher expectations of reading ability and answer the following research question: what factors are more influential in predicting low teacher expectations of reading for students with disabilities? Data from the Special Education Elementary Longitudinal Study (SEELS) was used to answer the research question (Wagner et al., 2005). SEELS contains information from nationally representative sample of over 11,000 students over a six-year period receiving special education services in grades 1-6. Data was collected by direct assessment and teacher surveys, where teachers were asked about characteristics of individual students. After accounting for missing data, the total number of students was 4,511 students. Variables examined including discrepancy between grade level and teacher estimate of reading ability, previous reading achievement, behavior ratings, and demographic variables. Logistic regression analyses were conducted with a set of predictors to estimate the probability of low expectations. The logistic regression was conducted in a series of steps to examine individual predictors and determine their fitted odds ratios. First, the gender variable alone was used. Second, race or ethnicity was used. Third, the disability types together were used. Fourth, family income variable was used. Fifth, the reading achievement of the prior academic year was used. Sixth, the four behavior variables were used. Finally, a full model with all variables were used in order to control for all. The results showed gender as a significant predictor of teacher low expectations, with males almost half as likely to receive low expectations than females. Teachers were more than twice as likely to express low expectations for African-American and Hispanic students, after controlling for gender, disability, family income, prior academic achievement and behavior, as compared to white students. For disability types, teachers were less likely to have low expectations for students with speech or language impairments, and were more likely to have low expectations for students with mental retardation, as compared to students with learning disabilities. Teachers were only slightly less likely to have low expectations for students who scored higher on a previous measure of reading achievement.

References (if any):


Poster Title: Exploring the Efficacy of Evidence-Based Reading Instruction on the Reading Outcomes of Students with Inattentive Behaviors

First Presenter: Alicia A. Stewart, The University of Texas at Austin (alicia.stewart@utexas.edu)
Second Presenter: Elizabeth Swanson, The University of Texas at Austin (easwanson@austin.utexas.edu)

Poster Abstract:
Attention deficit/hyperactivity disorder (ADHD) is characterized by persistent, high levels of inattention, hyperactivity, and/or impulsivity that interferes with functioning (American Psychiatric Association, 2013). Inattentive behavior and ADHD, in general, are related to and predictive of reading fluency, reading comprehension, and academic failure (Currie & Stabile, 2004; Mayes & Calhoun, 2007; Pham, 2016; Rodriguez et al., 2007; Rogers, Hwang, Toplak, Weiss, & Tannock, 2011); however, the presence of inattention is significantly related to lower reading outcomes; whereas, hyperactivity/impulsivity alone is not. Although students who struggle to maintain attention tend to embody similar word reading abilities as their typically-developing peers, they perform significantly lower on reading fluency and reading comprehension measures (Ghelani, Sidhu, Jain, & Tannock, 2004; Martinussen & Mackenzie, 2015). As these students progress through upper elementary and secondary grades, they fall considerably behind their peers (Ghelani et al., 2004). A large amount of descriptive studies exist outlining the characteristics of students with or at risk of ADHD (e.g., Du Paul et al., 2004; Harpin, Mazzone, Raynaud, Kahle, & Hodgkins, 2016), yet there is little to support effective reading instruction for this population, specifically for students with inattentive behaviors. According to a recent systematic review (Stewart & Austin, in review), no large group studies exist investigating the efficacy of instructional practices alone (e.g., without also manipulating medication as an independent variable) on the reading outcomes of students with inattentive behaviors. In addition, previous studies include participants identified with ADHD, resulting in samples that fail to represent at-risk students in addition to those already identified. Strategies to Read Information Texts and Vocabulary Effectively (STRIVE) is a set of evidence-based instructional practices that target vocabulary and reading comprehension using informational text in social studies classrooms. Previous studies support the efficacy of STRIVE in general education classrooms (Hairrel et al., 2011; Simmons et al., 2010; Swanson et al., in review). In an effort to expand previous literature on reading instruction for students who exhibit inattentive behaviors, the current study investigates the following research question: What is the efficacy of STRIVE reading instruction on the reading outcomes of students with inattentive behaviors? The current study utilizes a quasi-experimental design to investigate the effects of STRIVE instruction on student reading outcomes in the areas of vocabulary, reading comprehension, and content knowledge. In order to be included in the study, participants met two criteria. First, teachers referred fourth-grade students who embodied inattentive behaviors. Next, teachers filled out a brief ADHD measure (Conners 3; Conners, 2008) for each referred student. Students whose T-scores on the ADHD measure met or exceeded a designated cut score for identifying at-risk students were included, resulting in a sample size of 250 students. Student reading outcomes across conditions are compared at post-test using an ANCOVA that controls for pre-test scores. Results of STRIVE implementation fidelity, progress monitoring measures of vocabulary and content knowledge, and distal measures of vocabulary and reading comprehension will be presented.

References (if any):

Stewart, A., & Austin, C. (2018). Reading interventions for students with or at risk of attention deficit/hyperactivity disorder: A systematic review. Manuscript submitted for publication
**Poster Title:** Investigating the Number Line Estimation Task within an Early Numeracy Screening Battery

**First Presenter:** Marah Sutherland, University of Oregon (marahs@uoregon.edu)

**Second Presenter:** Ben Clarke, University of Oregon (clarkeb@uoregon.edu)

**Additional Authors:** Lina Shanley, Mari Strand Cary, Lillian Durán

**Poster Abstract:**

In recent years, there has been increased focus on improving students' mathematics achievement in the United States. National Assessment of Educational Progress mathematics scores from 2017 revealed subpar performance of American students with only 40% of fourth graders scoring at or above "proficient". Longitudinal research indicates mathematics difficulties (MD) are apparent at school entry and remain persistent across elementary school (Morgan, Farkas, & Wu, 2009). These findings highlight the need for detection of MD in the early grades so that students who need intervention can access services before falling even further behind their peers. The need for screening tools in mathematics has led to lines of research examining different types of screeners targeting early numeracy concepts. Methe et al. (2011) conducted a review of early numeracy screeners and found that frequently used measures targeted students' readiness skills, such as numeral identification and counting aloud. Screening batteries have also targeted students' deeper understanding of number, or number sense by including measures of magnitude understanding and strategic counting thought to rely on a student's development of a mental number line (Gersten et al., 2012). The mental number line has been described by developmental researchers as a "central conceptual structure" that students use to organize their understanding of number magnitude and relationships between numbers (Case & Okamoto, 1996).

Based on the theory that the mental number line underlies important early numeracy concepts and skills (Siegler, Thompson, & Schneider, 2011), researchers have investigated a task that directly assesses number line knowledge. The most widely researched number line task involves presenting a blank number line with two defined endpoints (e.g., 0 and 100) and having students place target numerals along the number line. Responses are scored by the accuracy of students' numeral placement. More accurate performance on the number line task is related to better performance on magnitude comparison tasks, greater understanding of fractions in the later elementary grades, and generally higher mathematics achievement (Booth & Siegler, 2006, Jordan et al., 2013). Despite these findings, the number line task has been relatively unexplored as a screening tool to identify students at risk for MD.

The purpose of the current study was to investigate an iPad-based Number Line Assessment (NLA) spanning 0 to 100. Our research questions were as follows: (1) What are the psychometric properties of an iPad-based NLA including reliability, and concurrent and predictive validity?, and (2) Does performance on the iPad-based NLA add incremental validity to an early numeracy screening battery? Participants included 286 first-grade students across three school districts in the Pacific Northwest. Students were assessed on the number line task in the fall and spring of the 2017-2018 school year, along with the Number Sense Brief, the ASPENS, and easyCBM. Results will be analyzed in the fall of 2018 and discussion will focus on implications for early numeracy screening in schools.

**References (if any):**


Poster Title: Growth in Math Computation and Working Memory in at Risk English Language Learners
First Presenter: H. Lee Swanson, University of New Mexico, University of California-Riverside (HLswanson@unm.edu)
Second Presenter: Jennifer Kong, University of New Mexico (jenniferkong@unm.edu)
Additional Authors: Stefania Petcu, University of New Mexico (spetcu@unm.edu)

Poster Abstract:
This cohort-sequential study explored the components of working memory that underlie math difficulties (MD) in elementary school children who are monolingual (English) or English language learners (ELL) whose first language is Spanish. To this end, children (N = 789) in grades 1, 2, and 3 at wave 1 were administered a battery of math, reading, vocabulary and cognitive (short-term memory [STM], working memory [WM], rapid naming, and inhibition) measures. The battery of tests was administered again one year and two years later to the same participants. Four important findings emerged: (1) growth in the executive, visual-spatial and STM storage components of WM were significantly related to growth in math computation independent of growth in reading, vocabulary, fluid intelligence, inhibition, and rapid naming speed, (2) monolingual children with MD superseded balanced and unbalanced bilingual ELL children with MD in levels of cognitive performance, but not in growth, (3) significant performance advantages of balanced bilinguals when compared to unbalanced bilinguals occurred on measures of visual-spatial WM and math calculation and (4) the lack of stability in the MD classification was a function of SES and unbalanced bilingualism. The results are discussed within the context of three models that assess the contribution of fluid/crystalized intelligence and WM in predictions of later math computation in children with MD.
Poster Title: Improving active engagement and communication of children with autism spectrum disorder during parent-delivered shared-story reading.

First Presenter: Julie Thompson, Texas A&M University (jlthompson@tamu.edu)

Poster Abstract:
Oral language is a significant predictor of literacy skills for students with ASD (Ricketts, Jones, Happé, & Charman, 2012) and early literacy skills, including phonemic awareness and phonics can be challenging to teach without requiring verbal responses (Twyman, Layng, Styleleather, & Hobbins, 2005) and can significantly hinder instruction for students with ASD. A further challenge to acquiring literacy for students with ASD is difficulty with attending during instruction (Leekam, Prior, & Ulijarevic, 2011); even when attending to instruction, students with ASD often attend to irrelevant features of the instructional stimuli (Ploog, 2010). Many typically developing children begin early reading instruction informally and incidentally, through book reading experiences with parents (Bus, van IJzendoorn, & Pellegrini, 1995). Book reading involves a shared experience between an adult and child in which the adult reads the text and engages with the child by, for example, discussing the book, asking questions, and pointing to text and pictures and often leads to increased print concept knowledge, which involves children’s understanding of how print is organized and used (e.g., tracking print appropriately during reading; Justice, Bowles, & Skibbe, 2006) which is significantly related to children’s later reading achievement (NELP, 2009). Further, engagement in book reading is indicative of children’s increased oral language development (Hindman, Connor, Jewkes, & Morrison, 2008). Due to the above-mentioned skill deficits, children with ASD often do not experience these early literacy learning opportunities without direct intervention.

The purpose of this preliminary study was to examine the potential effects of a shared-story intervention on active engagement and communication of children with autism spectrum disorder during parent-delivered shared-story reading. Ten parent-child dyads were included in this descriptive time-series analysis. The children with autism spectrum disorder were in grades Pre-K - 2nd. Parents were coached in the shared story intervention which included training in environmental arrangement, prompting, and reinforcement. Parents were taught to use prompting to support communication exchanges during shared-story reading sessions. Measures included bi-weekly audio recordings using a language environmental analysis device (LENA) to examine the number of parent and child vocalizations across shared-story readings. In addition, we created transcripts of the initial and final recordings to examine language quality (e.g. variety and type of language) during shared-story reading sessions and analyzed video recordings of three reading sessions (initial, middle, and final) to examine the rate of child active engagement across sessions. Results indicated that parents’ quantity of language remained relatively similar however the quality improved greatly. Child vocalizations were less consistent across participants likely due to the heterogeneity of participants language skills. However, all participants demonstrated increased active engagement during shared-story reading sessions. A major limitation to this study is the lack of a control to allow for examination of a causal interpretation. However, it appears that after a relatively small number of coaching sessions, parents can improve their delivery of shared-story reading with their children with ASD. Future research should include an experimental design to determine whether a functional relation exists between the shared story-reading and child language and engagement outcomes.

References (if any):


Poster Title: Relations Between Expressive Written Language and Writing Performance in Middle School
First Presenter: Adrea Truckenmiller, Michigan State University (atruck@msu.edu)

Poster Abstract:

Purpose: The purpose of this study is to explore the role of word- and sentence-levels of language in expository writing performance for middle school students. Three questions guided our study: (a) Are expressive language abilities related to writing performance across early and late middle school years? (b) Do the relations between expressive language and writing performance vary by student ability levels (low, average, and high)? (c) Do expressive language abilities contribute to the observed gender gap in written expression for middle school students? The first two questions were explored to determine if these expressive language components are critical at different developmental time frames or skill levels. The third question was explored to extend the individual differences research on the writing component skills that may or may not contribute to the overall writing achievement gap between girls and boys.

Participants: Nine teachers in Grades 5-6 and four teachers in Grades 7-8 volunteered to participate in the study. The classrooms were located in four rural and suburban school districts in the Midwest. A total of 299 students in Grades 5-6 and 169 students in Grades 7-8 completed the following written measures over the course of four sessions: the Vocabulary and Sentence Combining subtests from the Test of Written Language, Fourth Edition, and three researcher-created expository writing prompts. The writing prompts were administered via web application and consisted of an expository passage, a text-based question, four minutes to plan, and 15 minutes to write. Writing quality was scored using a previously-validated researcher-created scoring rubric that evaluated students' introduction, conclusion, coherence, cohesion, supporting details, language use, and mechanics. The interrater reliability correlation was .83.

Research Method & Findings: Models were conducted separately for Grades 5-6 and 7-8 and included the teacher designation at level 2 (ICC = 0.22 for Grades 5-6, ICC = 0.18 for Grades 7-8). First, student gender was regressed on writing quality in a 2-level model. Gender explained 7% of the variance in writing quality for Grades 5-6 and 11% variance in Grades 7-8. Subsequent models controlled for gender. By adding vocabulary (word-level language) and sentence combining (sentence-level language), the variance explained in writing quality increased by 28% for Grades 5-6 and increased by 14% for Grades 7-8. Both predictor variables demonstrated statistically significant fixed effects. A subsequent model was run to test gender-by-vocabulary and gender-by-sentence combining interactions. Fixed effects were not significant suggesting that gender differences in writing quality may not be due to gender differences in vocabulary or sentence combining. Finally, a quantile regression was conducted to determine if the relation between these two expressive language components and writing quality differs for low-, average-, and high-performing students. Hypotheses tests between the .20, .50, and .80 quantiles in each grade band indicated the relation between expressive language components and writing quality were not statistically significantly different across skill levels. Overall, these results suggest that expressive language components may be important for all students in middle school grades.
Poster Title: Technical features of CBM vocabulary probes used in teacher preparation programs
First Presenter: Dana L. Wagner, Minnesota State University Mankato (dana.wagner@mnsu.edu)
Second Presenter: Abigail A. Allen, Clemson University (aaallen@clemson.edu)
Additional Authors: Kiersten K. Hensley, Minnesota State University Mankato; Pamela M. Stecker, Clemson University; Friggita Johnson, Clemson University

Poster Abstract:
The purpose of the current study was to examine the technical adequacy of Curriculum-Based Measures (CBM) at the postsecondary level in the content areas of reading and mathematics instructional methods. We addressed the research question: What are the reliability and validity of CBM vocabulary matching and vocabulary selection probes as indicators of preservice teachers' knowledge and growth in reading and mathematics instructional methods? Participants included 46 undergraduate special education preservice teachers from two different universities. Vocabulary matching probes were developed using previously established methods (e.g., Espin, Busch, Lembke, Hampton, Seo, & Zukowski, 2013). Each probe contained 20 terms and 22 definitions with two of the definitions serving as distractors. Vocabulary selection probes were developed to explore the possibility of identifying a new CBM content area measure. Each selection probe contained 20 definitions. Each definition was presented with three different terms from which to select the correct answer. Matching and selection probes in each content area were administered for 4-minutes and 90-seconds, respectively, every other week over the course of one semester. Criterion measures were pre- and posttests that contained all terms from the pool of approximately 100 terms for each content area, and an analogy posttest containing a subset of terms. Test-retest, alternate form reliability, and criterion validity were assessed with Pearson correlations. A paired samples t-test was conducted to determine whether significant growth occurred on the larger vocabulary pre-/posttest. Descriptive data indicated participants generally scored higher on the initial matching probes in reading and mathematics compared to the selection probes. Participants generally scored higher on the final probes compared to the initial probes in both subject areas and on both types of task (matching and selection). Test-retest reliability coefficients were large for the reading matching probes ($r = .76-.83$), and moderate to large for the reading selection probes ($r = .69-.72$), mathematics matching probes ($r = .60-.74$), and mathematics selection probes ($r = .43-.78$). Alternate-form reliability coefficients were moderate to large for reading matching probes ($r = .41-.79$), and small to large for reading selection probes ($r = .34-.76$), mathematics matching probes ($r = .35-.84$), and mathematics selection probes ($r = .35-.86$). All coefficients were significant at the .05 level. Concurrent validity with the vocabulary pre-/posttest was moderate for both matching ($r = .52-.62$) and selection probes ($r = .51-.65$) in reading, and low to moderate for matching ($r = .42-.73$) and selection probes ($r = .43-.75$) in mathematics. All coefficients were significant at the .01 level except for the first probe and vocabulary pretest in mathematics for both matching ($r = .22$) and selection ($r = .23$). Predictive validity was moderate for the reading matching ($r = .48-.60$), small for reading selection probes ($r = .30-.50$), and moderate to large for the mathematics matching ($r = .64-.76$) and selection probes ($r = .42-.76$). Additional analyses to examine the analogy criterion measure and the measures' sensitivity to growth are underway. Overall, the results show promise for using CBM vocabulary probes to assess preservice teachers' knowledge of reading and mathematics instructional methods. Implications for follow-up research will be discussed.

References (if any):
Poster Title: Creating a Technology-Based Assessment of Early Inferencing
First Presenter: Kyle Wagner, University of Minnesota (wagn0524@umn.edu)

Poster Abstract:

Theoretical Framework: Applying cognitive psychology theory to reading comprehension instruction, TeLCI (a Technology-Based Early Language Comprehension Intervention) and ELCII (Early Language Comprehension Individualized Instruction) are designed to improve reading comprehension by fostering the development of inference making, a core language comprehension skill without the need for text decoding. To assess the extent to which TeLCI and ELCII show promise to improve inference making, we developed a proximal measure of inferencing. The present paper focuses on describing this assessment and its psychometric properties.

Purpose: The goal of this analysis is to provide evidence for the technical adequacy of our technology-based assessment that is designed to measure inferencing skill in early elementary school children, independent of decoding skills.

Methods:

Participants: Participants were n = 67 kindergartners, n = 80 first graders, and n = 27 second grade students from an urban Midwestern elementary school.

Measure: The measure is a cloud-based assessment designed to assess inferencing. The measure is comprised of 32 items divided between four interactive video modules. In each module, students are asked to watch a fiction or non-fiction video for approximately five minutes and answer 16 multiple choice inference questions. The assessment poses no decoding demands as all information is presented orally by an intelligent tutor.

Procedure: The four modules were combined into two assessment forms that each contained one fiction and one non-fiction module. To calibrate our items, we created two sets of linking items with shorter videos and only four items each that would be administered to all participants. First and second grade participants received either Form A or Form B as well as a set of linking. Kindergarten participants received both forms as well as the linking items.

Analysis: We evaluated psychometric properties of the assessment using both CTT item analysis methods and Rasch modeling. We used the QME package (Brown, Zieffler, Nickodem, Vue, & Anderson, 2016) in R (R Core Team, 2018) for the CTT analysis, and the mirt package (Chalmers, 2012) and Winsteps (Linacre, 2018) for the Rasch modeling.

Results and Discussion: Parameter estimates for the items in the assessment forms range from -1.21 to 2.47 with a mean of .36. Our items had a good range, though tended to be more difficult. All items fall within acceptable ranges for infit and outfit indices. Standard Error and Item information curves are centered near 0 and include most of our sample. This distribution of information is an improvement over the distribution from our Year 1 iteration, which tended to have more information centered around higher achieving students and increased error in our population of interest. This analysis suggests that the Rasch model was appropriate and the item deltas can be interpreted with confidence. Reliability for both forms were acceptable, Guttman's Lamda-2 = .89 (Osburn, 2000). Several items had problematic point biserial correlations (<.15) (Thorndike & Thorndike-Christ, 2010). We have begun revising items to decrease possible confusion and hopefully make the items easier and more reliable.

References (if any):

Poster Title: Developing Comprehension Interventions for Struggling Third Grade Readers: A Pilot Study
First Presenter: Meagan Walsh, Vanderbilt University (meagan.e.walsh@vanderbilt.edu)

Poster Abstract:
This pilot project was part of a much larger study to develop an effective RC intervention for struggling readers in the intermediate grades. However, during the first 3 years of that intervention study, 3rd graders had consistently demonstrated minimal benefit from tutoring. Thus, a pilot study was conducted to identify how the intervention might best be adapted to improve the performance of 3rd grade students. The purpose of this poster is to present the results of this pilot, explore the pattern of results, and report on how this data will be used to inform future ideations of the project.

Students were selected from 8 Metro Nashville public schools. Students chosen for the study were nominated by teachers because they felt they would benefit from tutoring in RC. Students selected for the study needed to demonstrate risk for developing a deficit in RC (Gates MacGinitie Reading Comprehension normal curve equivalent < 50th percentile). Students who met inclusion criteria were pre-tested using WIAT-III Reading Comprehension and randomly assigned to treatment and control. 56 third grade students completed the study (27-control; 29-treatment).

Students in the treatment condition were tutored in pairs for 48 sessions. All tutoring sessions were 50 minutes and conducted by trained graduate assistants. During sessions students were explicitly taught strategies for comprehending non-fiction text. After completing tutoring, students were assessed using a near transfer reading-comp measure and a knowledge measure developed by the research team. These measures were only administered at post. Students were also assessed at pre- and post on two far transfer RC measures.

Data were analyzed using cross-classified hierarchical linear models with random effects for pair assignment. All models controlled for pretreatment ability and used the Kroger method for calculating degrees of freedom. Effect sizes were calculated using Hedge’s g with an adjustment for small sample size. Students in the treatment group significantly outperformed students in the control condition on the near transfer knowledge test (g=3.06). While not significant, effect sizes on the Gates and Near Transfer RC measure were promising (g=.26 and g=.29 respectively). However, results on the WIAT were not as promising (g=-.58).

The mixed results of this pilot study have several implications. First, the intervention continues to need work. Second, the differential results on the two widely-accepted far transfer measures highlight the difficulty of measuring the RC construct. Furthermore, utilizing only one of these measures to determine risk proved insufficient. Thus, in future studies we feel it is necessary to adjust selection criteria.
Poster Title: Examining Student Engagement Outcomes for High School English Learners At-Risk for Dropout
First Presenter: Kelly J. Williams, Indiana University (kjwilli@indiana.edu)
Second Presenter: Leticia R. Martinez, The Meadows Center for Preventing Educational Risk, The University of Texas at Austin (lettyrmartinez@ austinfo.utexas.edu)
Additional Authors: Jeremy Miciak, The University of Houston (Jeremy.Miciak@uh.edu)

Poster Abstract:
Student engagement is comprised of interrelated academic, behavioral, cognitive, and psychological dimensions (Appleton, Christenson, & Furlong, 2008; Fredricks, Blumenfeld, & Paris, 2004; Reschly & Chrisensen, 2006). Higher levels of individual student engagement have been associated with higher academic achievement and school success (Connell, 1990; Connell & Wellborn, 1991; Finn, 1989; Frederick et al., 2011; Wang & Eccles, 2011). While many factors contribute to variability in students’ levels of engagement, research suggests that factors associated with student engagement are malleable and can be targeted with interventions (Finn & Zimmer, 2012; Fredricks et al., 2011; Reschly & Christenson, 2012).

We used a sequential explanatory strategy of mixed methods (Creswell, 2009; Creswell & Clark, 2018). We first collected and analyzed quantitative data to determine the impact of a data-monitoring and mentoring intervention on student engagement outcomes (i.e., attendance, behavior referrals, and a self-report measure of student engagement). Then, we collected qualitative data (i.e., student interviews) to explore contextual factors related to student-reported changes in engagement. Participants were recruited from three urban high schools in the southwestern United States. The initial sample included 358 ninth-grade English Learners (ELs) who were randomly assigned to one of four conditions: (1) mentoring intervention; (2) a two-year intensive reading intervention; (3) mentoring + the reading intervention; and (4) a business as usual (BaU) comparison condition. For the quantitative analysis, two groups were formed consisting of students in the treatment group (mentoring only and mentoring + reading intervention) and a comparison group that did not receive a school engagement outcome (reading intervention only and BaU). Students in the treatment condition received two years of the mentoring intervention and those in the comparison group did not receive any engagement interventions. Multi-group multiple indicator (MGM) growth models were used to analyze treatment effects. On the student self-report engagement measure, there were no significant differences between the treatment and comparison group on the subscales of behavioral engagement (ES = -0.14), academic engagement (ES = -0.13), psychological engagement (ES = -0.18) student-teacher relationships (ES = -0.15), and goal setting and problem solving (ES = -0.17). There were also no significant differences on number of disciplinary referrals. The intervention did have a significant impact on attendance rate at the end of tenth grade for students who scored 0.5 standard deviation above the sample mean absense rate or higher.

The qualitative phase occurred during participants’ eleventh-grade year. We identified participants whose self-reports of engagement demonstrated considerable change (both increased and decreased engagement) from the beginning to the end of the study. Participants were thirty-four students whose pretest-posttest change score fell in the top and bottom quartile for difference scores within the treatment group. We conducted and transcribed two structured interviews with each participant. We are currently completing qualitative data-analysis using NVivo 12 qualitative software and are using an open-coded system (Strauss & Corbin, 1990) and grounded-theory approach (Strauss & Corbin, 1990) to identify common themes. Findings will be discussed with emphasis on the challenges of implementing student engagement interventions with ELs in urban, low-SES contexts.

References (if any):


**Poster Title:** Reading-Writing Relationships in High-Functioning Children with Autism Spectrum Disorders  
**First Presenter:** Matthew Zajic, University of Virginia (mcz3e@virginia.edu)

**Poster Abstract:**  
**Purpose:** Children with autism spectrum disorder (ASD) demonstrate persistent educational challenges (1). Children with ASD who demonstrate decreased autism symptomatology and increased cognitive abilities appear to experience fewer educational challenges (2). One key area of challenge for children with ASD is literacy development. While children with ASD experience both reading and writing difficulties (3-4), no research has investigated the relationship between reading and writing abilities in children with ASD. This study conducted an exploratory investigation into the relationship between lower-order and higher-order reading abilities and lower-order and higher-order writing abilities while controlling for autism symptomatology and cognitive abilities.  

**Participants:** A total of 79 children with ASD (M=12.59, SD=2.11) participated in this study. All children came into the study with a community diagnosis of ASD that was confirmed using gold-standard measures (e.g., Autism Diagnostic Observation Schedule, 2nd Edition; ADOS). Performance (PIQ), verbal (VIQ), and full-scale IQ (FIQ) abilities were measured with the Wechsler Abbreviated Scales of Intelligence, 2nd Edition; all children had a FIQ of at least 73. Writing performance was measured using the Test of Written Language, 4th Edition (TOWL-4). All writing samples were scored by trained undergraduate research assistants for Contextual Conventions (CC; lower-order writing) and Story Composition (SC; higher-order writing). Lower-order reading abilities were assessed using the Test of Word Reading Efficiency, 2nd Edition (TOWRE-2) and the Accuracy subscale from the Gray Oral Reading Tests, 5th Edition (GORT-5). Higher-order reading comprehension was assessed using the Comprehension subscale from the GORT-5. As the TOWL-4 produces a narrative writing sample, an measure of narrative structure was also collected via the story recall subscale from the Wide Range Assessment of Memory and Learning, 2nd Edition (WRAML2).  

**Research Method:** Structural equation modeling (SEM) analyses were used to investigate the relationships between reading and writing abilities while controlling for autism symptomatology and IQ abilities. A latent construct of reading accuracy was created using GORT-5 Accuracy and TOWRE-2 subscales.  

**Findings:** Given the exploratory nature of this study, model fit was adequate: Chi-square = 39.99 (df=23), p =.015; RMSEA=.097, 90% CI (.04-.15); CFI=.96; SRMR=.05. Autism symptomatology was significantly, negatively associated with reading comprehension and narrative structure but was unrelated to reading accuracy. PIQ and VIQ were positively, significantly associated with both reading comprehension and reading accuracy; VIQ was positively, significantly associated with narrative structure, but PIQ was unrelated. Reading accuracy was positively, significantly associated with lower-order and higher-order writing (though with a larger magnitude for lower-order writing). Reading comprehension was unrelated to lower-order and higher-order writing. Narrative structure was positively, significantly associated with lower-order and higher-order writing (though with a larger magnitude for higher-order writing). Lower-order and higher-order writing were positively, significantly associated with one another. These findings demonstrate that the reading abilities of children with ASD are associated with their writing abilities and that narrative writing abilities are more strongly associated with reading accuracy and narrative structure knowledge than with reading comprehension abilities (though only one comprehension measure was included). Further implications for ongoing research into the literacy challenges of children with ASD will be discussed.

**References (if any):**  
Poster Title: Understanding Rater Behavior in Observations of Special Education Math Teachers
First Presenter: Yuzhu Zheng, Boise State University (yuzhuzheng@boisestate.edu)
Second Presenter: Evelyn Johnson, Boise State University (evelynjohnson@boisestate.edu)

Poster Abstract:
Overview: RESET is a federally funded project to create observation rubrics aligned with evidence-based practices (EBPs) for students with high incidence disabilities (SWD). The goal is to leverage the extensive research on EBPs for SWD to inform the development of observation instruments that provide feedback to special education teachers to improve their practice and ultimately, to improve outcomes for SWD. To achieve this goal, the raters who evaluate and provide feedback have to be consistent in their interpretation and application of the rubrics scoring procedures and criteria. RESET consists of a set of rubrics that detail the elements of a number of EBPs. In this study, we focus on the Understanding of Procedures-Mathematics rubric. The purpose of this study was to examine the factors that influence rater’s application of the scoring criteria. Specifically, we investigated the extent to which raters are able to consistently represent the scoring criteria in the Understanding of Procedures rubric, how raters discriminate among levels of performance on each instructional element, and the consistency with which the raters applied evidence to support their scoring decisions.

Participants: Nine female and one male raters were recruited to observe 17 special education teachers’ Developing Understanding of Procedures-Mathematics. Raters had between 3-20 years of working experience in special education.

Procedures: Rater training began with orientation to the rubric and manual. Over four days, raters viewed and scored four videos and reconciled scores with master coded rubrics. Then, they were given a set of 21 randomly assigned videos to evaluate within four weeks. Raters were asked to score each item with time stamped evidence, and a brief explanation of their rationale. For two lessons that were scored by all raters, they were asked to audio record a “think aloud” with their thought processes and rationales for scores.

Data Analysis: We report results for the rater facet of a many-faceted Rasch measurement (MFRM) analysis, including presentation of infit and outfit statistics, reliability and separation and bias interaction of raters with items, raters with teachers, and raters with items and teachers. Think aloud data will be analyzed qualitatively to identify the consistency with which raters’ scoring procedures aligned with the RESET training, manual and rubric.

Results: All of the data for this study have been collected. Analyses are currently underway but not yet completed. It is anticipated that our analyses will be completed no later than November 2018.