**Poster Title:** Do Writing Self-Efficacy and Writing Attitudes Predict Middle School Students' Writing Performance?

**Presenter Name(s):** Angelique Aitken, Arizona State University
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**Brief Abstract:**
Middle school students completed four motivational measures: writing self-efficacy, reading self-efficacy, writing attitudes, and reading attitudes. Factor analyses produced seven reliable motivation measures. Regression analyses showed writing motivation measures significantly predicted students' WIAT writing test after controlling for reading motivation, gender, language status, SES, and disability.

**Abstract:**

**Purpose/Research Questions:** This study examined relationships between middle school students' writing attitudes and self-efficacy and their writing performance after first controlling for reading motivation and student characteristics. It provided a particularly strong test of the predictive contributions of these two writing beliefs, as it controlled for variance due to other variables that are associated with both students' writing belief and writing performance (Graham, 2006). The study answered this question: Do writing attitudes and self-efficacy make a statistically significant contribution to predicting writing performance after first controlling for reading motivation, gender, disability status, language status, and SES?

**Summary of Research Literature:** The beliefs that developing writers hold about writing can foster or hinder their writing performance, as they influence whether one engages in writing, how much effort is committed, and what resources and tools are applied (Graham, in press). Two especially important beliefs students hold about writing are their attitudes towards it and their confidence in their abilities to write well (i.e., self-efficacy). Previous studies have shown that both writing attitudes and self-efficacy predict students' writing performance (Lee, 2013; Pajares & Johnson, 1996), and that each of these beliefs are related to student characteristics such as gender (Knudson, 1993). No study to date however has controlled for variance due to reading motivation.

**Participants** We conducted factor analyses of the motivation measures with a group of 260 middle school students (58% boys, 62% free-and reduced lunch, 21% English language learners, and 25% had an IEP). We then examined if writing beliefs made a unique contribution to predicting WIAT writing performance with 185 of these youngsters (58% boys, 56% free-and reduced lunch, 22% English language learners, and 29% students had an IEP).

**Research Method:** Students were administered measures of reading attitudes, writing attitudes, reading self-efficacy, and writing self-efficacy as well as the WIAT essay writing subtest. Two factor analyses were computed: one for reading and writing attitude items and a second for the reading and writing self-efficacy items. The first analysis yielded five reliable factors - attitudes toward recreational print reading, recreational digital reading, academic digital reading, academic print reading and writing, and sharing writing. The second factor analysis resulted in two factors: reading efficacy and writing efficacy. We conducted a regression analysis where we entered the writing beliefs variables (self-efficacy and sharing writing) as a block after first controlling for reading motivation and student characteristics.

**Findings:** The two writing beliefs measures collectively accounted for a statistically significant and unique amount of variance in WIAT writing scores (4%) after first controlling for reading beliefs and student characteristics (which accounted for 16% of variance). The following variables made a unique contribution to predicting WIAT scores: disability status, attitudes toward reading recreational print and digital text, and writing efficacy.

**Discussion of Research Findings:** Reading and writing beliefs are assumed to play an important role in how well students’ write (Graham, 2006; Shanahan, 2016). This study supports this content for middle school students showing that both writing and reading beliefs account for unique variance in students’ writing.
Poster Title: Relations among reading constructs in early elementary grades

Presenter Name(s): How Alpert, UCLA, California State University, Los Angeles; Diane Haager, California State University, Los Angeles
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Brief Abstract:
Phonemic awareness and rapid automatized naming are related to phonetic decoding. This study found that, in early elementary students oversampled for the presence of reading difficulties, executive function appears to make a unique contribution to phonetic decoding and play a role in phonemic awareness’ and rapid letter naming’s contributions.

Abstract:
Phonetic decoding is an early reading skill and a requisite component of efficient reading in an alphabetic language. With phonetic decoding, the reader applies a language’s grapheme-phoneme correspondences and phonics rules to recode written language into oral language or its silent equivalent. Phonemic awareness is related to phonetic decoding, perhaps because it captures phonological processing of phonemes. Similarly, rapid letter naming is related to phonetic decoding, perhaps because it captures visual processing of graphemes. It was unknown whether the intentional coordination of grapheme-phoneme correspondences in phonetic decoding could be distinguished from phonemic awareness and rapid letter naming.

This study explored whether these coordinating processes include executive function, a set of component skills for directing, maintaining, and changing purposeful action. This study’s purpose was to quantify how phonemic awareness, rapid letter naming, and executive function explain phonetic decoding. The questions that guided this research were 1. Do phonemic awareness, rapid letter naming, and executive function explain unique variance in phonetic decoding? 2. How do relations among the constructs change when accounting for seven construct-irrelevant variables? 3. What model best describes relations among the variables?

Participants (n = 60) were 5-8 years old and in transitional kindergarten, kindergarten, first grade, or second grade. They were recruited as a convenience sample from two sites and oversampled for the presence of reading difficulties. DIBELS’ (Smolkowski & Cummings, 2015) Nonsense Word Fluency subtest measured phonetic decoding. CTOPP (Wagner, Torgesen, Rashotte, & Pearson, 2013) measured phonemic awareness and rapid letter naming. Executive Function Touch (Willoughby, Pek, & Blair, 2013) measured executive function. Results were analyzed with step-wise hierarchical regressions and mediation analyses.

Entered as the third step of a hierarchical regression, executive function did not explain unique variance in phonetic decoding above that explained by phonemic awareness and rapid letter naming. However, executive function was significant in the model that best fit (AIC = 74) the data. This model explained 70% of phonetic decoding with phonemic awareness, rapid letter naming, executive function entered as the first step of a hierarchical regression, and with age, gender, reading difficulties, and site retained but grade, language, and response time excluded in the seven subsequent steps. Mediation analyses indicated executive function mediated the effect on phonetic decoding of phonemic awareness and rapid letter naming.

Thus, executive function appears to make its own unique contribution to phonetic decoding and play a role in phonemic awareness’ and rapid letter naming’s contributions.

References:
Poster Title: Response to Intervention in Reading: A Synthesis of Observation Studies

Presenter Name(s): Christy R. Austin, The University of Texas at Austin
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Brief Abstract:
This synthesis systematically reviews observation studies investigating the implementation of RTI reading instruction. Findings describe: (a) the screening, progress monitoring, and reading instruction implemented during each RTI tier, (b) the decision-making process utilized, (c) how interventions were intensified for inadequate responders, and (d) the effects of implementing RTI in reading.

Abstract:
Response to intervention is a framework for identifying students at-risk for reading difficulties or disabilities and providing research-based reading intervention in increasing levels of intensity to prevent students’ future reading failure. This synthesis systematically reviews observation studies investigating the implementation of RTI reading instruction in practice. Criteria for inclusion in this study include: a) observation studies conducted during reading instruction provided as part of Response to Intervention or Multi-Tiered Systems of Support, (b) students in Grades K-12, (c) a formal observation tool or formal observation protocol, and (d) studies published in English in a peer-reviewed journal between 2004 and 2017. Fifteen studies met these inclusion criteria. Studies were analyzed to describe: (a) the screening, progress monitoring, and reading instruction implemented during each tier of RTI observed, (b) the decision-making process utilized during the RTI framework, (c) how interventions were intensified for students demonstrating inadequate response, and (d) the effects of implementing RTI in reading. Findings and implications for practice are provided.
Poster Title: 'I Don’t Want to Stop Writing These:' Opinion Writing with Elementary-Aged ELLs

Presenter Name(s): Ashley Barkel, Arizona State University
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Brief Abstract:
In this multiple baseline, single-case design study, three 4th and 5th grade students learning English learned powerful strategies aligned with CCSS standards for writing opinion essays. The Self-Regulated Strategy Development (SRSD) instructional approach was adapted for these students. Students showed meaningful gains in writing and positively evaluated the instruction.

Abstract:
Effective writing instruction is critical to help all students meet school, work, and life demands. However, there is an extremely limited evidence base for writing interventions with elementary-aged students learning English, making it difficult to identify recommendations to inform writing practices. In this multiple baseline across students design study, three 4th and 5th grade Spanish speaking students learning English learned a set of strategies for writing opinion essays aligned with AZ and CCSS standards. The current study extends research on Self-Regulated Strategy Development (SRSD) for writing instruction to a different population of students. SRSD has been used with many different populations including typically developing students, struggling writers, and students with disabilities (Harris et al., 2016). However, there is limited research on how elementary-aged students learning English respond to SRSD writing instruction. In this current study, students learning English learned a set of strategies that integrated the writing process; developmentally appropriate use of genre knowledge, including genre elements and characteristics of effective persuasive writing; and self-regulation of writing. Students were taught a general writing process strategy represented by the mnemonic POW (Pick your idea, Organize your notes, Write and say more) and a planning strategy (this step helped them Organize their notes - see POW above) represented by the mnemonic TREE (Topic; Reasons, 3 or more; Explanations for each reason, Ending). Development in the use of TREE involved continued learning about effective writing to persuade. Students were also taught how to apply self-regulation strategies (goal setting, self-monitoring and recording, self-instruction, and self-reinforcement) to help them manage the writing strategies as well as the writing process and their writing behaviors. These strategies were taught following the SRSD instructional approach for writing, which was used with adaptations based on the available research and literature on effective instruction for students learning English, and characteristics of the students in this study. The following research questions were addressed:

1. For 4th and 5th grade students learning English, what are the effects of SRSD instruction for opinion essay writing on the number of elements, writing output, use of linking words, and overall writing quality?
2. For 4th and 5th grade students learning English, what are the effects of SRSD instruction for opinion essay writing on students’ approach towards writing?
3. Will 4th and 5th grade students learning English find SRSD instruction for opinion essay writing to have acceptable social validity?

All students evidenced meaningful gains in genre elements in their opinion essays; additional data analysis is ongoing and will be included in the presentation. Initial analysis indicates gains were also made in essay quality and length. Students found the instruction fun, helpful, and easy to learn. After learning the strategies one student stated, ‘I like doing this; I don’t want to stop writing these!’

References:
Poster Title: Exploring Math Self-Concept Among Grade 8 Students Enrolled in Different Courses

Presenter Name(s): Deni L. Basaraba, Bethel School District #52
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Brief Abstract:
Grade 8 math course-taking can have important implications for college and career attainment. Whereas math achievement is a known factor in math course-taking, math self-concept is also a worthwhile consideration. The current study examined how math self-concept was associated with math course-taking and math achievement for eighth grade students.

Abstract:
Enrollment in middle school Algebra (MS Algebra) is a hallmark for advanced mathematics course-taking, as research indicates that students who take Algebra 1 and at least one higher-level mathematics course are more likely to be successful in college mathematics courses and subsequent careers (ACT, 2005). In addition to achievement, attitudes toward math and math self-concept are critical factors in math attainment (Caprara et al., 2011); however, the extent to which math self-concept is related to mathematics achievement for students enrolled in different mathematics courses has been relatively unexplored. The aims of the current study are to examine (a) the relation between math self-concept and math achievement for Grade 8 students, (b) whether that relation varies depending on the Grade 8 math course in which students are enrolled, (c) whether students' math self-concept changes from Fall to Spring of Grade 8, and (d) whether math self-concept is related to within-year growth on mathematics outcomes.

A convenience sample of approximately 350 Grade 8 students enrolled in a school district in the Pacific Northwest during the 2016-2017 school year participated in this study. Approximately 50% of these students were female, 72% were White, 6% were receiving Special Education services, and approximately 60% were from economically disadvantaged backgrounds. Measures used in this study include: (a) the College and Career Readiness Mathematics Practices Scale (CCRMS), administered in the Fall and Spring, (b) easyCBM CCSS-M, administered Fall, Winter, and Spring, (c) the iReady Math Diagnostic, administered Fall, Winter, and Spring, and (d) the Smarter Balance mathematics achievement test (SBAC-M), administered in the spring. The CCRMS (25 Likert-scale item survey) was designed to collect information about students' mathematical aspirations and mathematics self-efficacy and asks students to rate their level of confidence in their ability to perform different mathematical tasks and skills (Peoples, 2016). Analyses for this study will include (1) predictive and concurrent correlations between all measures of interest, (2) independent-samples t-tests to explore differences on specific CCRMS items and overall scores for students enrolled in the two Grade 8 math courses, (3) paired-samples t-tests to explore whether there are significant changes in students' math self-concept from Fall to Spring of Grade 8, and (4) multi-level growth models. Preliminary analyses of Fall data revealed significant differences in the ratings for some items and the overall raw CCRMS score for Grade 8 students enrolled in Grade 8 Math and MS Algebra courses, as well as positive, moderate correlations between CCRMS raw scores and mathematics outcomes from the Fall, Winter, and Spring of Grade 8. Analyses that include students' spring math self-concept scores will be forthcoming and included in the poster.

The current study can contribute to existing literature in two ways: (1) by examining the relation between math self-concept and math achievement for students enrolled in systematically different mathematics courses, and (2) lending insight to non-cognitive factors such as math self-concept that teachers, schools, and districts may want to attend to when trying to increase mathematics achievement and improve math course-taking patterns.
Poster Title: Differential Performance on Word-Problem Intervention: Females Favored Over Males with Mathematics Difficulty

 Presenter Name(s): Katherine A. Berry, University of Texas at Austin; Sarah R. Powell, University of Texas at Austin
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 Additional authors/presenters: Sarah R. Powell, University of Texas at Austin; Marcia Barnes, University of Texas at Austin

Brief Abstract:
To demonstrate math competency, students must solve word problems. Word problems prove challenging for students with math difficulty (MD), especially for females with MD. We provided a 16-week, word-problem intervention to third-grade students with MD. Students who received intervention outperformed students in the control condition, with females significantly outperforming males.

Abstract:
Purpose/Research Questions: We implemented a randomized control trial to determine the efficacy of an intensive, 16-week, word-problem intervention for third-grade students with mathematics difficulty (MD). We also examined if mathematics performance differences existed across females and males who participated in the intervention and who did not receive the intervention. We asked the following research questions: (1) Does an intensive word-problem intervention improve the word-problem performance of third-grade students with MD? (2) Do females with MD who receive the intervention outperform females with MD who do not receive the intervention? (3) Do females with MD who receive the intervention demonstrate improved performance over males with MD who receive the intervention?

Participants and Method: After receiving approval from our university Institutional Review Board, we recruited teachers from 14 elementary schools for participation in the study, and screened 1,111 third-grade students. Students who performed <13th percentile on a word-problem measure (Jordan & Hanich, 2000) were identified as at-risk for MD and deemed eligible for the randomized control trial. Eligible students were randomly assigned to either receive the word-problem intervention (n = 40; M = 18; F = 22) or to participate in a business-as-usual comparison group (n = 43; M = 21; F = 22). 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, (3) interventionist-led lesson featuring schema instruction, (4) schema sorting practice, and (5) cumulative review. Fourteen 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 16-week tutoring intervention, all eligible students were post tested across basic mathematical and word-problem knowledge to determine if differences existed across tutoring and business-as-usual conditions and gender.

Findings: Data analysis indicated that students in the intensive word-problem intervention demonstrated superior growth in word-problem solving over students in the business-as-usual comparison group, with an effect size (ES) of 1.55. Females in intensive word-problem intervention demonstrated superior mathematics learning over females in the business-as-usual comparison, with an ES of 1.39. Males receiving the intervention showed a similar pattern of results, but with an ES of 1.83. Notably, females receiving the intervention significantly outperformed males who received the intervention with an ES of 0.46. With our randomized-control trial, we have determined an efficacious method for providing word-problem intervention to students with MD and females in particular. The use of schemas within word-problem intervention holds important implications for female access to STEM fields, teacher training, curriculum development, and future research for students with or at-risk for disability.

References:
Poster Title: How does attendance affect student achievement in a reading intervention?

Presenter Name(s): Gina Braun, University of Illinois Chicago; Kaitlin Leonard, University of Connecticut
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Brief Abstract:
The purpose of this study was to examine individual students' attendance and how it affected their response to literacy intervention. Participants included 400 elementary students involved state K-3 MTSS intervention which at risk students received small group reading intervention over the course of the school year.

Abstract:
Student achievement is affected by the amount of time students spend in school (Gottfried 2009). While the research on absenteeism exists, and demonstrates positive outcomes for students over time the more they attend school, much of the research on absenteeism looks at students in upper grades, and the data shows that students are likely to be absent in later grades. According to data, when absent in the lower grades, it leads to lower tests scores and challenges throughout school (Romero, 2007). Research is limited on the effects of attendance and specific interventions, specifically in literacy.

The purpose of this study was to examine individual students' attendance and how it affected their response to literacy intervention. Aligning to a treatment integrity framework, we conceptualized attendance as exposure, which refers to if the student was present in school to participate in instruction, and dosage is an indicator of the amount of instruction or intervention an individual student receives. We attempted to quantify exposure as the number of days an individual student participated in Tier 2 literacy intervention and dosage as the number of minutes per week of intervention the student received.

We are in the process of conducting a secondary analysis of an extant data set of elementary schools involved in a state K-3 MTSS initiative (n= approximately 400 students) in which at risk students received Proactive-Early Interventions in Reading over the course of the year in small groups, 4-5 times per week. Reading outcomes included DIBELS and WRMT measures.
**Poster Title:** Language-focused intervention for prekindergarten students in Head Start classrooms

**Presenter Name(s):** Mindy Sittner Bridges, University of Kansas Medical Center  
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**Additional authors/presenters:**

**Brief Abstract:**
This pilot study examined the use of a language-focused intervention with prekindergarten students. Participants showed significant gains in vocabulary following the intervention as compared to peers. Additionally, preservice SLPs implemented the intervention with high fidelity. These preliminary results could have implications for small-group intervention with a Response to Intervention framework.

**Abstract:**
This pilot study examined whether participation in a language-focused intervention affects prekindergarten students’ vocabulary and narrative language skills. Additionally, the fidelity of such intervention as delivered by preservice speech-language pathologists was examined.

**Methods:** Eighteen prekindergarten Head Start students were randomly assigned to intervention or control groups. The intervention groups received the language-focused intervention; control groups received typical Head Start instruction. Participants in the intervention group participated in intervention for one hour, three times a week for four weeks. The intervention was conducted by preservice speech-language pathologists and focused on vocabulary and narration. All students participated in pre- and post-assessments. A researcher-developed vocabulary probe was administered at pre- and post-test. This probe directly assessed students’ knowledge of the vocabulary words targeted during intervention. Students were asked to provide a definition of the target word, with each item scored on a sliding scale depending on the completeness of the answer. The Test of Narrative Language was used to measure the participants’ narrative production and comprehension.

**Results:** There were no significant differences between groups on initial standardized language scores. Mixed ANOVAs were used to investigate whether a language-focused intervention resulted in gains in language skills in the intervention group as compared to the control group. Results indicated significant gains in target vocabulary made by the intervention group as compared to the control group. No significant differences between groups in narrative language gains based on the Test of Narrative Language were noted. Further analyses of more in-depth coding of narrative elements specifically taught in the intervention is ongoing. Results indicated that the intervention program could be implemented with high fidelity within a small group setting. The range of fidelity for our lessons was 82%-100%, with an average of average of 97%.

**Clinical Implications:** The prekindergarten students who participated in language-focused intervention showed significant gains in target vocabulary words as compared to their peers who did not receive the intervention. No significant change was demonstrated on standardized measures of narrative language skills, although future analyses is ongoing. It is possible that the intervention lacked the necessary intensity to afford these changes. More research is warranted with a larger sample size to further investigate the effectiveness of such an intervention with prekindergarten students. This study demonstrates that language-focused intervention can be implemented in small groups with consistently high fidelity. More specifically, interventionists in this study followed procedures with much higher fidelity than several studies similar in design (e.g., Brown, Garzarek, Donegan, 2014; Chan, 2015; Spencer, Kajian, Petersen, & Bylik, 2013; Spencer, Petersen, Slocum, & Allen, 2015). The high fidelity noted in this study suggests that preservice speech-language pathologists and/or speech-language pathologists can effectively provide intervention related to early literacy skills. Thus, this study demonstrates promising implications for small group intervention (RTI framework) and the positive impact speech-language pathologists can have within an RTI framework for vocabulary purposes.
Poster Title: Is Child-to-Parent Reading a Valuable Learning Experience? Parental Feedback to Child Reading Miscues

Presenter Name(s): Jessica Brock, Vanderbilt University; Alison Hessling, Vanderbilt University
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Additional authors/presenters: Shih-Yuan Liang, Vanderbilt University; Melanie Schuele, Vanderbilt University

Brief Abstract:
This investigation assessed parental feedback to child miscues in child-to-parent reading. Sixteen parent-child dyads (first through third grade) read unfamiliar books. Although half of child miscues were ignored, parents most often provided nonmetalinguistic feedback to miscues. Future implications include interventionist-and-parent collaboration to improve the quality of parental feedback.

Abstract:
Introduction: In early reading development, child-reading-to-parent interactions in the home allow parents to provide individualized support children need to decode words and to confirm accuracy. Mothers of below average readers were more likely than mothers of advanced readers to indicate child miscues, make corrections, or ask other questions (Tracey & Young, 2002). We examined the scaffolding parents provide in child-reading-to-parent interactions.

Method: Sixteen parent-child dyads participated in child-to-parent reading in the university lab. Parents were told to read with their child as they normally would at home. Children in first through third grade read (approximately seven minute) excerpts of three books, two supplied by the child’s parent and one supplied by the researchers. The final two books were transcribed and coded, and can be described as follows: 1) an unfamiliar book from home 2) a researcher provided, unfamiliar book determined by grade equivalent scores on the Word Identification subtest of the WRMT-3 and the Flesch-Kincaid Readability grade levels. Recordings were transcribed sentence by sentence and child miscues and parental feedback (verbal and non-verbal) to miscues were coded and analyzed. Parental feedback was characterized across the following categories: 1) no feedback, 2) metalinguistic feedback (graphophonemic, semantic, or contextual), and 3) nonmetalinguistic feedback (redirect attention and word supply).

Results: When reading a book brought from home, 42% of the child miscues received no feedback from parents, 27% were self-corrected, and 31% received at least one form of feedback. The most common types of parental feedback were word supply (M = 47.57, SD = 29.54, range = 0-86%) followed by redirecting attention with pointing or phrases such as 'try again' (M = 39.49, SD = 23.72, range = 0-53%) and graphophonemic cues (M = 9.41, SD = 14.78, range = 0-42%). When asked to read an unfamiliar book provided by the researchers, parents ignored about 41% of the child miscues, 24% were self-corrected, and 35% were followed by parental feedback. Again, word supply outnumbered the other types of feedback (M = 51.93, SD = 29.34, range = 3-100%), followed by redirecting attention (M = 31.34, SD = 19.19, range = 0-57%) and graphophonemic cues (M = 10.28, SD = 15.50, range = 0-42%). Parents’ metalinguistic feedback was mostly restricted to generic graphophonemic cues such as ‘sound it out’, stretching out the word in syllables, or providing a single phoneme or syllable along with pointing.

Discussion: When listening to their child reading, parents used a relatively limited repertoire of strategies to scaffold young readers to correct their reading miscues. Upon hearing a miscue, parents more often made non-metalinguistic responses such as word supply and redirecting attention than drawing child attention to metalinguistic aspects. These lower-level forms of feedback might be sufficient for children who do not struggle to learn to read; nevertheless, this is not an effective model for struggling readers (Ashton, Stoney, & Hannon, 1986). Implications include training to support parents on how to provide quality feedback to help their child integrate alphabetic knowledge with semantic and syntactic textual information.
Poster Title: Teaching algebraic concepts to middle school students with mathematics difficulties

Presenter Name(s): Diane Pedrotty Bryant, University of Texas at Austin, The Meadows Center for Preventing Educational Risk; Brian R. Bryant, University of Texas at Austin, The Meadows Center for Preventing Educational Risk

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Brief Abstract:
This poster presentation centers on a description of intervention components of an intensive intervention to teach middle school students who struggle with mathematics. Findings are presented that focus on the effects of the intervention and the perspectives of the interventionists and students.

Abstract:
The purpose of this poster is to present findings from Year 1 of a Goal 3 IES grant on Project AIM: Algebra-readiness Intervention Modules for Middle School Students with Mathematics Difficulties. Four hundred twenty-five 7th graders who were district identified using the state’s high stakes assessment measure were randomly assigned to a treatment or ‘business as usual’ group in mathematics intervention classes. Mathematics interventionists were trained on how to employ the modules as part of their intensive intervention with students who received instruction at least three days per week within a September to April timeframe. The module lessons were designed to promote the development of conceptual, strategic, and procedural knowledge by including the use of mathematical representations (e.g., number lines, graphs, integer chips) and practices to foster students’ ability to generalize ideas, provide a rationale for those generalizations, and use the generalizations to reason about other topics, which were the basis for algebraic readiness in this project. The intervention components of Project AIM’s modules included lessons, teacher masters with answers for problems in the student booklets, student booklets, materials, and progress monitoring measures. Fidelity data were collected for the treatment only group and for the treatment and comparison groups. Social validity data were collected to determine the teachers’ and students’ perspectives about the instruction and activities. Three types of assessments were conducted: (a) the GMADE (distal measure), (b) easycbm (proximal measure; three forms), and (c) Trying It On Your Own (proximal measure to go with each lesson for the treatment group). The research questions that guided this study included:

1. What are the effects of a rational numbers intervention on the mathematics performance of middle grades students with mathematics difficulties as measured by the easycbm?
2. What are the perspectives of middle grades mathematics interventionists and students of the rational numbers lessons on rational numbers? Preliminary findings suggest that students in the treatment group outperformed students in the comparison group on the easycbm measures but not on the GMADE measure. Also, findings on the TIOYO measures showed that students scored a 3 (out of 4) for the majority of items across the instructional lessons.
Poster Title: The Effects of a State-Implemented Co-Teaching Training on Students’ Mathematics Achievement Scores

Presenter Name(s): Kaitlin Bundock, Utah State University; Kristen Rolf, Utah State University,
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Brief Abstract:
This poster describes a state-implemented Co-Teaching professional development project and analyzes student mathematics achievement data from classrooms participating in the project, as well as comparison non-co-taught general education and special education resource classes. Preliminary results indicate that students with and without disabilities make significant yearly gains in co-taught classes.

Abstract:
Co-teaching is a collaborative instructional model in which a special education teacher and general education teacher work together to educate a classroom of students with diverse abilities. This model of special education service delivery has become increasingly popular over the past fifteen years, yet few studies have evaluated the effects of co-teaching on student achievement outcomes (McDuffie, Mastropieri, & Scruggs, 2009; Murawski, 2006; Murawski & Swanson, 2001). A meta-analysis conducted to evaluate the quantitative student results of co-teaching found only six studies that met eligibility criteria (i.e., provided evidence of implementation of true co-teaching, included effect size data, etc.; Murawski & Swanson, 2001). The overall mean effect size of the six studies indicated that co-teaching may moderately improve student outcomes, but recommended that more studies be conducted to substantiate these results (Murawski & Swanson, 2001). In this poster, we describe a state-implemented co-teaching professional development project (the Co-Teaching Project), and analyze student mathematics achievement data from classrooms participating in the Co-Teaching Project. The Co-Teaching Project, in its fifth year of implementation, aims to create inclusive public schools by providing effective training and ongoing coaching in co-teaching and other inclusive educational strategies, primarily in the area of middle-school mathematics. Co-teaching pairs, consisting of general and special education teachers who will be teaching together in the upcoming school year, receive training in the summer as well as ongoing coaching throughout the school year. Initial evaluations of pre- and post-test mathematics achievement, based on data collected and analyzed by the Co-Teaching Project, indicate that students with and without disabilities in participating co-taught classrooms had significant improvements in test scores during the year their teachers participated in the Co-Teaching Project. While these results are promising, more sophisticated analysis methods are needed to thoroughly analyze and disaggregate student achievement results in relationship to the Co-Teaching Project. In this study, we use Generalized Equation Estimating (GEE) to analyze and compare the mathematics achievement of approximately 1200 sixth-through ninth-grade students with and without disabilities in both co-taught (15 classes) and non-co-taught comparison classrooms (15 special education resource classes, 15 non-co-taught general education classes) to answer the following research questions: (1) Do students with (and without) disabilities achieve at higher rates in co-taught settings versus non-co-taught settings?; (2) Do students with disabilities achieve at comparable rates as students without disabilities in co-taught (and non-co-taught) settings?; (3) To what degree do student factors (other than disability/no-disability) affect the growth rates of students in co-taught and non-co-taught settings? These factors include: (a) Gender, Ethnicity, SES, language status, (b) Grade level, (c) Type of disability, (d) Prior Achievement level. References McDuffie, K.A., Mastropieri, M., & Scruggs, T.E. (2009). Differential effects of peer tutoring in co-taught and non-co-taught classes: Results for content learning and student-teacher interactions.

Poster Title: The effect of silent reading fluency on reading comprehension for third, fourth, fifth grade students using maze test and sense group reading

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Additional authors/presenters: Hyejung Koh, Uiduk University, Dongil Kim, Seoul National University

Brief Abstract:
The purpose of this study is to analyze the effect silent reading fluency on reading comprehension by grade level and reading comprehension achievement level. Multiple regression analysis revealed the relationship two components of silent reading fluency and reading comprehension ability.

Abstract:
Silent reading fluency is the ability to read a text accurately, quickly and silently. More recently, silent reading fluency is important in upper grades of elementary than lower grades because they have to read silently for learning in the class(Prior & Welling, 2001). Silent reading fluency is measured using maze test and reading sense group. The purpose of this study is to analyze the effect silent reading fluency on reading comprehension by grade level and reading comprehension achievement level. Participants included 626 students who were administered Maze, Sense group reading, and the reading comprehension test. Multiple regression analysis revealed the relationship two components of silent reading fluency and reading comprehension ability by grades and achievement levels. As a result, silent reading fluency increases with grades. And sense group reading ability affects on reading comprehension of high achieving students. In order hands, both sense group reading and maze affect on reading comprehension of low achieving students. Also, silent reading fluency affects reading comprehension of both high achieving and low achieving third grade. However, silent reading fluency affects reading comprehension of only low achieving students in fourth and fifth grade. Implication of these results and suggestions for follow-up studies were discussed.
Poster Title: Writing Instruction for Students with Disabilities in Upper Elementary Inclusive Classrooms

Presenter Name(s): Alyson A. Collins, Texas State University Stephen Ciullo, Texas State University,
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Additional authors/presenters: Stephen Ciullo, Texas State University,

Brief Abstract:
This study examined upper elementary teacher writing practices for students with disabilities in inclusive classrooms. Results indicated teachers had knowledge of effective writing practices, yet teachers were less likely to implement these strategies in observed practice. Implications for how teachers adapt writing instruction for students with disabilities will be discussed.

Abstract:
Students with disabilities are less proficient in writing skills when compared to their general education peers (e.g., Graham, Collins, & Rigby-Wills, 2017). Survey research, however, suggests teachers infrequently use instructional adaptations and rarely differentiate their lessons to address the writing difficulties of students with disabilities (e.g., Gilbert & Graham, 2010; Graham, Harris, Bartlett, Popadopoulou, & Santoro, 2016). Consequently, there is concern that the pervasive writing challenges of students with disabilities may be challenging to remediate without teacher use of effective writing practices.

The present study investigated self-reported surveys in concurrence with systematic observations to determine how teachers provided writing instruction to students with disabilities in inclusive classrooms. We aimed to understand teacher instructional practices and adaptations to inform teacher professional development research and improve writing outcomes for students with disabilities. Our three research questions were:

RQ1: How do general education teachers view their ability to utilize effective writing practices with students with disabilities?
RQ2: How frequently do general education teachers report making adaptations for students with disabilities?  
RQ3: How does teacher reported use of effective writing practices compare to observed instruction?

Participants included 30 third-, fourth-, and fifth-grade teachers who provided writing instruction to students with disabilities in inclusive classrooms. Teachers were from six elementary schools located in one public school district in a southwestern state. All teachers completed two surveys through a secure online portal (e.g., Qualtrics, 2017). The first survey, the Teacher Efficacy for Writing Scale (Graham, Harris, Fink, & MacArthur, 2001; Graham et al., 2016), measures self-efficacy to teach writing on a 6-point Likert scale, ranging from strongly disagree to strongly agree. The second survey, the Adaptations for Teaching Writing Scale (Gilbert & Graham, 2010; Graham et al., 2016), measures how often certain adaptations are used for struggling writers on a 7-point Likert scale, ranging from never to daily. Classroom writing instruction was documented at three time points across the school year (fall/winter/spring) using the Writing Instruction Observation Protocol (WIOP; Kotula, Aguilar, & Tivnan, 2014).

Results for Research Question 1 and 2 indicated approximately 64% of teachers believed they knew how to teach writing to students with disabilities, yet 56% reported that students’ success in mastering new skills were rarely a result of their knowledge and expertise. Approximately 80% and 52% of teachers also reported extra encouragement and extra time were the most frequently used adaptations, respectively.

Results for Research Question 3 indicated on average, teachers only adjusted instruction based on perceived student needs in 19% of the observed lessons. This finding is inconsistent when compared to how teachers reported addressing these students’ writing needs. Our study supports and extends the extant literature (e.g., Troia & Graham, 2017) by exploring self-reported survey data in concurrence with classroom observations. Collectively, findings suggest writing lessons in present day inclusive classrooms are not extensively adapted for students with disabilities and effective writing practices are not commonly utilized. Findings provide implications for future research on teacher professional development and writing instruction for students with disabilities with consideration of study limitations.
Poster Title: Curriculum-Based Measurement for Middle School Science: A Comparison of Tools

Presenter Name(s): Sarah Conoyer, Southern Illinois University Edwardsville; Jeremy Ford, Boise State University

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Additional authors/presenters: Erica Lembke, University of Missouri; John Hosp, University of Massachusetts Amherst; Alex Smith, University of Missouri

Brief Abstract:
This poster will discuss a scaled replication study comparing Statement Verification for Science and Vocabulary Matching measures for predicting student performance in middle school science. Additionally, learn how science teachers view CBM for science and the optimal methods to support instructional decision making.

Abstract:
The Next Generation Science Standards (NGSS) indicate science should be accessible to all students (Lee, Miller, & Januszyk, 2014), however many often struggle comprehending the content presented in science classes due to complex vocabulary (Fang, 2006). Therefore, middle schools need adequate tools to screen and monitor student performance in science vocabulary. Curriculum-based measurement (CBM; Hosp, Hosp, & Howell, 2016) may be a potential method for identifying students at risk in science learning. Recently, the development of CBM in science (e.g., Authors, 2014; Espin et al, 2013; Mooney & Lastrapes, 2016) has increased but there is still much to be explored.

This follow-up study examined differences between Vocabulary Matching (VM) and Statement Verification for Science (SV-S) for middle school students with regard to science content knowledge. Four participating schools in the Pacific Northwest agreed to participate with a total of 249 students in grade 7. This study aimed to further investigate if the format of information presented (i.e., SV-S vs. VM) produces differences in alternate-form reliability, validity of scores, or any differences in accuracy of prediction of scores on the state standardized science assessment. Additionally, we also surveyed middle school science teachers about how these measures could be potentially useful for making instructional decisions.

To complete SV-S, students responded to a series of sixty 'true' and 'false' items developed in conjunction with state science standards and the NGSS for 3 min. For VM forms, statements from each SV-S form were translated into two corresponding VM forms. This allowed us to claim the content of SV-S and VM Forms were similar and only the format differed. Forms were counter-balanced across class periods by teacher and across schools. Science teachers were then asked to complete a social validity survey during data collection. All data have been collected and CBM data has been scored and entered into a database. The range for mean correct on VM forms was 13-15 items; for SV-S forms the range was 24 to 26 items. Reliability coefficients were moderate for both tools ($r = .733$ and $.615$ for VM and SV-S, respectively). Additional analysis will be completed following receipt of state standardized science test results available during the fall of 2017.

References:
Poster Title: Bibliometrics and Altmetrics in Special Education

Presenter Name(s): Bryan G. Cook, University of Hawaii; John Wills Lloyd, University of Virginia,
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Brief Abstract:
Bibliometric influence indices play a growing but controversial role in evaluating scholarly publications. We report four bibliometric analyses conducted using special education journals and articles: the relation of five prominent influence indices, ranking special education on a composite influence index, distribution of article citations, and correlates of article altmetric scores.

Abstract:
The importance and influence of scholarly work, as measured through bibliometrics, is increasingly used to evaluate publications; journals; departments, colleges, centers, and universities; and individual scholars (Roemer & Borchardt, 2015). For example, journals are often ranked on their Journal Impact Factor (JIF) scores, which represent the average number of times articles published in the previous two years were cited in the most recent year. Despite JIF’s wide use, the metric has received considerable criticism—both conceptually (e.g., discouraging the publication of high-quality research that is unlikely to be highly cited) and technically (e.g., not considering the source of the citations, using a restricted time frame; Bloch & Walter, 2001). In response, alternative citation-based influence indices have emerged (e.g., h-index, immediacy index). Because the different citation-based indices have been shown to correlate only moderately with one another in other fields, Bradshaw and Brook (2016) recommended using a composite index that averages difference indices. Alternatively, because journal influence indices are typically heavily affected by a few outlying, highly-cited publications (with the majority of articles not being cited), Lariviere et al. (2016) proposed that distributions of article citations be used to represent journal influence more transparently. Finally, altmetrics, which indicate the social media presence of a publication, provide a new alternative for considering the influence of scholarship (Costas, Zahedi, & Wouters, 2015). In this poster, we examine these emerging approaches for estimating the influence of scholarly publications in special education.

Our research questions are:
1. How are popular influence indices for special education journals related to one another?
2. What is the ranking of special education journals using a composite index of journal influence?
3. What are the distributions of citations for publications in special education journals?
4. What are altmetric scores for articles in prominent special education journals, and are altmetric scores related to traditional measures of influence (e.g., citations and downloads)?

To examine our research questions we identified 43 special education journals for which at least four of the five impact indices used by Bradshaw and Brook (2016; i.e., JIF and Immediacy Index from Journal Citation Report, Google Scholar’s H-5 factor, and SCImago Journal Rank and SNIP from Scopus) are available for 2016 (the most recent year available). Correlations among these five influence indices for special education journals ranged from medium (e.g., \( r = .31 \) between Immediacy Index and H-5 factor) to large (e.g., \( r = .81 \) between JIF and SCImago Journal Rank). We calculated a composite influence index based on average standardized scores across these five measures, and ranked special education journals based on the composite index. Preliminary analyses of articles published in 2015 indicate that the modal number of citations is 0 (range=0-27), with right-skewed distributions of citations. Using the same subsample of articles published in 2015, we found medium correlations between article altmetric scores and (a) total citations (\( r = .34 \)) and (b) number of downloads (\( r = .30 \)).
**Poster Title:** School and University RTI Partnership

**Presenter Name(s):** Lysandra Cook, University of Hawaii at Manoa
**Presenter Email:** lhcook@hawaii.edu

**Brief Abstract:**
This case study examined the benefits and challenges of a school and university partnership designed around the school's reading RTI framework. Teacher candidates provided one-on-one systematic and explicit phonics based reading intervention to first grade students identified as being at-risk for reading failure, implemented progress monitoring, and presented data-based recommendations.

**Abstract:**
Research clearly shows that without quality, systematic, explicit, and intensive reading-focused interventions, children at risk for reading difficulties are likely going to be faced with a lifetime of illiteracy (NICHC, 2004). Early identification is the critical first step in preventing ongoing reading difficulties (Good, Simmons, & Smith, 1998). The next step is provision of quality interventions (Scammaca, 2007). Multi-tier levels of support models have been identified but intensification of instruction can be difficult for school already facing budget constraints.

Educator preparation programs are currently facing their own multi-tier system challenges as they must adjust to ensure the graduates are prepared to work within such systems (Ross & Lignugaris-Kraft, 2015). The difficulty meeting this challenge is confounded by substantial research documenting that teacher preparation programs are graduating initial licensure teachers lacking both the knowledge and efficacy in teaching reading, particularly related to phonemic awareness and phonics (Salinger et al., 2010). The joint problems that schools and university face provide an opportunity for partnership and mutual benefit.

This case study examined a school and university partnership designed around the school's reading RTI framework. Teacher candidates provided one-on-one systematic and explicit phonics based reading intervention to first grade students identified as being at-risk for reading failure, implemented progress monitoring, and presented data-based recommendations.

RQ1: What are the perceived benefits and challenges of an intervention field experience for public school stakeholders (teachers and administrators)?
RQ2: What are the perceived benefits and challenges of an intervention field experience for university stakeholders (candidates, supervisors, administrators)?

**Partnership.** An Education Preparation Program in Hawaii partnered with a unique urban elementary school. The Title 1 school serves 168 students in grades K-1. The high-need school identifies 99% of students as receiving free and reduced lunch and 62% of the students as having Limited English Proficiency.

**School personnel.** The school personnel involved in the partnership include the principal, RTI coordinator, and four first-grade teachers. University stakeholders. The university stakeholders involved included the program director (author), the university literacy coach, and four teacher candidates.

The program director is responsible for monitoring university requirements, coordinating with school partners, and training candidates in the reading intervention and DIBELS. The literacy coach is assigned to the school to support the teacher candidates and monitors implementation fidelity across the semester. The teacher candidates were enrolled in their first semester of a four-semester undergraduate dual elementary and special education initial licensure program.

**Data Collection:**
**School level.** Classroom teachers responded to surveys regarding the partnership. The principal and RTI coordinator participated in interviews. DIBELS Next (Good & Kaminski, 2002) Nonsense Word Fluency Correct Letter Sounds (NWF CLS) was the universal screening measure used by the school. The teacher candidates utilized NWF CLS for weekly progress monitoring.

**University level.** Teacher candidates participated in a focus group and provided a written reflection at the end of the semester. The literacy coach participated in an interview.
Poster Title: Self-Questioning Strategy Instruction for Struggling Readers: A Synthesis

Presenter Name(s): Johny Daniel, University of Texas at Austin; Kelly J. Williams, University of Texas at Austin
Presenter Email: johny.daniel@utexas.edu; kellyjwilliams@utexas.edu

Brief Abstract:
This synthesis examines the effects of self-questioning strategy instruction on reading comprehension outcomes for struggling readers in grades K-12 through a systematic review of literature from 1965 to 2015.

Abstract:
Self-questioning is a strategy where students stop regularly while reading and generate questions about a text to help monitor their understanding (Andre & Anderson, 1978). Generating questions while reading text has been positively associated with improved reading comprehension outcomes (Rosenshine et al., 1996). In the past, two syntheses (Rosenshine et al., 1996; Wong, 1985) have examined the effectiveness of self-questioning strategy instruction on students’ reading comprehension outcomes. Of 53 total studies in both syntheses, only 15% (n=8) of studies included school-age students with LD or students identified as below-average/struggling readers and concurrently investigated self-questioning strategy intervention as the independent variable. Of these eight studies, three studies showed significant positive effects on reading comprehension outcomes for treatment group students. Considering the paucity of data on effects of self-questioning strategy instruction for students with reading difficulties, the purpose of this synthesis was to evaluate the effectiveness of self-questioning strategy instruction for this subpopulation of students. This synthesis addressed the following research question: (1) What are the effects of self-questioning strategy instruction on reading comprehension outcomes for struggling readers in grades K-12?

A systematic search of peer-reviewed literature published between 1965 and 2015 was conducted using electronic databases (Education Source, Psych Info, and ERIC), hand search of relevant journals, and ancillary search of included articles. To be eligible for inclusion, studies had to meet the following criteria: (a) participants were identified with LD, dyslexia, or as struggling readers in grades K-12, (b) study designs were randomized control trials, quasi experimental, or single-case, (c) study employed a single component intervention -- self-questioning strategy instruction -- involving student generation of questions while reading text, (d) measurement of at least one reading comprehension outcome, (e) instruction provided in English. Ten studies met criteria for inclusion in the synthesis; eight randomized control trials and two single case design studies. Cohen’s d effect size ranged from -.45 to 4.33 and PND ranged from 51% to 100%. Of the ten studies, five studies evaluated the effectiveness of self-questioning strategy instruction on elementary school students and the remaining five included middle and high school students or both.

In general, the effects of self-questioning strategy instruction on struggling readers’ reading comprehension outcomes were mixed. No clear trends of the effects of self-questioning strategy intervention were associated with participants’ grade-level and type of instruction (explicit or non-explicit instruction). The total number of hours of instruction had a slight impact on reading comprehension outcomes, with medium to large effects for students who received more than two hours of self-questioning strategy instruction. Seventeen total effects were calculated, and of those, only 8 demonstrated significant, positive effects of treatment (ES range .56 to 4.33). Statistical significance may not have been attained in experimental studies due to the relatively small total sample in five of the eight interventions (n<30). Hence, evidence of the effectiveness of self-questioning strategy instruction for students with LD and struggling readers is questionable and future research is warranted, with large sample sizes, to investigate the efficacy of self-questioning strategy instruction for improving struggling readers’ comprehension outcomes.
Poster Title: Audio Sampling of Teacher Behaviors: An Evaluation of Three Methods

Presenter Name(s): Lisa Anne Didion, University of Texas at Austin; Sarah A. Benz, University of Texas at Austin
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Additional authors/presenters: Sarah A. Benz, University of Texas at Austin

Brief Abstract:
The purpose of this study is to determine the most reliable and efficient method of measuring teacher behaviors through audio recordings. The researchers compared three methods of sampling teacher behavior to determine which was most predictive of the frequency or duration of behaviors heard when the entire audio was coded.

Abstract:
Current teacher evaluation methods (i.e., value-added models, portfolios) are costly and timely with inconsistent evidence of their effectiveness (Blanton et al., 2006). Video recordings have been used to evaluate teacher behavior using momentary time sampling and partial interval recording (Harbort et al., 2007). These methods are suited to code audio-recorded instruction. Audio-recorded data have been used for teacher self-reflection (Sutherland & Wehby, 2001) but no investigations use audio for data collection primarily reserved for functional behavior assessments.

The purpose of this study was to determine the most reliable and efficient method of measuring teacher behaviors through audio recordings. We sought to compare three methods of sampling teacher behavior to determine which was most predictive of the frequency or duration of behaviors heard when the entire audio was coded.

Therefore, we address: (1) Which method for sampling teacher behavior is most efficient and reliable for measuring teacher behavior from audio recordings? (2) Are methods more or less predictive depending on behavior type (i.e., continuous or nominal)? Data collection was part of a larger project with the CEEDAR initiative. Twelve pre-service teachers wore audio recording devices to capture their instruction as lead teacher. A total of 44.62 hours of audio was coded. Eleven teacher-behaviors were chosen and coded for their clarity, frequency, and relation to the CEEDAR reform. Behaviors included positive behavior supports (i.e., behavior specific praise) and high-leverage instructional practices (i.e., rephrases main idea in multiple ways). A codebook with comprehensive definitions for each behavior was developed. Audio files for each lesson were segmented into one-minute units. To code the audio in its entirety, a partial interval recording system was used. If a behavior was heard at any time within the unit it was noted with a corresponding code. Within each unit, a behavior was counted once even if it was observed more times within the unit. Multiple behaviors were coded within each unit if observed. If a behavior lasted longer than one-minute, it was coded in all units it was observed. The frequency or duration of each behavior was calculated. Then, three methods of coding were compared to this data and included: (a) the first 20 minutes of an audio file, (b) momentary time sampling where at the end of every five minutes, two minutes of audio were coded, and (c) a random half of the audio file. The results of each method were weighted to equal the length of the entire audio session and then compared to the original partial interval results per participant.

Data collection is ongoing and a multilevel model is being developed. The model will account for the dependency of data and nesting at different levels. The model will be run to examine differences in continuous and nominal data. The findings from this study will add to the growing discussion on efficient and reliable ways to evaluate teacher instruction. Discussion will be focused around: (a) data collection, (b) data analysis, and (c) future uses for these methods.
Poster Title: Motivation Training Enhances Effects of Self-Monitoring of Reading Fluency: Data Mountain's Potential

Presenter Name(s): Lisa A. Didion, University of Texas at Austin; Jessica R. Toste, University of Texas at Austin
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Brief Abstract:
This study evaluated the effectiveness of a self-monitoring program ('Data Mountain') for improving oral reading fluency of third graders with learning difficulties. In this multiple baseline design, six students received two variations of the program: self-monitoring or self-monitoring + motivation training, paired with consistent oral reading fluency practice.

Abstract:
The ability to read proficiently is critical to school success and academic achievement (NRP, 2000; Snow, Burns, & Griffin, 1998). However, according to the most recent report of the National Assessment of Educational Progress (NAEP, 2015), only 36% of fourth grade students are performing at or above proficiency level in reading. One potential avenue for improving reading outcomes and motivation is to target students' psychosocial behavior skills, such as self-monitoring and motivation beliefs training. The current study examined the efficacy of a self-monitoring program ('Data Mountain') paired with motivation training to improve the oral reading fluency of third graders with or at-risk for reading disabilities (RD).

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 reading difficulties (RD). We sought to compare combined programs including self-monitoring and motivation training. We address three primary research questions:

(1) Do third graders with RD demonstrate increased oral reading fluency accuracy when participating in a self-monitoring program?
(2) Does motivation training enhance the self-monitoring program?
(3) Are there any observable increases to reading comprehension performance after receiving the self-monitoring and/or motivation training?

A multiple baseline design was used to examine whether there is a functional relation between the independent variable (i.e., intervention) and the primary dependent variable, oral reading fluency (ORF; number of words read correct and number of errors). Teachers nominated third grade students that demonstrated difficulties in the area of reading. These nominated students were screened by the research team on the TOWRE-2 and were included if they had a total score below the 25th percentile. Six students who met screening criteria participated in the study. Following the baseline phase, we conducted two intervention phases: (a) self-monitoring, and (b) self-monitoring + motivation training. Two students at a time moved from baseline to each intervention phase. The staggered introduction of intervention phases allowed for demonstration of experimental effect within and across data series. Data revealed that all students demonstrated increased levels of ORF with an average increase of 22 words per minute (WPM) when self-monitoring and an average increase of 9 WPM when motivation training was embedded. Increased performance on comprehension measures and decreased errors made were also observed. Findings were translated into between-case standardized mean difference effect sizes (Pustejovsky, 2016). The effect sizes for ORF were .78 when the self-monitoring only phases were compared to baselines and .39 when the motivation training phases were compared to self-monitoring only. These findings provide evidence that self-monitoring supports word reading fluency, accuracy, and comprehension and that motivation training may help to extend the effects of self-monitoring. The Data Mountain program is easy to implement and has numerous adaptation possibilities. The findings from this study will add to the growing discussion on the importance of social-emotional processes in student learning. Discussion will be focused around: (a) research design, (b) effects on the primary (oral reading fluency) and secondary (comprehension) dependent variables, and (c) future directions for adapting Data Mountain.
Poster Title: Study Quality as a Moderator to Treatment Effects for Young Struggling Readers

Presenter Name(s): Rachel Donegan, Vanderbilt University
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Brief Abstract:
For this review, we analyzed reading interventions studies for K-3 students with or at-risk of reading disabilities using methodological quality indicators and examined the relationship between effect size and study quality. Preliminary results indicate quality of research varied widely across indicators. Further analysis is in progress.

Abstract:
Previous meta-analytic research has shown consistent positive outcomes for young students participating in tier 3 type (Wanzek and Vaughn, 2007) and tier 2 type (Wanzek et al., 2016) reading interventions over the past 20 years. However, these analyses have not examined the relationship of quality of research in the included studies and the effect sizes they report. Purpose The purpose of the current study is to synthesize K-3 reading intervention studies from the past 20 years and analyze the quality of the studies. We did so with the following questions in mind: What is the quality of early reading intervention studies completed in the last 20 years? Is there a relationship between the quality of early reading intervention studies and effect sizes these studies report?

Methods: Studies included in this synthesis examined reading interventions for K-3 students with or at-risk for reading disabilities. Reading intervention was defined broadly and could include interventions that targeted phonological awareness, phonics, fluency, spelling, comprehension or multi-component interventions. We coded all included studies for study quality using an adapted version of quality indicators for systematic research reviews (Goldstein, Lackey, & Schneider, 2014) and included indicators measuring design characteristics and internal validity, measurement features, analysis and results, and external validity.

Findings: Updated meta-analyses of reading intervention research conducted in the past 20 years found significant positive effects for tier 2 and tier 3 type interventions with overall mean effect sizes of 0.49 and 0.39 respectively (Wanzek et al., 2016; Wanzek et al., in press). We sought to re-analyze these results to determine the relationship of the quality of these studies and the effects of tier 2 and tier 3 types reading interventions on the outcomes of young students with reading difficulties or disabilities. Preliminary results indicate quality of research varied widely across indicators. Further analysis of the relationship between study quality and effect size is in progress and will be complete by October 2017.

References:
Poster Title: A Comprehensive Review of Paraeducator Training Materials

Presenter Name(s): Sarah N. Douglas, Michigan State University
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Brief Abstract:
Paraeducator training is essential to quality special education services. Yet educators, often lack the knowledge required to select or create materials for paraeducator training. This presentation will provide results from a review of 26 paraeducator training curricula and their alignment to professional standards, legislative requirements, and research recommendations for paraeducators.

Abstract:
Paraeducators have become an essential part of special education services (Ashbaker & Morgan, 2001). Paraeducator supports for students with disabilities have increased drastically over the past 15 years (National Center for Education Statistics, 2007; 2013). Increased use of paraeducators has been attributed to a rise in inclusive practices, increased identification of students with behavior disorders, standards-based reform, parental advocacy, and a shortage of qualified special education teachers (Carter et al., 2009; Giangreco et al., 2002; Giangreco, Suter, & Doyle., 2010). IDEA 2004 stipulates that state education associations ‘must establish and maintain qualifications to ensure that personnel...are appropriately prepared and trained, including...content knowledge and skills to serve children with disabilities’ (20 U.S.C. 1412(a)(14)). Yet, paraeducators often receive no formal training, rather learning on-the-job through interaction with students or instruction from a teacher or other paraeducator (Douglas, Chapin, & Nolan, 2016; Giangreco et al., 2002). Unfortunately, on-the-job instruction relies on informal, localized, individualized approaches to training that are often facilitated by a teacher who may not be prepared to provide effective supervision (Carter et al., 2009; Trautman, 2004). Formal training for paraeducators can be difficult due to time limitations, limited budgets (Douglas et al., 2016; Morgan, Forbush, & Nelson, 2004; Trautman, 2004), and a lack of personnel with ‘expertise to develop or select training programs’ (Morgan et al., 2004, p. 25). Although a variety of paraeducator training materials are available to support paraeducator training (Giangreco, Backus, CichoskiKelly, Sherman, & Mavropoulos, 2003), no systematic review of these materials has been conducted.

This poster presentation provides results from a comprehensive review of paraeducator training curricula. An extensive search of training materials for paraeducators supporting individuals with disabilities published between 2004 and 2016 was conducted. From this search 26 paraeducator training materials were identified and evaluated using a specially designed rubric. The rubric helped identify the key features of the curricula and their alignment to legislative requirements, research recommendations, and professional standards (i.e., Paraeducator Common Core Guidelines). The following research questions were addressed within the review: (a) Do paraeducator training materials align with federal legislation, the CEC Paraeducator Common Core Guidelines, and research recommendations for adult learners?; (b) What are the features of existing paraeducator training materials (e.g., content, time commitment, cost, training resources)?

Overall findings were disappointing for paraeducator training materials. While the majority of materials aligned with federal legislation, few aligned with recommended practices for adult learners and professional standards. Based on the results of the review, three paraeducator training materials emerged as materials that align with federal legislation, professional standards, and research-based adult learning methods. Features of paraeducator training materials are highlighted as well as suggested improvements to future paraeducator training materials. Recommendations for implementation of paraeducator training, limitations, and future research directions are discussed.
Poster Title: A Statewide Survey of Administrators, Teachers, and Paraeducators: Paraeducator Supports for Students with Disabilities

Presenter Name(s): Sarah N. Douglas, Michigan State University
Presenter Email: sdouglas@msu.edu

Brief Abstract:
Paraeducators are an essential part of educational services for children with disabilities. However, challenges exist with the employment, appropriate use, and supervision of paraeducators. A study was conducted to understand the policies and practices of paraeducators across Michigan. Data from a survey of administrators, teachers, and paraeducators in K-6 schools will be presented.

Abstract:
Paraeducators work under the direction of educational professionals across the U.S. (Every Student Succeeds Act, 2015) and have become an essential part of educational services for children with disabilities (Carter, O'Rourke, Sisco & Pelsue, 2008). However, many challenges exist with employment, appropriate use, and supervision of paraeducators. School districts report high paraeducator turnover, often due to low wages and lack of training (Fisher & Pleasants, 2012). Teachers have also reported limited preparation for supervisory duties with paraeducators and challenges with evaluation practices (Douglas et al., 2015). However, despite the important role administrators play in paraeducator supports, little is known about the perspectives of educators such as administrators, teachers, and paraeducators, related to the policies, practices, supervision, and evaluation of paraeducators. Therefore, a study was conducted to answer the following research questions: (a) What state policies exist in Michigan related to paraeducators?; (b) What are the perceptions of administrators, teachers, and paraeducators at elementary levels related to paraeducator hiring, training, supervision, and evaluation?; (c) What benefits and challenges do administrators, teachers, and paraeducators face related to paraeducator supports?; and (d) What recommendations do administrators, teachers, and paraeducators have for state level paraeducator policies? Participants were recruited from across Michigan using a stratified sample of all elementary schools across the state, to accurately represent districts in urban, suburban, town, and rural locations. A total of 170 educators participated in the survey including 69 administrators, 64 teachers, and 37 paraeducators. Participants represented a range of urban, suburban, town, and rural school districts across Michigan. Data will be presented to represent the policies that were identified thru the survey by educators. Additionally, perceptions of different educators will be presented and contrasted by role (administrator, teacher, paraeducator). The benefits and challenges paraeducator supports in elementary settings will also be discussed from the perspective of various educators, and recommendations from educators on new policies and procedures that should be established for paraeducators will be discussed. Overall findings show a strong need to continue research and policy development for paraeducators. Data suggest that educators have varied viewpoints related to paraeducator supports, and face many challenges related to hiring, training, supervision, and evaluation. Furthermore, few policies exist to support paraeducator supports for children with disabilities. Recommendations will be made based on results for changes to state policy and practice. Future research directions will be discussed.
**Poster Title:** Reading Interventions that Use Data-Based Decision Making: A Meta-Analytic Review of the Effects for K-12 Students

**Presenter Name(s):** Marissa J. Filderman, The University of Texas at Austin

**Presenter Email:** Marissa.Filderman@utexas.edu

**Brief Abstract:**
Data-based decision making (DBDM) is recommended practice in intensifying interventions for students with or at-risk for reading disabilities. This meta-analytic review explored interventions that employed DBDM (k = 15) and the effects on reading outcomes for K-12 students. Further, potential moderators of the efficacy of DBDM are investigated.

**Abstract:**
Students with or at-risk for learning disabilities (LD) often struggle with reading (Cortelia & Horowitz, 2014), leading to diminished academic and life outcomes (NJCLD, 2008; Wagner et al., 2005). It is estimated that upward of 50% of students with LD do not respond to available Tier 2 interventions and require more intensive intervention to remediate reading (McMaster et al., 2005). For students with the most persistent reading difficulties, typical methods of intensification such as increasing the duration of sessions or decreasing group size have not proven effective (Wanzek et al., 2013). Research suggests that one of the most effective ways to intensify interventions for these students is to individualize their instruction through use of performance data, or the process of data-based decision making (DBDM; Stecker, et al., 2005). While this approach has been widely recommended and supported by the National Center on Intensive Intervention, there has yet to be a systematic review conducted that explores the efficacy of DBDM in reading in grades K-12. The current meta-analysis investigated interventions that use DBDM with students with or at-risk for reading disabilities (RD) in grades K-12. We pose two research questions: (1) What are the effects of DBDM on students’ reading outcomes?; and (2) What are potential moderators of the efficacy of DBDM? A comprehensive electronic search resulted in 15 studies published between 1975-2017 that met the following criteria: (a) participants were receiving a reading intervention and defined by study authors as struggling; (b) participants were in grades K-12; (c) experimental or quasi-experimental study design; (d) intervention employed DBDM; and (e) at least one measured reading outcome. To fully meet inclusion criteria, the study description had to identify both the type of data source used to make decisions, and the process of how that data was informing instructional decisions. Studies were coded for reported effect sizes using Hedge’s g. Meta-analysis best practice guidelines (Borenstein, et al., 2005) were applied and weighted, random-effects meta-regression models using Hedges et al.’s (2010) corrections. Results with a sample of 1,933 students indicate that DBDM has a positive effect on reading outcomes. Findings include: (a) multiple components are typically used with DBDM, including temporal and content-based instructional adjustments (b) the most common components used are mastery and individualized content, (c) the implementer of the interventions was typically a researcher or individual hired by the researcher, and (d) the slope method and mastery measures were most frequently used for decision making. This meta-analysis provides data to support the overall efficacy of DBDM, as well as moderating variables, in order to better serve students who require more intensive intervention.
Poster Title: Students with Disabilities Considering Postsecondary Education: An Inclusive University-Based Project

Presenter Name(s): Jeremy W. Ford, Boise State University
Presenter Email: jwford@boisestate.edu

Brief Abstract:
With an increasing number of students with disabilities (SWDs) attending college, a need exists for universities to collaborate with state agencies and schools. This presentation will provide an overview of a university-based project designed to support SWDs considering postsecondary education. Results of a study examining changes in self-perception are provided.

Abstract:
The number of students with disabilities (SWDs) pursuing postsecondary education has been notable since the 1980s (Wagner, Newman, Cameto, Garza, & Levine, 2005). However, despite SWDs attending postsecondary education institutions, the transition from high school may make such students feel anxious and overwhelmed (Sandler, 2008). The many benefits of a college education, and the need for carefully considered postsecondary transition planning for SWDs (Connor, 2012), provide a rationale for university involvement in supporting SWDs in pursuing postsecondary education. Postsecondary Rewarding Education is Possible (PREP) Academy is a university-based collaborative partnership between a Pacific Northwest state's Division of Vocational Rehabilitation (VR) and a public research university of the same state. Funding for PREP Academy comes from VR, via the Workforce Innovation and Opportunity Act (WIOA; 2014). Recent scholarship has called for special education and VR professionals to collaborate in meeting WIOA's goal of improving competitive integrated employment opportunities for individuals with disabilities (Stevenson & Fowler, 2016). PREP Academy is an example of such a collaboration. In order to facilitate PREP Academy meeting the needs of SWDs interested in postsecondary education across the state, a pilot study was conducted in the summer of 2017. The purpose of this study was to examine changes in self-perception of attending students. We are interested in learning about the ways in which attending PREP Academy affects students' (a) confidence in their ability to advocate for their postsecondary education needs, (b) confidence in their skills related to obtaining and sustaining employment, and (c) ideas about future careers and career preparation. In order to answer our research questions, students (N = 23) were given pre- and post-surveys to answer our questions related to self-perception. Parents/guardians were also surveyed to obtain their insight (N = 13). In addition, a subset of students and their parents/guardians (N = 3 sets) were interviewed for additional data collection via semi-structured interviews.

Preliminary results found students to report having less confidence in pursuing their postsecondary option of choice, being less sure of their future career plans, and recognizing a need to be better aware of their disability and how to self-advocate after attending PREP Academy. Results from parent/guardian surveys will be analyzed in September. Interviews are completed and will be transcribed in September to be analyzed in October.

References:
Poster Title: Dropout Prevention for Students with Disabilities: A Review of the Correlational Literature

Presenter Name(s): Lindsay Foreman-Murray, Vanderbilt University
Presenter Email: lindsay.r.james@vanderbilt.edu

Brief Abstract:
The study presents the results of a systematic review of the correlational literature related to preventing dropout for students with disabilities (SWD). Major themes in the literature will be highlighted, specifically social-emotional interventions, mentors and relationships, and placement. Implications for future research will be discussed.

Abstract:
The study presents the indications in the literature for areas of focus in preventing dropout for students with disabilities (SWD). The purpose of the review was to determine promising avenues and areas of focus for intervention to support SWD in graduating from high school through a systematic review of the correlational literature addressing this topic. The research questions were as follows: What are the strongest predictors of future dropout for SWD? Secondarily, do these predictors differ by disability category and severity? Does the empirical literature indicate testing of programs that are responsive to these indicators and trends? After screening, 15 papers were included in the review and were coded for quality indicators, features, and key constructs. Data relating to 32,332 students was analyzed across studies. In most cases, students were enrolled in middle or high school at the time research was conducted; in several cases, data collection began when students were enrolled in elementary school and continued until students either graduated or dropped out of school. Three major areas of focus were apparent in the literature: Social-emotional needs, mentoring and relationships, and placement and tracking. The quality of the studies was generally found to be high, with large sample sizes and appropriate statistical analysis. There was little evidence for differences according to disability category, and no strong conclusions could be reached, though differences in placement and tracking by disability category are discussed. The limited recent empirical evidence related to dropout prevention for SWD and in particular students with emotional and behavioral disorders is discussed. Implications for future research are discussed.
Poster Title: Quality of Explanation as an Indicator of Fraction Magnitude Understanding

Presenter Name(s): Lindsay Foreman-Murray, Vanderbilt University; Lynn Fuchs, Vanderbilt University
Presenter Email: lindsay.r.james@vanderbilt.edu; lynn.fuchs@vanderbilt.edu

Brief Abstract:
Student explanations have become an ever-greater part of the mathematical assessment landscape in recent years. We investigated the relation between student accuracy in comparing the magnitude of fractions, the quality of students’ explanations of those comparisons, and the relation between those measures and scores on a criterion test.

Abstract:
Student explanations of their mathematical thinking and conclusions have become an ever-greater part of the assessment landscape in recent years. The purpose of the study was to investigate the relation between student accuracy in comparing the magnitude of fractions and the quality of student explanations of those comparisons for students with or at risk for LD, as well as the relation between those measures and scores on a criterion test. We also considered the contribution of reasoning and language to the prediction. The sample for this study was 71 grade four students, drawn from the at-risk control group of a parent study investigating the relation between explanation quality and comparison accuracy. Broadly, our research questions were: What accounts for the quality of students' explanations? What is the relation between comparison accuracy and explanation quality? Which of these measures best predicts NAEP scores?

To investigate these questions, we ran multiple regression analyses and conducted a complete commonality analysis of the included measures. Results indicated that language and reasoning were equally strong predictors of success on the explanation measure, suggesting that students with language deficits may not be uniquely disadvantaged on explanation measures. We regretted not having a measure specifically targeting mathematical vocabulary, and recommend that future investigations of this question utilize such a measure.

Results indicated a significant, moderate correlation between accuracy and explanation quality. We found that students were more successful in comparing fractions than in discussing magnitude comparisons, and that explanation quality accounts for little variance in NAEP scores beyond what is accounted for by more traditional measures of magnitude understanding, and commonality analyses showed that widely used domain-general assessments accounted for the majority of the predictive power of the model. These results indicate that the use of explanations as an assessment of magnitude add difficulty for students with or at risk for LD without capturing additional nuance regarding mathematical understanding and skill.
Poster Title: Investigating Optimal Ratios of Teacher Demonstrations to Student Practice during Explicit Instruction

Presenter Name(s): Brian Gearin, University of Oregon Christian T. Doabler, University of Texas at Austin
Presenter Email: bgearin@uoregon.edu; cdoabler@austin.utexas.edu
Additional authors/presenters: Ben Clarke, University of Oregon

Brief Abstract:
Explicit mathematics instruction is known to facilitate instructional interactions. This study investigated whether there was an optimal ratio of student practice opportunities to teacher demonstrations during core mathematics instruction. Results suggest that a 3:1 ratio of student practice to teacher demonstrations increased mathematics achievement for kindergarten students with mathematics difficulties.

Abstract:
BACKGROUND: Explicit mathematics instruction can be an effective means for promoting mathematics learning for the full range of learners, including students with mathematics difficulties (MD). One of the features hypothesized to contribute to the efficacy of explicit mathematics programs is the instructional interactions they facilitate between students and teachers around critical mathematics concepts and skills. These interactions primarily consist of (a) teachers' demonstrations of mathematical content, and (b) students' opportunities to practice. In this study, we addressed two questions: (1) Is there an optimal ratio of teacher demonstrations to individual student practice opportunities that maximizes the achievement of students with MD? (2) In the absence of a single optimal ratio, is there a linear relationship within commonly used ratios of teacher demonstrations to student practice that is associated with achievement for students with MD?

METHODS: The data analyzed in this study were collected as part of a federally-funded, randomized controlled trial focused on testing the efficacy of the Early Learning in Mathematics (ELM) program, a core kindergarten curriculum. A total of 129 kindergarten classrooms (N = 2,708 students) participated in the study, of which 68 were randomly assigned to use the ELM core mathematics program (treatment) and 61 were assigned to use standard district mathematics instruction (control). Our primary analysis consisted of a latent difference score model in Raykov's framework. The model measured (a) a latent difference score representing logged individual student response opportunities minus logged teacher demonstrations, and (b) a latent intercept score representing logged teacher demonstrations.

RESULTS: The model fit well (chi-square = 32.98, df = 32, p = .4190, RMSEA = 0.003, CFI = 0.987, TLI = 0.986). The latent logged difference score was correlated -0.42 with latent logged teacher demonstrations. However, in our hypothesized model with a fixed intercept and random slope, the quadratic trend for the latent difference score was close to zero and not significant, suggesting that our model did not describe an optimal ratio. Meanwhile, the linear effects analysis was negative and strongly significant, indicating that a higher number of individual practice opportunities for each teacher demonstration flattened the random slope. The flattening of the slope is evidence of differential achievement, benefiting students with MD.

CONCLUSIONS: Contrary to our hypothesis, we did not find an optimal ratio of teacher demonstrations to individual practice opportunities within our dataset. However, we found evidence that a 1:3 ratio of teacher demonstrations to individual practice opportunities improved mathematics achievement among students with MD. There was also evidence that a 1:3 ratio was significantly and substantially better than 1:1 and 1:2 ratios. Because a 1:3 ratio represented the upper limit of instructional interactions in our dataset, we could not determine whether higher ratios, such as 1:4 or 1:5, would predict stronger mathematics outcomes. In sum, given the importance of a 1:3 ratio for students with MD, teachers may seek to provide this number of practice opportunities for each teacher demonstration during core mathematics instruction.
Poster Title: Investigating Score Reports for Universal Screeners: Do they Facilitate the Intended Uses?

Presenter Name(s): Leanne Ketterlin Geller, Southern Methodist University
Presenter Email: lkgeller@smu.edu

Brief Abstract:
This paper presents findings from a qualitative study designed to examine score reports from universal screeners. We conducted a document analysis to identify common features, determine the degree of alignment with evidence-based report features, and how these features support the intended interpretations and uses of data from universal screeners.

Abstract:
Score reports should be designed to facilitate teachers’ interpretation and use of data from universal screeners. First, score reports should help teachers identify students who may be at-risk for future failure. Second, score reports should help teachers determine the level of intensity of supplemental instruction that is needed. Third, score reports should help teachers monitor performance over time. These decisions should be made quickly and efficiently. The literature on score reports suggests a variety of best practices. Score reports are most effective when tailored to the audience they intend to serve (Goodman & Hambleton, 2004). A variety of score representations (graphical and textual) supports intended interpretation of students’ strengths and areas for growth (Zenisky & Hambleton, 2012). Reducing the chances for misinterpretation is essential. Reports must explicitly state the purpose of the assessment, identify its limitations, as well as clarify how to use the report. Measurement error, the use of statistical jargon, and sub-score reporting can all contribute to misinterpretation. Measurement error is important, but challenging to interpret. An effective score report includes visuals and text to explain the measurement error. We examine score reports from commercially available universal screeners to answer the following research questions:

1. What features are present in score reports for universal screeners? Which features align with evidence-based features identified in the research?  
2. How might these features support teachers’ use of results from universal screeners?

Score reports from elementary mathematics universal screeners were examined. The sample of universal screeners was selected from those submitting evidence to the National Center on Response to Intervention Tools Chart. Reports were obtained from the vendors’ websites. Only the teacher-level reports depicting class-level summary data were examined. Score reports were coded by two independent raters. First, a dichotomous rating was applied that indicated the presence (1) or absence (0) of the evidence-based feature. Second, for each feature that was identified, a 4-point scale was used to indicate the degree to which the score report aligned with the evidence-based feature. Preliminary results indicate that a wide variety of features that do and do not correspond with evidence-based features are present on universal screener score reports. For those that correspond, the degree of alignment varies across reports. For example, most score reports include graphical representations of the results along with textual descriptions, but the text may not be easily interpreted. Similarly, most score reports classified students into tiers of instructional support to facilitate teachers’ decision making; however, few reports included a graphical or textual description of measurement error.

References:
Poster Title: Improving Reading Comprehension Outcomes for Students with Learning Disabilities: A Meta-Analysis

Presenter Name(s): Samantha A. Gesel, Vanderbilt University; Anne C. Sinclair, Vanderbilt University
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Additional authors/presenters: Lauren M. LeJeune, Vanderbilt University; Chris Lemons, Vanderbilt University

Brief Abstract:
Students with learning disabilities (LD) tend to struggle with reading comprehension (Mastropieri, Scruggs, & Graetz, 2003). This presentation reports the results of an update to Berkeley, Scruggs, and Mastropieri's (2010) meta-analysis of the effect of reading interventions on comprehension measures for students with learning disabilities.

Abstract:
NCES reports that only 12% of fourth graders with disabilities meet or exceed proficiency (2015). Students with learning disabilities (LD) often struggle in earlier reading skills (Jenkins, Fuchs, van den Broek, Espin, & Deno, 2003) and reading comprehension (Mastropieri, Scruggs, & Graetz, 2003). Berkeley, Scruggs, and Mastropieri (2010) conducted a meta-analysis of reading interventions (published 1995-2006) designed to improve reading comprehension for students with LD. Overall Berkeley et al. (2010) calculated moderate effect sizes (0.69 for researcher-created measures; 0.52 for standardized) and concluded that effective instruction for students with LD explicitly teaches strategies to actively and efficiently process texts.

Purpose and Research Questions: The purpose of this meta-analysis is to update the results of Berkeley et al. (2010). The following research questions guided our analysis:
1. For students with RD/LD in grades K through 12, what is the effect of reading strategy interventions on reading comprehension outcomes?
2. Are these effects moderated by (a) publication status, (b) study quality, (c) type of comprehension measure, (d) implementer, (e) instructional context, and (f) student characteristics?
3. How do the obtained effect sizes compare to the results in Berkeley et al. (2010)?

Research Methods: We conducted a systematic literature search to screen and identify published and unpublished studies meeting the following inclusion criteria:
1. Written in English
2. Dated 2006 to 2017
3. Randomized control trial, quasi-experimental, or single case design
4. K-12 participants with RD or LD
5. Intervention targeting reading strategies
6. Reading comprehension measure
We screened 5,844 records at the title, abstract, and full text level to determine study eligibility. We randomly selected 25% of the records to double screen during title and abstract screening as a measure of inter-rater reliability. We double screened all records during full text screening (n=525) and calculated agreement by criterion. In all, 54 studies met all criteria for this meta-analysis. This presentation will discuss the meta-analytic results for the 39 group design studies. We coded all group design studies across 5 categories: Design and General Info, Participants, Treatment Conditions, Measures and Results, and Analysis and Quality.

Findings: We will complete our analyses in January 2017. Preliminary results indicate variability in participants, intervention, interventionist, and measures across studies. This presentation will discuss findings and implications for research and practice.

References:
**Poster Title:** Teaching Students with Disabilities and General Education and Special Education Teacher Turnover

**Presenter Name(s):** Allison F. Gilmour, Temple University

**Presenter Email:** allison.gilmour@temple.edu

**Brief Abstract:**
I examined if teaching SWDs was associated with general education and special education teacher turnover. The percentage of SWDs in teachers' classes was associated with an increase in turnover. Special education certification completely moderated this association. Teaching students with behavior disorders increased the odds of turnover for all teachers.

**Abstract:**
Teacher turnover, defined as when a teacher leaves teaching or moves from one school to another, is a significant problem in education because of the detrimental effects of turnover on schools and students (Billingsley, 2004; Boe, 2006; Clotfelter, Ladd, Vigdor, & Wheeler, 2006; Feng & Sass, 2017; Ingersoll, 2001; Mason-Williams, Bettini, & Gagnon, 2017; McLeskey, Tyler, & Flippin, 2004; Milanowski & Odden, 2007; Ronfeldt, Loeb, & Wyckoff, 2013). Turnover is particularly problematic in special education (Ingersoll, 2001; Kelly, 2004). The purpose of this study was to examine the association between teaching SWDs and turnover, for all types of teachers, and to examine how this association varied between general education teachers and special education teachers. Many SWDs in the United States are educated in general education settings for the majority of their time at school (McLeskey, Landers, Williamson, & Hoppey, 2012) and general education teachers are increasingly taking on responsibility for educating SWDs (Dewey et al., 2017). Despite evidence that suggests when teachers work with more challenging students, without sufficient supports, they have higher probabilities of turnover (Boyd et al., 2008; Feng, 2009; Hanushek et al., 2004; Loeb, Darling-Hammond, & Luczak, 2005), researchers have not quantitatively examined if the inclusion of SWDs impacts career decisions for general education and special education teachers.

Using a state level administrative dataset including 127,581 teachers over multiple years, I asked three research questions. First, was there an association between the average percentage of SWDs in teachers' classes and turnover, after controlling for teacher, classroom, and school characteristics? Second, what was the association between the average percentage of students with specific disabilities in teachers' classes and turnover after controlling for teacher, classroom, and school characteristics? Third, were these associations moderated by special education certification? I systematically built up multilevel logistic regression models to address these questions.

After adding control variables, a one percentage point change in the percentage of SWDs in a teachers' classes was associated with a .001 logit change in turnover. Special education certification completely moderated the association between the percentage of SWDs in teachers' classes. When special education certified teachers taught more SWDs, their odds of turnover decreased. A one percentage point change in the percentage of students with behavior disorders in teachers' class was associated with a .01 logit change in turnover. This translates to a 160% increase in the predicted probability of turnover for a teacher with a class entirely of students with behavior disorders compared to a teacher without any students with behavior disorders in her class. Certification did not moderate the association between teaching students with behavior disorders and turnover. In all models, special education teachers had consistently higher odds of turnover after accounting for the percentage of SWDs in their classes. This suggests that for special education teachers other job requirements are more predictive of turnover than the students that they teach. I discuss the implications of these findings for general education teachers who have SWDs in their classes and designing interventions to decrease special education teacher turnover.
Poster Title: Pathways of Progress to Success on CCSS-Aligned Statewide Tests

Presenter Name(s): Roland Good, Dynamic Measurement Group Kelly Powell-Smith, Dynamic Measurement Group

Presenter Email: rhgood@dibels.org; kpowellsmith@dibels.org

Additional authors/presenters: Mary Abbott, Dynamic Measurement Group

Brief Abstract:
Progress monitoring decisions are a critical part of Response-to-Intervention models. This poster examines the contribution of Pathways of Progress based on student growth percentiles to outcomes on two CCSS-aligned statewide tests. The impact of initial skills and student progress are discussed with respect to practice and future directions for research.

Abstract:
Background, Purpose, and Research Questions: The Common Core State Standards (CCSS) initiative's goal is to establish consistent educational standards and ensure students graduate from high school prepared to enter college programs or the workforce with the skills required to be successful. Many states self-selected into one of two consortia for the purposes of assessing student performance on the CCSS (e.g., Smarter Balanced Assessment Consortium (SBAC)). Others used sections of consortia tests in their own CCSS-aligned assessment (e.g., SBAC ELA in the Oregon Assessment of Knowledge and Skills, OAKS); others had their own test developed (e.g., Arizona's Measurement of Educational Readiness to Inform Teaching; AzMERIT).

DIBELS Next® is widely-used in elementary schools for screening and progress monitoring decisions, which are a critical part of Response-to-Intervention. DIBELS Next Pathways of ProgressTM offers a means of indexing student progress useful for evaluating the effectiveness of instruction, establishing meaningful, attainable, and ambitious goals, and providing feedback about progress. Previous research indicates that the probability of achieving the DIBELS Composite Score (DCS) benchmark is progressively higher for students achieving higher Pathways and that Pathways explains an additional 5% to 35% of variance in spring DCS outcomes (Good, Powell-Smith, & Dewey, 2016).

In this study, we examine the probability associated with different Pathways of Progress in achieving future outcomes given beginning-of-year DCS along with examining the amount of additional variance accounted for by Pathways over and above initial skills when predicting CCSS-aligned test outcomes. Participants Participants include 1900 students in grades 3-5 from one school district in Oregon and 1259 students in grades 3-4 from one school district in Arizona. Measures Measures included the DIBELS Next Composite Score (DCS) (see Good, Kaminski, Dewey, Wallin, Powell-Smith, & Latimer, 2013) and the SBAC and AzMERIT English Language Arts (ELA) scores.

Data Analysis: The independent variables were (a) the student’s level of initial skill represented by the DCS at the beginning of the year, and (b) an indicator variable for the student’s individual Pathway of Progress over the course of the year. The dependent variables were the spring (a) AzMERIT and (b) SBAC ELA scores. We evaluated the difference in the probability of meeting the SBAC or AzMERIT ELA Achievement Standard between each Pathway using logistic regression. The proportion of variance in the outcome (e.g., spring SBAC or AzMERIT ELA Score) that was explained by the student’s beginning of year benchmark status and their end of year Pathway of Progress was calculated from a series of multiple regression models at each grade level. The amount of additional variance explained by Pathways being added to the model beyond that explained by initial DCS alone was examined.

Results and Discussion: Preliminary results indicate that there is an strong association between DIBELS Next and statewide ELA outcomes. Knowing the association between DIBELS Next Pathways of Progress and performance on statewide CCSS-aligned outcome assessments will assist schools using DIBELS Next to identify and provide instructional support to students at-risk of falling below the statewide assessment standards.
Poster Title: Intelligent Math Tutors in Early Childhood: A Systematic Synthesis of Literature

Presenter Name(s): Rene Grimes, University of Texas at Austin; Diane P. Bryant, University of Texas at Austin
Presenter Email: renegrimes@utexas.edu; dpbryant@austin.utexas.edu

Brief Abstract: Intelligent tutoring systems (ITS) include dynamic instruction and assessment and are potentially useful for response to intervention. Though recent ITS meta-analyses have shown mixed results, none of these included ITS mathematic programs for grades PK-1. This systematic review reports findings from representing ITS mathematic programs for grades PK-1.

Abstract: Fuchs and Fuchs have suggested using a simpler two-tier response to intervention framework: embedded RTI (2017). Core to this framework is a nested level of support in the general education classroom, incorporating strong core curriculum, supplemental resources, differentiated instruction based on individual students’ needs, and continuous assessment of student growth (2017). Intelligent tutoring systems (ITS) offer a viable resource to include in an embedded RTI framework. ITS are distinctly different from other forms of computer assisted instruction (CAI) in that they combine continuously adaptive individualized instruction, feedback and assessment (Shute, 2011).

Conceptually, ITS are sophisticated electronic versions of data based instruction, offering the possibility of providing on and off grade-level specific skill instruction and assessment. Because of the individual adaptive nature of ITS, these programs can be used as core instruction, as interventions to remediate missing skills (and potentially reduce the numbers of students over-identified for intervention), and as instructional enrichment for students who have already mastered grade level content. Recent meta-analyses and reviews of ITS have found sometimes conflicting results. Comparing the effectiveness of human tutoring to ITS, VanLehn (2011) found that human tutors were highly effective, but that ITS were only slightly less effective than human tutors. Steenbergen-Hu and Cooper (2013) analyzed mathematics ITS for grades K-12 and found only a small to moderate effect; and suggested that ITS programs may be less effective for struggling learners.

On the other hand, Ma et al. (2014) found significant effects regardless of academic content or grade level. Kulik and Fletcher (2016) found ITS instruction to be significantly more effective than regular classroom instruction, human tutors, and other forms of CAI, regardless of age level or content. Both Ma et al. (2014) and Kulik and Fletcher (2016) suggested that conflicting results can be attributed to inclusion criteria and strength of research design.

None of the above analyses contained experimental or quasi-experimental studies of mathematics ITS for grades PK-1. Yet, the need for early instruction and intervention for this age group is clear as some students exhibiting patterns of mathematical learning difficulties in kindergarten continue to show substantially lower rates of growth throughout the entirety of their elementary education (Morgan, Farkas, Hillemeier, & Maczuga, 2016; Morgan, Farkas & Wu, 2009). Morgan et al. (2009) argued additional assistance must be provided before the end of kindergarten and Chinn (2016) claimed that preschool is time to begin intervention. Whether ITS systems for this age range and content exist, were excluded from previous analyses based on inclusion criteria, or simply have not been researched is an open question.

Therefore, a systematic search was warranted. A total of eight studies, representing four different ITS, were located and a systematic analysis of effectiveness, specific numeracy skills designed into the content of the ITS, and evaluation of the overall methodological quality of each study is reported in this synthesis. Implications for future research, benefits and limitations of ITS use as an embedded RTI resource within PK-1st grade classrooms, is also discussed.
Poster Title: The Development of Reading Tutors' Interpretation of CBM Progress Monitoring Data

Presenter Name(s): Stephanie M. Hammerschmidt-Snidarich, ServeMinnesota, Center for Applied Educational Research and Improvement (CAREI), University of Minnesota; Dana L. Wagner, Minnesota State University, Mankato
Presenter Email: snida@umn.edu; dana.wagner@mnsu.edu

Brief Abstract:
A think aloud procedure was used to explore reading tutors' development of CBM progress monitoring graph interpretation skills at two points in time. Results indicated that tutors were highly accurate overall, and there were significant increases in the number of words expressed, completeness, coherence, and specificity when describing the graphs.

Abstract:
The interpretation and use of progress monitoring data for data-based decision-making is an essential skill for special education teachers and other educational practitioners who serve within the school system. Students with diverse needs rely on effective, individualized instruction to progress at desired rates. It is therefore important to overcome barriers to the effective use of progress monitoring data, including inaccuracies in understanding, interpreting, and using graphed CBM progress monitoring data by teachers and other practitioners. This poster presents the results of research that used a think aloud procedure to explore reading tutors' development of CBM progress monitoring graph interpretation skills at two points in time. Verbal reports such as think alouds can be considered as data (Ericsson & Simon, 1980), and have been used in multiple studies to elicit information about teachers' judgments, plans, and decisions (see review by Shavelson, 1983). The research question that guided the study was: What are the effects of training, a year of implementing tier 2 reading interventions, involvement in DBDM, and coaching on tutors' CBM graph interpretation skills?

The 32 individuals who participated in the study completed the think aloud task before and after receiving training and support for CBM progress monitoring and data-based decision-making during a year of volunteer service as a reading tutor. During their service year, tutors implemented evidence-based reading interventions daily with a caseload of 12-22 students. Tutors also administered weekly CBM progress monitoring probes, seasonal benchmark assessments, and participated in monthly data review meetings with support from a literacy coach at the school site and a literacy coach from the volunteer organization. During the meetings, tutors were actively involved in the process of evaluating individual student progress (including CBM graphs), and deciding whether to continue or change the current intervention, or exit the student from intervention services. Results indicate that, overall, tutor think alouds were highly accurate. In addition, there was a significant pre- to post-test increase in the number of words tutors expressed during their think alouds, as well as a significant increase in tutors' completeness, coherence, and specificity when describing the graphs. This study extends previous research on teacher candidates' CBM graph interpretation at two points in time (Wagner, Hammerschmidt-Snidarich, Espin, Seifert, & McMaster, 2017). Study results may help to inform contexts and strategies that can support the development of CBM progress monitoring graph interpretation skills and suggest directions for future research in this area.

References:
**Poster Title:** Spoken fictional narrative and literacy skills of children with Down syndrome

**Presenter Name(s):** Alison Hessling, Vanderbilt University  
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**Brief Abstract:**  
Spoken fictional narrative retells were examined for fifteen, 8- to 18-year old children with Down syndrome (DS). Macrostructure was the only variable that explained unique variance to reading comprehension, whereas narrative microstructure and macrostructure explained unique variance to word-level reading. Strong correlations were found between narrative skills and literacy skills.

**Abstract:**  
Children with Down syndrome (DS) exhibit below average nonverbal intelligence and impaired language skills; however, their spoken narrative production is a relative strength (e.g., Chapman & Hesketh, 2000; Finestack, Palmer, & Abbeduto, 2012; Miles & Chapman, 2002). We examined spoken fictional narrative retells and examined how they contribute to literacy skills of children with DS. Fifteen, 8- to 18-year old children with Down syndrome produced spoken fictional narratives following a clinician model using the wordless picture book Frog Goes to Dinner (Mayer, 1969). Spoken fictional narratives following a modeled story were analyzed. Receptive vocabulary, word-level reading, and reading comprehension also were measured. Children with DS produced limited syntactic (MLU-M: M = 6.59, SD = 2.50) and semantic diversity (NDW: M = 54.53, SD = 24.17). Further analyses of sentence complexity using the Narrative Assessment Protocol (NAP; Justice, Bowles, Pence & Gosse, 2010) revealed that the spoken narratives of children with DS rarely contained compound or complex sentences; however, prepositional phrases were frequently used to elaborate utterances. In addition, NAP analysis revealed that participants used verbs more often than nouns and modifiers. At the macrostructure level, children with DS included many essential story grammar components (e.g., main characters, conflict/resolution pairings) but did not provide sufficient detail (e.g., modifiers, elaborated noun phrases) about these elements. 

Results reflect mastery over concrete ideas presented in picture books but a diminished ability to produce abstract concepts such as characters' thoughts or emotions. A series of regression analyses were completed to investigate whether narrative performance was related to word-level reading and reading comprehension. Macrostructure was the only variable that contributed unique variance to reading comprehension after controlling for word level reading and receptive vocabulary, F(1,11) = 5.79, p = .035. We then considered that word level reading, instead of reading comprehension, may be more sensitive to the variability in language and literacy skills among the participants in this study. After controlling for receptive vocabulary, all four narrative measures (MLU-M, NDW, NAP, NSS) contributed unique variance to word level reading. Additionally, strong correlations (range: r = .63-.97) were found between narrative microstructure and macrostructure skills and literacy skills. The majority of research on literacy skills of children with Down syndrome has focused on identifying how receptive language skills and not expressive language skills are related to reading. We found that expressive language skills, specifically spoken narrative skills, are related to word-level reading and reading comprehension for children with Down syndrome. Narrative analysis using the Narrative Assessment Protocol provided detail analysis, beyond MLU and NDW, of the sentence structure of spoken narrative retells. Findings from this study support the use of narrative microstructure and macrostructure analyses as a valuable tool for educators to guide assessment and intervention planning for school-aged children with DS. Knowing information about a child’s narrative skills provides information not only about their expressive language skills, but also about literacy skills.
Poster Title: Transition Programs and their Effects on Transition-Related Outcomes for Students with High-Incidence Disabilities

Presenter Name(s): Lexy House, The University of Texas at Austin
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Brief Abstract:
Although transition planning is a critical aspect of educational success for students with disabilities, few studies have focused on programs that support transition for students with high-incidence disabilities (HID). This systematic review included 11 studies of transition programs for 2,412 students with HID. Findings focus on the types of transition programs provided, alignment with best practice guidelines, and students' transition-related outcomes.

Abstract:
Transition refers to the period wherein students leave schools and move into other settings (e.g., independent living, employment, college). For students with disabilities, this post-secondary transition is often challenging (Lindsay, Hartman, & Felling, 2015). There is substantial evidence that students with disabilities experience poorer outcomes (e.g., academic, economic, social) than individuals without disabilities (Blackorby & Wagner, 1996; Wagner et al., 2005) and this creates a critical need to establish strong supports during their K-12 education. While research has been conducted that examines the efficacy of transition programs for students with disabilities, there is a dearth of research related to supports for students with high-incidence disabilities (HID). As such, the present study sought to conduct a systematic review of the outcomes of students with HID when participating in transition programs/services. We address the following two research questions: (a) What are the effects of transition programs/services on transition-related outcomes (e.g., goal attainment, employment, college planning) for middle and high school students with HID?; and (b) To what degree do transition programs/services for students with HID align with the theoretically and empirically supported transition intervention framework (Kohler & Field, 2003)? A search of peer-reviewed studies published between 2004 and 2017 was conducted with electronic databases and hard searches. Studies were determined to be eligible for inclusion if they met the following criteria: (a) participants were middle or high school students (grades 6-12) identified with HID (e.g., LD, E/BD, MID); (b) transition intervention, program, or services were being implemented; (c) at least one transition-related outcome was measured; and (d) studies was published in English and took place in the U.S. Eleven studies met criteria for inclusion in the synthesis. When examining reported participants (n = 2,412), the majority were male and in high school. Many of the studies involved programs focusing on self-determination, and self-development where the main-focus was either on life skills or employment skills. Several programs available were individualized to meet the student’s needs, meaning the services involved employment and/or education. Of the 11 described programs, 8 included educational components (e.g., GED services, diploma, post-secondary services), 6 included employment components (e.g., job seeking skills, employment readiness assessment, services available), and 2 involved student self-advocacy in developing their own IEP goals.
Poster Title: Assessing Middle School Mathematics Vocabulary: Findings from an Exploratory Study

Presenter Name(s): Elizabeth M. Hughes, The Pennsylvania State University; Sarah Powell, The University of Texas at Austin
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Additional authors/presenters: Jooyoung Lee, The Pennsylvania State University

Brief Abstract:
Middle school mathematics textbooks include over 600 mathematics vocabulary terms (e.g., coefficient), which students are required to know in order to read textbooks or answer assessment items. This study evaluated a vocabulary assessment of 7th grade mathematics terms for reliability, validity, constructs, and student performance.

Abstract:
Purpose: Solving mathematics problems presented with a combination of numbers, representations, and words is critical to demonstrating mathematics competence in the middle-school grades. Understanding mathematics vocabulary may contribute to conceptual thinking about mathematics (Dunston & Tyminski, 2013). This is especially important as mathematical concepts grow in complexity and the demands for mathematical language increases. For example, Powell and Nelson (2017) determined that students are expected to master 105 new mathematics vocabulary in first grade and over 325 in fifth grade (Powell, Driver, Roberts, & Fall, 2017). Middle-school mathematics textbooks include over 600 mathematics vocabulary terms (e.g., hypotenuse, quotient, coefficient) which students are required to know in order to read textbooks or answer assessment items. Several researchers have theorized possibilities that explain the relationship between vocabulary and reading comprehension, including the direct impact of vocabulary on comprehension, understanding vocabulary within a larger structure of content, ability to retrieve words, automaticity of word meaning, and exposure to vocabulary in text (Wright & Cervetti, 2016). While there is widespread understanding that teaching and learning vocabulary is important for comprehension; however, the sheer number of mathematics-vocabulary terms that students are required to know make it challenging for educators to target essential vocabulary for instruction and assessment. The aim of this research is to develop and evaluate a researcher-created vocabulary assessment of middle-school mathematics vocabulary with classroom utility.

Research Questions:
(1) Which mathematics-vocabulary terms are most prevalent in the middle-school grades?
(2) What subsets of items measure technical, subtechnical, general, and symbolic mathematics vocabulary?
(3) What are the psychometrics of a researcher-created mathematics vocabulary assessment?
(4) What words are most challenging for students?

Participants: In all, 477 students in grades 7 and 8 across three states completed the assessment.

General Research Method: To address the research questions, the researchers developed a list of all terms included in three widely adopted textbooks and the CCSS-M. The researchers then surveyed in-service middle-school mathematics teachers to identify the 50 ‘most important words’ middle-school students need to know. We created a multiple-choice test that included 69 vocabulary terms. The researchers ran an exploratory factor analysis (EFA) to determine fit of each word and underlying constructs and a confirmatory analysis (CFA) to confirm the convergent and discriminant validity. Descriptive data share the words that were most often missed and most often correct. Additionally, a series of ANOVAs were conducted to compare performance (e.g., grade, gender, disability).

Findings: In this exploratory study, an EFA yielded 53 terms loading to one factor, with coefficients less than 0.30 being suppressed. Overall, the mathematics-vocabulary test was reliable, with Cronbach’s alpha at .92. A CFA across four factors loaded terms across anticipated constructs, prompting post hoc evaluations to explore underlying constructs. Accuracy ranged across students, with significant differences between grades. With only 10% of students selecting the correct answer, coefficient was most frequently missed; followed by X-intercept, rate, and factor. The words with the correct answer most frequently selected include: variable, perimeter, median, and Y-axis.
**Poster Title:** A Systematic Analysis of Experimental Studies Targeting Fractions for Students with Mathematics Difficulties

**Presenter Name(s):** Jiwon Hwang, California State University Bakersfield; Paul J. Riccomini, The Pennsylvania State University

**Presenter Email:** jhwangpsu@gmail.com; pjr146@psu.edu

**Brief Abstract:**
The current study conducted a quantitative synthesis to investigate overall efficacy of fraction intervention when compared to standard instruction. This study provides a diagnostic view of the current state of U.S. mathematics education on fractions and insights for future directions in fraction instruction, particularly focusing on students with mathematics difficulties.

**Abstract:**
Developing an understanding of fraction is one of the biggest challenges but plays a predominant role in learning mathematics. Despite its crucial role, fraction is a notoriously difficult area for students especially those who have mathematics difficulties, which have been continuously addressed by previous research. Therefore, we aim to identify whether students received appropriate educational benefits by analyzing the efficacy of fraction intervention when compared to standard instruction for students who severely struggle in mathematics including those with disabilities. This study provides a diagnostic view of the current state of U.S. mathematics education in the area of fractions and insights for future directions about fraction instruction, particularly focusing on students with disabilities. The following research questions guided this study: (1) Do ESs in fraction instructions vary across levels of each of four grouping variables (instruction type, achievement group, grade, measurement type) in each of the five domains of dependent measures in fraction achievement (conceptual understanding, procedural skills, word problems, contextualized problems, mixture)?; (2) Are ESs of fraction intervention greater than standard/typical instruction in each of the five domains of dependent measures in fraction achievement?; (3) How do the ES differences between fraction interventions and standard/typical instruction relate to students with mathematical difficulties including those with disabilities, grade levels, and measurement types? We conducted a quantitative synthesis of 22 experimental studies involving fraction interventions for school-aged students from elementary to high schools. A sample size used was 8,313 and achievement level of students varied from talented to severely struggled mostly diagnosed with disability. We employed a multifactor analysis of variance model for ESs separately for each dependent measure to examine variability in ESs for each dependent measure as a function of four grouping variables that we hypothesized as moderators; and Hedge's g was calculated for ES. The results indicated that instruction type was a significant moderator in three domains (conceptual, procedural, and contextualized problem). Particularly, video instruction, sequential multiple representation, and standard/typical instructions were significantly effective. In addition, fraction intervention yielded significant improvement in only two problem-solving related domains (word problem and contextualized problem) when compared to standard/typical instruction; whereas mean ESs for standard/typical instruction were greater than intervention in the conceptual and procedural domains. Given that intervention should be designed to target students' areas of difficulties that standard instruction has a limited ability to control, it is unlikely the specific components included in the interventions were effective, and, even more, standard/typical instruction without special components were more effective in three domains. Moreover, more students in the low-achievement group responded to instruction with a greater improvement than students with disabilities, which further reiterates the need for specially designed instruction that accounts for the specific instructional needs of students with disabilities. Our findings imply that interventions were not successful in addressing students' instructional needs and possibly had no significant influence on growth in students' fraction achievement. Clearly, more work is needed in this area to develop more effective interventions with specially designed instruction to address the conceptual and procedural knowledge of fractions.
Poster Title: A Validation Study of Observer Rating Scale of CISA-2

Presenter Name(s): Jiyung Hwang, Seoul National University; Dongil Kim, Seoul National University,
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Additional authors/presenters: Hyeyun Gladys Shin, Seoul National University; Seyoung Jang, Seoul National University

Brief Abstract:
CISA-2 (Community Integration Skills Assessment-2) is an adaptive behavior assessment tool designed to inspect the level of adaptability in children. The purpose of this study was to develop Observer Rating Scale of CISA-2 and to examine the validity of the Scale. Constructive validity of the Scale.

Abstract:
CISA-2 (Community Integration Skills Assessment-2) is an adaptive behavior assessment tool designed to inspect the level of adaptability in children. With the underlying notion that an individual’s adaptive behavior is often regulated by the expectations or standards set by others, it is necessary and meaningful for the assessor to observe and identify the process of the subjects’ actual behavioral performance. Therefore, the purpose of this study was to develop Observer Rating Scale of CISA-2 and to examine the validity of the Scale. The following research questions guided this study. First, developing an Observer Rating Scale which allows assessor to obtain specific information on current performance level by describing behavior in categorical levels. Second, verifying the constructive validity of Observer Rating Scale. Third, verifying the discriminant validity by analyzing the accuracy of discriminant level from the result of Observer Rating Scale. 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. Observer Rating Scale of CISA-2 was developed upon selecting 46 representative question items from the sub-area of CISA-2. Then, confirmatory factor analysis was utilized in order to examine the constructive validity of the Scale. The results indicate that Observer Rating Scale confirmed high constructive validity with the adequate model fit (CFI = .975, TLI = .961). Discriminant analysis was additionally used to examine the discriminant validity of the Scale, and the result yielded discriminant validity being significantly high with over 93% accuracy. Both strengths and limitations regarding practical usage of the Scale for assessing adaptive behavior and screening possible developmental delay in children are also discussed.

Keywords: Adaptive Behavior Rating Scale, CISA-2 (Community Integration Skills-2), Adaptive Behavior, Confirmatory Factor Analysis, Discriminant Analysis
Poster Title: Analysis of Syntactic Complexity and Its Relationship to Writing Quality in Argumentative Essays

Presenter Name(s): Thilagha Jagaiah, University of Hartford
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Brief Abstract:
Identifying salient syntactic complexity measures (SCMs) to examine sentences are essential to improve writing quality. This study will provide valuable information regarding the relevant SCMs that will improve writing quality, and how the use of various SCMs differed between at-risk and not-at-risk students. The study has implications on sentence-construction skills.

Abstract:
To produce quality texts, writers have to be skillful in both higher-order skills (planning, drafting, revising, and editing) and lower-level skills (handwriting, spelling, vocabulary, and sentence construction). Although writing requires conscious effort and much practice in composing, developing and analyzing ideas, proficient and effective writing also hinges on the ability to craft syntactically complex sentences. Lack of mastery in constructing syntactically complex sentences hinder students' abilities to effectively translate thoughts and ideas into writing (Saddler, Behforooz & Asaro, 2008), and this can be a serious inhibitor to successful writing (Saddler & Graham, 2005). Although studies have shown that as students mature they are able to construct complex sentence structures (Hunt, 1970; Beers & Nagy, 2009, 2011), little is known what determines a syntactically complex sentence, and whether the use of syntactically complex sentences improves writing quality for at-risk and not-at-risk students. The purpose was twofold. First, 28 syntactic complexity measures (SCMs) were identified and tested to determine if the selected measures were a good fit to the four hypothesized latent variables: Sentence Pattern, Sentence Length, Sentence Connector, and Sentence Sophistication. Second, the relationship between the four latent variables and writing quality were examined and how the relationship differed by student type (at-risk and not-at-risk).

Participants: The participants were 1,029 eighth-grade students from a Northeastern region of the United States who responded to argumentative prompts. Research Methods Data for this study were drawn from the 2012-2013 spring semester of a Benchmark Writing Assessment System (BAS-Write). The writing samples were analyzed using Coh-Metrix. The participants were classified as at-risk or not-at-risk students based on writing scores provided in the Spring 2012 State Accountability Assessment (SAA). Twenty-eight Coh-Metrix SCMs were selected by referencing the 52 SCMs compiled in Jagaiah’s (2016) systematic review and linguistic theory. The 28 Coh-Metrix SCMs were theoretically grounded and validated, and were aligned with theories of discourse which operate at multiple levels of language related to words, sentences, and connections between sentences (McNamara et al., 2014). A hypothesized model of four latent variables and 28 SCMs was developed and tested using Confirmatory Factor Analysis (CFA) to test goodness of fit. Subsequently, the four latent variables were used as predictor variables, student type as categorical variable, and writing score as dependent variable in a Multiple Linear Regression (MLR) analysis to determine the relationship between the latent variables and writing quality, and how the relationship differed by student type.

Findings: A refined hypothesized model using CFA with the same four latent variables and a reduced number of SCMs from 28 to 16 produced a good fit. The MLR analysis indicated a modest positive relationship between each of the four latent variables and writing quality. The four latent variables explained approximately 30% of the variations in writing quality, and this relationship varied significantly between at-risk and not-at-risk students. Increased use of the four latent variables had a greater impact on writing quality for at-risk students. The findings have important implications for methodology, writing assessment, and writing instructions on sentence-construction skills.
**Poster Title:** Characteristic Profile Analysis for Students with Intellectual Disabilities in Transition Based on Multiple Intelligences by Adaptive Behavior Scale

**Presenter Name(s):** Seyoung Jang, Seoul National University; Dongil Kim, Seoul National University,

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**Brief Abstract:**
Latent profile analysis will be done to classify characteristics of students with intellectual disabilities in transition based on multiple intelligences by adaptive behavior. The result of study will be use individualized education plan and individualized transition plan for students with intellectual disabilities.

**Abstract:**
American Association on Intellectual and Developmental Disabilities (AAIDD) defined intellectual disabilities is a ability characterized by significant limitations in both intellectual functioning and in adaptive behavior, which covers many everyday social and practical skills and originated before age of 18. To Measure intellectual functioning, standardized IQ test score of around 70 or as high as 75 indicates a limitation in intellectual functioning. Also, standardized adaptive behavior tests determine limitation in adaptive behavior such as, learning and performing about conceptual, social, and practical skills in everyday lives. However, there are lots of opinions about what intelligence is between researchers. Therefore, adaptive behavior is powerful factor to measure ability of students with disabilities. In past special education, they focused on deficit paradigm because of IQ score. But, these days, they focused on growth paradigm based on their ability and potential. In transition education for students with intellectual disabilities, Multiple Intelligences Theory by Gardner is used for career education and vocational education. This study is characteristic profile analysis for students with intellectual disabilities in transition multiple intelligences by using adaptive behavior scale.

Content validity about operational definition of multiple intelligences based on adaptive behavior was confirmed by special education professional. According to the operational definition of multiple intelligences, items are selected by 8 published adaptive behavior tests in South Korea. Based on selected items, researchers make pilot test. By examining pilot test to students with intellectual disabilities in high school and transition program, researchers determined final items.

Latent profile analysis will be done to classify characteristics of students with intellectual disabilities in transition based on multiple intelligences by adaptive behavior. The result of study will be use individualized education plan and individualized transition plan for students with intellectual disabilities.
Poster Title: The Effect of Working Memory on Low Achieving Students' Reading Comprehension

Presenter Name(s): Sora Jeong, Seoul National University; Dongil Kim, Seoul National University,
Presenter Email: sora501217@snu.ac.kr; dikimedu@snu.ac.kr

Brief Abstract:
The purpose of this study is to analyze the characteristics of working memory for reading comprehension of low achieving students. 149 students are participated in this study. The results indicated working memory has effects on reading comprehension even after reading fluency and vocabulary had been taken into account.

Abstract:
The purpose of this study is to analyze the characteristics of working memory for reading comprehension of low achieving students compared to normally achieving students. Therefore, this study addresses the following research questions; 1. Are there any differences in reading related skills (reading fluency, vocabulary, and working memory) and reading comprehension? 2. What is relation among the variables; reading fluency, vocabulary, working memory and reading comprehension? 3. What is the effect of working memory for reading comprehension in low achieving students compared to normally achieving students?
The total number of participants of this study is 149, and all of them are 2nd and 3rd grade elementary school students in Republic of Korea. To identify the low achievement group, this study use cut off score (in bottom 25% in total for reading comprehension test). 41 low achieving students and 108 normally achieving students. The participants are excluded when they are reported to have a low IQ level; 85 or below, or have disability. Also, participants are excluded if they take the test insincerely or the results indicate that their answers may be false. The method of hit study is the BASA-Reading for reading fluency and the ACCENT Korean test for reading comprehension (fact comprehension and inferential comprehension) and vocabulary. Furthermore, participants are assessed working memory including executive function, phonological loop, and visuo-sketchpad respectively. For working memory, this study uses the test from literatures and WISC IV. Prior to the actual test, this study examines the reliability, validity, and level of difficulty through a pilot test. And then the researcher trains the assistant researcher on the basis of the guidelines for the test. For the analysis of the data, Firstly, this study compares the differences among low and normal achievement group using t-test. Second, this study explores the correlation among fluency, vocabulary, working memory, and reading comprehension. Lastly, this study explores the effect of working memory on reading comprehension of low and normal achievement group allowing for reading fluency and vocabulary, known for its influential on reading comprehension through hierarchical multiple regression analysis. The results and the discussions of this study are as follows: Firstly, the results indicated statistically significant differences between two groups on all measures except when it comes to inferential comprehension and phonological loop. Accordingly, the results show that low achieving students have difficulties not only in reading comprehension but in reading related skills; fluency, vocabulary, and working memory. Second, working memory has effects on reading comprehension even after reading fluency and vocabulary had been taken into account. Particularly, in normally achieving group, all of variances are founded as predictor for fact and inferential comprehension except when it comes to reading fluency for inferential comprehension. In contrast, in low achieving group, only visuo-sketchpad has effect on fact comprehension and visuo-sketchpad and reading fluency have effect on inferential comprehension. Thus the aspects of effectiveness of working memory depend on the reading comprehension achievement level. Especially, in low achievement group, visuo-sketchpad has important role on reading comprehension. The implications for practice are discussed.
**Poster Title:** Improving Special Education Teachers' Ability to Conduct Reading for Meaning Instruction

**Presenter Name(s):** Evelyn S. Johnson, Boise State University, Lee Pesky Learning Center; Laura A. Moylan, Boise State University

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**Additional authors/presenters:** Angela R. Crawford, Boise State University

**Brief Abstract:**
RESET is a federally funded project to create observation rubrics aligned with evidence-based practices (EBPs) for students with high incidence disabilities. The purpose of this study was to describe the development of the Reading for Meaning Rubric.

**Abstract:**
RESET is a federally funded project to create observation rubrics aligned with evidence-based practices (EBPs) for students with high incidence disabilities. The goal is to leverage the extensive research on EBPs for this population of students to inform the development of observation instruments that provide feedback to SETs to improve their practice and ultimately, to improve outcomes for students with disabilities (SWD). RESET consists of a set of rubrics that detail the elements of a number of EBPs. Effective teacher observation systems require deliberate construction and thorough psychometric evaluation. An assessment that seeks to measure something as complex as instructional practice must be designed around the inferences that are to be made, the observations that will be used to draw these inferences, and the chain of reasoning that connects them (Messick, 1994). Evidence-Centered Design (ECD) provides a conceptual design framework to create complex, coherent assessments based on the principles of evidentiary reasoning (Mislevy, Steinberg & Almond, 2003). In brief, ECD consists of five stages: 1) domain analysis, 2) domain modeling, 3) conceptual framework, 4) assessment implementation, and 5) assessment delivery. Designing assessment products through the ECD framework ensures that the way that evidence is gathered and interpreted is consistent with the underlying construct the assessment is intended to address (Mislevy, et al, 2003). This poster describes the process used to construct the Reading for Meaning rubric to ensure that we have created an observation instrument with adequate psychometric properties.

**Participants:** A total of 20 special education teachers teaching in grades 1 through 8 from 6 districts across 3 states provided video for this study.

**Procedures:**
**Video collection.** During the 2016-17 school year, SETs provided weekly video recorded lessons from a consistent instructional period that depicted lessons in which students were led through ‘reading for meaning’ instructional activities. Videos were recorded and uploaded using the Swivl® capture system and ranged in length from 20-35 minutes. Each teacher contributed a total of 20 videos over the school year. For the analysis conducted in this study, we randomly selected three videos from each participating teacher for analysis.

**Raters.** A total of 4 raters were recruited to evaluate the videos. Videos were randomly assigned to raters. Raters were trained over a four-day period to use the rubric, and were given four weeks to evaluate a total of 20 videos each. We used a linked scoring design to reduce the number of videos that each rater had to score but that allowed for proper analysis of scores.

**Data Analysis:** To determine the reliability of the instrument and to examine how various facets of the observation tool functioned, we conducted a many-faceted Rasch measurement (MFRM) analysis with four facets: items, lessons, teachers and raters.

**Results:** Analyses are currently underway but not yet completed. We will report on item level fit statistics, as well as reliability and separation indices for the various facets. It is expected that analyses will be completed by November 2017.
Poster Title: The effect of feedback on special educators' implementation of evidence-based practices

Presenter Name(s): Evelyn S. Johnson, Boise State University, Lee Pesky Learning Center; Angela R. Crawford, Boise State University
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Additional authors/presenters: Yuzhu Zheng, Boise State University

Brief Abstract:
RESET is a federally funded project to create observation rubrics aligned with evidence-based practices (EBPs) for students with high incidence disabilities. The purpose of this study was to examine the effect of providing feedback to special education teachers using an observation rubric called RESET.

Abstract:
RESET is a federally funded project to create observation rubrics aligned with evidence-based practices (EBPs) for students with high incidence disabilities. The goal is to leverage the extensive research on EBPs for this population of students to inform the development of observation instruments that provide feedback to SETs to improve their practice and ultimately, to improve outcomes for students with disabilities (SWD). RESET consists of a set of rubrics that detail the elements of a number of EBPs. In this study, we focus on the Explicit Instruction rubric. The purpose of this study was to examine the effect of providing feedback to special education teachers using an observation rubric called RESET (Recognizing Effective Special Education Teachers).

Participants: A total of 30 special education teachers teaching in grades 1 through 8 from 10 districts across 3 states were randomly assigned to the feedback (n=15) or control (n=15) group.

Procedures:
Video collection. During the 2016-17 school year, SETs in both conditions provided weekly video recorded lessons from a consistent instructional period. Videos were recorded and uploaded using the Swivl® capture system and ranged in length from 20-35 minutes. Each teacher contributed a total of 20 videos over the school year. For the analysis conducted in this study, we then selected the first, mid-year and last video from each teacher for a total of 90 videos.
Feedback. SETs in the feedback group selected one video each month for six months that they would use for feedback. First, they completed a self-evaluation using the Explicit Instruction (EI) rubric (described below). At the same time, RESET project staff also evaluated their video using the EI rubric. Once both rubrics were complete, a debrief session was conducted, during which scores were discussed, and goals were set, with suggestions for improvement. Teachers in the feedback group received a total of six feedback sessions throughout the school year. Teachers in the control condition submitted video but did not self-evaluate or receive feedback.
Raters. A total of 12 raters were recruited to evaluate the videos. Videos were randomly assigned to raters who were unaware of teacher condition and order of video (e.g. fall, spring). Raters were trained over a four-day period to use the rubric, and were given four weeks to evaluate a total of 25 videos each. We used a linked scoring design to reduce the number of videos that each rater had to score but that allowed for proper analysis of scores.

Data Analysis: Data was analyzed for each lesson through a many-faceted Rasch measurement (MFRM) analysis to obtain a 'fair average' score that corrects for rater severity. We used the fair average score in a multi-level growth modeling analysis to examine whether there were differences in growth in teacher performance over time, and whether these differences varied depending on assignment to condition.

Results: Analyses are currently underway but not yet completed. It is anticipated that our analyses will be completed no later than November 2017.
Poster Title: Do Students Know How to Behave? Findings from a Meta-Analysis

Presenter Name(s): Ryan Kettler, Rutgers, The State University of New Jersey
Presenter Email: r.j.kettler@rutgers.edu;
Additional authors/presenters:

Brief Abstract:
The purpose of this presentation is to describe a meta-analysis of 30 years of direct measures of social, emotional, and behavioral (SEB) knowledge. Findings from the meta-analysis will be used to develop a new SEB knowledge test for student assessment, intervention planning, and large scale accountability evaluation.

Abstract:
The purpose of this poster presentation is to describe a meta-analysis of direct measures of social, emotional, and behavioral (SEB) knowledge. SEB knowledge refers to students’ understanding of externalizing, internalizing, and prosocial characteristics. Findings from the meta-analysis will be used to develop a new SEB knowledge test for student assessment, intervention planning, and large scale accountability evaluation.

SEB knowledge assessment is an area of increasing relevance in education in the United States, since the Every Student Succeeds Act of 2015 requires public schools to include in their accountability systems at least one indicator of school quality or student success other than academic skills that allows for meaningful differentiation in school performance. States are currently searching for nonacademic measures of SEB knowledge to include in large scale accountability systems, and this is a challenge because typical techniques for measuring these constructs (e.g., direct observations, rating scales) do not share the same strong psychometric indicators that support tests of academics (e.g., reading, mathematics).

Direct tests of SEB knowledge may have better psychometric properties for measuring students’ abilities in this area, compared to direct observations or rating scales, which address students’ behaviors rather than the knowledge which is a prerequisite to those behaviors. This distinction has been clarified using the idea of can’t problems versus won’t problems. Direct observations and rating scales alone only indicate how students do or don’t behave, and cannot distinguish between deficits in knowledge and behavior (leading to can’t problems) and deficits in behavior only (leading to won’t problems).

There are other reasons a direct test of SEB knowledge would be preferable to direct observation or rating scales for accountability evaluation. Direct tests may address a broader range of knowledge than can practically be assessed using direct observation. For example, an SEB knowledge test may include subscales of items yielding scores for social knowledge, emotional knowledge, and behavioral knowledge. Also, a direct test of SEB knowledge may not be as susceptible to bias as rating scales potentially are. Unlike rating scales used for accountability evaluation, a direct test of SEB knowledge would not involve the conflict of interest inherent in having a teacher or student make judgments that contribute to the teacher’s evaluation.

Attempts have been made at developing tests of SEB knowledge using a variety of formats (e.g., performance tasks, interviews), although none have become widely used in practice for assessment, intervention, or evaluation purposes. The current study is a meta-analysis of studies of direct measures of SEB knowledge conducted over the past 30 years.

Key questions include:
1. Which aspects of SEB knowledge have been addressed by direct assessment?
2. Which format yields the most accurate assessment of these areas?
3. Which grades can be effectively assessed using these measures?
4. How sensitive are measures of SEB knowledge to change across and within grade levels?

Findings from the meta-analysis will be discussed in this poster presentation. Implications for a new direct test of SEB knowledge will also be presented for discussion.
Poster Title: Teachers' Use of Scaffolding Strategies in Early Childhood Special Education (ECSE) Classrooms

Presenter Name(s): Kiren S. Khan, Rhodes College
Presenter Email: khank@rhodes.edu

Brief Abstract:
The present study investigates the extent to which teachers differentiate instruction in inclusive (i.e., include typically developing peers) and self-contained (i.e., include only children with disabilities) Early Childhood Special Education (ECSE) classrooms in terms of the number of instances they provide explicit instruction and scaffolding on language and literacy.

Abstract:
A considerable body of research supports the importance of shared book reading as being particularly influential to young children's development of important emergent literacy skills (e.g., Justice & Ezell, 2002). Some work has even documented the extent to which teachers employ specific high- and low-support scaffolding strategies during shared book reading in preschool classrooms (e.g., Pentimonti & Justice, 2010). However, no prior study has investigated the extent to which teachers differentiate instruction in Early Childhood Special Education (ECSE) classrooms in terms of the number of instances they provide explicit instruction and scaffolding on language and literacy. The present study addresses this gap in this literature by exploring the extent to which teachers provide explicit instances of instruction and scaffolding on language (narrative, vocabulary) and literacy (print knowledge, phonological awareness) during shared book reading sessions in inclusive (i.e., include typically developing peers) and self-contained (i.e., include only children with disabilities) ECSE classrooms. The present study included data from 72 ECSE classrooms that were randomly assigned to the comparison condition in a larger study (the RISE project) examining the longitudinal effects of implementation of a language and literacy curriculum by preschool classroom teachers. All teachers in the study were provided with the same set of 15 children's books, with teachers in the comparison condition instructed to read these books on the same schedule as the intervention condition teachers, that is, twice each week for 30 weeks without additional lessons to guide them. Trained research staff applied the Explicit Language and Literacy Instruction and Scaffolding Coding Scheme (ELLIS; a tool developed as part of the larger study) to teachers' video-recordings of shared book reading sessions to code the extent to which teachers targeted phonological awareness, print knowledge, narrative, and vocabulary in these sessions. Specifically, videos were coded for explicit instances of orienting children to, and providing definitions and elaborations on, each of these targets, as well as the use of low-support scaffolding strategies (predicting, reasoning, and generalizing) and high-support scaffolding strategies (eliciting, reducing choices, and co-participating). Results indicate that teachers provide comparable levels of instruction across each of the four language and literacy domains in inclusive (n= 52) versus self-contained (n= 20) classrooms, with higher levels of instruction observed for language (M= 46.21 occurrences; SD= 38.29) compared to literacy instruction (M= 27.65 occurrences; SD= 27.56) across both classroom types, t (142)= 3.34, p < .001. The general pattern obtained for frequency of the six scaffolding strategies indicates low levels of scaffolding overall (less than 5 occurrences on average per book reading session for all scaffolding types except generalizing which had a frequency of about 9 occurrences per session). A univariate analysis of variance indicated a significant effect only for the 'predict' low-support scaffolding strategy which was utilized more frequently in inclusive classrooms compared to self-contained classrooms, F (1,72)= 4.96, p < .05; all other high- and low-support scaffolding strategies were utilized at comparable rates. Implications and potential for intervention are discussed.
Poster Title: Effects of Informational Text Type on the Understanding, Delayed Memory and Misconceptions

Presenter Name(s): Dongil Kim, Seoul National University
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Additional authors/presenters: Anna Eunji Kim, Seoul National University

Brief Abstract:
The purpose of this study is to investigate the effect of the informative text structure in school learning on learner’s understanding of text content, misconception, and delayed memory. In this study, the text structure is divided into the descriptive text, narrative text, and the narrative text with emotional value words.

Abstract:
The purpose of this study is to investigate the effect of the informative text structure in school learning on learner’s understanding of text content, misconception, and delayed memory. In this study, the text structure is divided into the descriptive text, narrative text, and the narrative text with emotional value words to examine the effect of existing text structure on text understanding. For this study, 135 students in the first grade of middle school participated in the study. The students were randomly assigned to the descriptive text group, narrative text group, and the emotional narrative text group. As a result, there was no significant difference between the three text groups in immediate understanding of the text contents, and the level of misconception was high in the emotional narrative text group compared with other two groups. Regarding the result of delayed memory test of the text contents carried out in a week, the emotional narrative text group and the narrative text group got high marks. These results suggest that the emotional words can have negative effects in the narrative texts in the school learning.
**Poster Title:** Argumentative Writing as a Learning Tool in Mathematics for Students with Disabilities

**Presenter Name(s):** Sharlene A. Kiuhara, University of Utah; Joel R. Levin, University of Arizona

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**Additional authors/presenters:** Joel R. Levin, University of Arizona; Meade B. MacKay, University of Utah

**Brief Abstract:**
Implementing randomized single-case multiple-baseline designs and analyses, we present findings from two studies investigating the extent to which a Self-Regulated Strategy Development (SRSD) problem-solving strategy, in conjunction with argumentative writing, improves the quality of mathematical reasoning and writing for 6th graders receiving special education services.

**Abstract:**
Because students struggle to apply mathematical reasoning to justify their understanding of fractions¹, our purpose was to see if improving students' mathematical reasoning through constructing written arguments would improve their fraction knowledge. We present findings from two single-case multiple-baseline design (MBD) studies of 6th graders with disabilities and those at-risk for disabilities. Using SRSD2 and concrete-representational-abstract sequencing for number line development³, we included a six-lesson problem-solving heuristic and an argumentative writing strategy⁴,⁵. We pilot-tested the intervention for five weeks with a MBD across four classroom teachers who received professional development before implementing the intervention (N=27 at-risk students). Visual and randomization-test analyses suggested that there were selected improvements in students' pre- to post-intervention performance, with rescaled Non-Overlap of All Pairs (NAP) indices ranging from .13 to 1.00 on computational accuracy of fractions, .44 to 1.00 on mathematical reasoning, and .25 to 1.00 on argumentative elements⁶. Based on these data, we adjusted the supporting materials and incorporated a newly developed MBD and associated randomization-test test across five special educators and their students (N=32 SWD; 69% with LD). Statistically significant pre- to post-intervention gains again emerged with NAPs ranging from .05 to .64 on computational accuracy. (Scoring for mathematical reasoning and argumentative elements is underway and will be presented in the poster session). However, the anticipated greater benefits of the instructional intervention compared to those of the pilot study did not materialize. Although not fully realized here, argumentative writing within mathematics instruction shows promise for increasing mathematics outcomes for SWD. Further research is needed to identify and develop prerequisite skills that special education teachers need to engage students in questioning and feedback techniques during scaffolded instruction and to increase their self-efficacy for teaching fractions.


**Poster Title:** Item Difficulty on the Measure of Phonological Awareness

**Presenter Name(s):** Hannah Krimm, Vanderbilt University; Shih-Yuan Liang, Vanderbilt University

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**Additional authors/presenters:** C. Melanie Schuele, Vanderbilt University Medical Center

**Brief Abstract:**
The purpose of this study is to verify that the items on each subtest of the Measure of Phonological Awareness (MOPA; Schuele, 2017) increase in difficulty and that the subtests are presented according to increasing difficulty as well. We will administer the MOPA to 100 Standard American English-speaking first graders. We will calculate the item difficulty statistic for each item and average item difficulty for each subtest.

**Abstract:**
Early phonological awareness is critical for acquiring decoding skill (Wagner & Torgesen, 1987). Children with weak phonological awareness skills who receive early instruction targeting phonological awareness development can achieve average decoding skill (Torgesen, 2000). Thus, it is imperative for educators to quickly and accurately identify children with phonological awareness deficits early in the elementary years (e.g., by first grade) and provide appropriate instruction. Traditional phonological awareness screening measures predict which students are likely to struggle to acquire decoding skill, but provide insufficient performance detail for instructional planning (e.g., deletion; Catts, 1991). The Measure of Phonological Awareness (MOPA; Schuele, 2017) was designed to characterize a student’s phonological awareness development along a continuum of phonological awareness skills, beginning with early instructional steps such as rhyme generation and culminating in the critical skills of segmenting and blending. The measure provides specific information about a child’s present level of skill, and thus provides a roadmap for instruction to prevent reading difficulties.

The purpose of this study is to verify that the MOPA presents test items and subtests in order of increasing difficulty. We aim to answer the research questions:

1. Are the items on the MOPA ordered according to difficulty for first grade students?
2. Are the subtests on the MOPA ordered according to difficulty for first grade students?

**Participants:** Participants are 100 Standard American English-speaking first graders attending local elementary schools. Measures The MOPA is an 80-item criterion-referenced assessment of phonological awareness, with seven sub-tasks which each assess one skill: rhyme judgment, rhyme generation, initial sound segmentation, final sound segmentation, whole word phoneme segmentation, phoneme blending, and onset-rime blending. Each skill is assessed with ten test items, with the exception of whole word phoneme segmentation (20 items). Items are presented in an order that is hypothesized, based on the developmental literature, to increase in difficulty. Items are scored as correct or incorrect. Skills are considered mastered when the child answers 80% of the items correctly.

**Procedures:** Consent forms will be sent home with all children in multiple first-grade classrooms. Trained research assistants will administer the MOPA to consented children individually in the hallway or in a quiet empty classroom. Most research assistants are certified, licensed speech-language pathologists or speech-language pathology graduate students. Analysis To verify that the items on each MOPA subtest are ordered according to increasing difficulty, we will compute the item difficulty statistic (p) for each item. The difficulty statistic represents the proportion of students who answer each item correctly. To verify that the MOPA subtests are ordered according to increasing difficulty, we will compare average item difficulty across all subtests.
Poster Title: The Variable-as-Label Misconception Among Algebra Students: Implications for Students with Mathematics Disabilities

Presenter Name(s): Sarah Krowka, Vanderbilt University
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Brief Abstract:
Algebra learners often hold misconceptions about the use of variables in algebraic expressions. One well-documented misconception involves students’ tendency to consider a variable as an abbreviated label for an object. This systematic review and meta-analysis synthesizes evidence for the prevalence of this misconception and highlights the importance of extending this research to students with mathematics disabilities.

Abstract:
Algebra learners often hold misconceptions about the use of literal symbols—or variables—in algebraic expressions. One well-documented misconception involves students’ tendency to consider a variable as an abbreviated label for an object (e.g., MacGregor & Stacey, 1997; McNeil et al., 2010; Küchemann, 1980). Holding a faulty conceptual understanding of a variable—a fundamental algebraic concept—can be a critical obstacle to students’ algebra learning (Leitzel & National Council of Teachers of Mathematics, 1989). This systematic review and meta-analysis of prevalence synthesizes evidence of this variable-as-label misconception and highlights the importance of extending this research to students with mathematics disabilities. Sixteen error-analysis studies examining the variable-as-label misconception were identified. Collectively, 7,214 students, ages 10 to 22 in eight countries over almost four decades (1980 to 2016) were investigated. The included studies demonstrated a considerable degree of demographic heterogeneity, but are largely homogenous in terms of methodology. Studies included conference proceedings (n = 5), journal articles (n = 6), and theses (n = 5) ranging in sample size from N = 6 to N = 2923. Studies predominantly investigated middle school students using one open-ended assessment item within a larger assessment.

I conducted a meta-analysis of prevalence using a random-effects model in the Stata statistical environment (StataCorp, 2014) with the metaprop program (Barendregt et al., 2013). The pooled prevalence estimate across 25 samples from 16 studies was 28% (95% CI [0.22, 0.34]). Heterogeneity was substantial across all estimates (I² > 90%). Results suggest that, on average, approximately 28% of 6th grade to college-level students may hold the variable-as-label misconception. Results must be interpreted with consideration for the limited number of assessment items used in the majority of the included studies (i.e., one or two items).

By synthesizing the prevalence of the variable-as-label misconception, researchers and educators are better able to determine the necessary areas of focus, degree of urgency needed to address the issue, and the scope of intervention needs.

Poster Title: Measuring Motivation to Read through Self-Report Using Polytomous Item Response Models

Presenter Name(s): Paulina A. Kulesz, University of Houston, TIMES
Presenter Email: Paulina.Kulesz@times.uh.edu
Additional authors/presenters: Christopher A. Wolters, Ohio State University; David J. Francis, University of Houston

Brief Abstract:
Motivation to read is crucial for understanding students’ learning and performance within an academic context though it has been investigated using a restricted set of data analytic methods. The current study examined a typical assessment of motivation to read using five polytomous item response models.

Abstract:
Motivation to read is crucial for understanding students’ learning and performance within an academic context. However, to date, motivation to read has been investigated using a restricted set of data analytic methods which have not only limited conclusions regarding cognitive processes used by students to provide answers to items, but also limited conclusions regarding the dimensionality of motivation constructs. The current study examined a typical assessment of motivation to read using five polytomous item response models (i.e., graded response model, Rasch graded response model, generalized partial credit model, partial credit model, and rating scale model), which were embedded within two factor analytic models, namely the correlated-traits, confirmatory factor analytic model and bifactor model. The Motivation to Read Survey was administered to 1,029 secondary school students. The results suggested that: (a) the graded response model which freely estimated item discrimination parameters provided the best fit, and (b) the dimensionality of the motivation to read construct was best identified using a bifactor model that included three specific factors and one general factor. These findings contrast sharply with prior research on this instrument and similar motivation surveys that have indicated many more dimensions. The current study illustrates that the response format must be considered in choosing an appropriate model for self-report data and highlights the importance of these choices for identifying and interpreting the underlying psychological constructs.
Poster Title: School Administrators' Training and Support Needs Related to Evaluating Special Education Teachers

Presenter Name(s): Janelle Lawson, San Francisco State University
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Brief Abstract:
In this study, 929 school administrators in California completed a 26-item survey inquiring as to the training and supports needed to better observe, evaluate, and provide feedback to special education teachers. Improving practices related to evaluating special education teachers should lead to gains in student achievement as teacher performance improves.

Abstract:
School administrators (i.e., principals and other instructional leaders) are integral to the teacher observation-evaluation-feedback process, and the Every Student Succeeds Act (ESSA, 2015) emphasizes the critical need for school administrators to be trained to properly perform all aspects of the process and make subsequent personnel decisions. This study focuses on the training and support of school administrators as evaluators of special education teachers, as concerns have arisen regarding whether school administrators, who typically are not licensed or trained in teaching students with disabilities (Jones & Brownell, 2013), are equipped to observe, evaluate, and provide useful feedback to special education teachers (Steinbrecher et al., 2015).

This study sought to explore the training administrators currently receive from their personnel preparatory programs and school districts, and the supports they feel would help them in evaluating their special education teachers. This study also sought to explore administrators' feelings of confidence in order to determine if they feel equipped and able to perform aspects of the observation, evaluation, and feedback process as it applies to special educators. Finally, this study investigated years of experience and background as they relate to confidence to determine how variables such as experience with the evaluation process and having a background in special education impact administrators' confidence in their ability to effectively evaluate special education teachers.

A total of 929 school administrators in California participated in the study. A list of administrators and corresponding email addresses for all active public, including charter, schools was obtained from the California Department of Education's publicly accessible database. In April of 2017, we disseminated an anonymous link to an electronic survey via email to all 10,504 school administrators with available email addresses on the list of active schools. The electronic survey, disseminated via Qualtrics, included 26 items and took approximately five minutes to complete.

Results indicated that most school administrators in the sample did not hold special education teaching credentials at any point in their careers, suggesting that their background and training related to instructional practices came predominately from general education. Related to special education teacher evaluations, 71.8% of respondents indicated no training received from their personnel preparatory programs, and 73.8% received no training from their school districts. Nearly 70% of respondents reported wanting more information on evidence-based practices for teaching students with disabilities. In general, participants reported feeling more confident evaluating general education teachers than special education teachers, and administrators who had held special education teaching credentials were more confident in their ability to evaluate special education teachers than their peers. Finally, years of experience with special education teacher evaluation were associated with greater feelings of confidence for administrators without a background in special education, but for administrators with a background in special education, they were likely to feel confident evaluating special education teachers whether they had few or many years of experience with evaluation.
**Poster Title:** The Effectiveness of Fraction Interventions for Fifth Graders with Mathematics Difficulties

**Presenter Name(s):** Jihyun Lee, University of Texas at Austin; Diane Bryant, University of Texas at Austin

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**Additional authors/presenters:** Brian Bryant, University of Texas at Austin

**Brief Abstract:**
This intervention study investigated the effects of fraction lessons on the performance of fifth grade students with mathematics difficulties and the perspectives of the fifth graders toward the fraction intervention. This study used a multiple probe multiple baseline design across groups. The results and implications will be discussed.

**Abstract:**
Success in learning algebra is crucial for graduating colleges and getting higher salary jobs (Sadler & Tai, 2007). Fractions is key for understanding an integral part of algebra. Moreover, fractional performance of elementary school students predicts their mathematical performance and algebra knowledge in high school. Specifically, fractional knowledge in grade 5 is the best predictor of which students will have better algebra performance. However, many students with mathematics difficulties (MD) have challenges in learning fraction (Siegler & Pyke, 2013). Thus, the purpose of this study is to examine the effect of a fraction intervention that focuses on conceptual and procedural knowledge of fractions on performance of 5th graders with MD. The following research questions will guide this study: 1) What are the effects of fraction lessons on the performance of 5th grade students with MD on the easyCBM fraction measure? and 2) What are the perspectives of fifth grade students with MD toward the fraction intervention on learning fractional concepts and skills? The design for this study is a multiple probe multiple baseline design across groups. Participants were six fifth grade students with MD to make three groups of two. The lessons were developed based on the premise that the intervention development must be driven by the research on evidence-based practices (e.g., visual representation, modeling of problem solving, student verbalizations, guided and independent practices, and corrective feedback) to teach struggling students. This study includes two measures: the easyCBM fraction assessment and Social validity questionnaire. The fidelity of implementation and assessment will be measured for at least 30% of the lessons and the assessments. Inter-observer agreement will be calculated for measuring the fidelity of implementation and assessment. To examine social validity of the intervention, a Likert scale with items related to the intervention’s content will be used to collect data on the perspectives of students at the end of the intervention. For research question 1, the results indicate that the fraction intervention improved participants’ performance on the easyCBM fraction measure. Specifically, in terms of factors of visual analysis, all of the three groups had low and stable levels of responding during baseline phase, had stable and increasing trends after the introduction of the intervention, and had high levels of responding during the maintenance phase. Additionally, the investigator calculated Non-overlap of All Pairs (NAP) as an effect size between baseline and intervention phases and between baseline and maintenance phases. The NAP was medium or strong across the three groups. Between baseline and intervention phases. The NAP was strong across the three groups between baseline and maintenance phases. For research question 2, the results of the social validity survey indicated that participants’ perspectives were strongly positive toward the intervention. The implications for future researchers and practitioner will be discussed.

**References:**

Poster Title: Explicit Phonological Awareness Instruction for Preschoolers with Down Syndrome

Presenter Name(s): Lauren LeJeune, Vanderbilt University; Samantha Gesel, Vanderbilt University
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Additional authors/presenters: Christopher Lemons, Vanderbilt University

Brief Abstract:
We developed an intervention to explicitly teach preschoolers with Down syndrome (DS) phonological awareness skills, including blending and segmenting word parts and phonemes. This poster will present methodology and findings from a single case design study in which we piloted the intervention with two preschool-aged children with DS.

Abstract:
Rationale  It is imperative for early childhood educators to directly target phonological awareness (PA) skills (National Early Literacy Panel, 2009) in order to prepare preschoolers for success with future reading instruction. Given that preschool-aged children with Down syndrome (DS) often exhibit deficits in PA (Martin, Klusek, & Estigarribia, 2009), additional research is needed to evaluate methods to enhance learning for these students.

Purpose and Research Questions: The purpose of this study is to pilot an intervention designed to explicitly teach participants PA skills. Our research question is the following: Can a researcher-created early literacy intervention increase preschool-aged participants' ability to blend and segment: (a) compound words, (b) onset-rime, and (c) three-phoneme words?

Participants: The participants are two children with DS, ages 4 and 5 years. Research Method  We are using a multiple probe (conditions) across behaviors (i.e., phonological units) design (Gast, Lloyd, & Ledford, 2014) to measure the effect of explicit instruction on participants’ ability to verbally blend and segment words spoken to them. We are collecting dependent variable data at the conclusion of each intervention session through a researcher-created assessment that measures blending and segmenting directly targeted and novel words.

Results: This study is currently ongoing and will be complete by November 2017. Preliminary results indicate that the intervention is effective at increasing participant’s ability to blend and segment compound words and four-phoneme words. After collecting all data, we will conduct a post-hoc item analysis to examine differences in results for blending and segmenting.

References:
**Poster Title:** Equivalence of Administration Modes on MOPA Performance

**Presenter Name(s):** Shih-Yuan Liang, Vanderbilt University; Hannah Krimm, Vanderbilt University

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**Additional authors/presenters:** C. Melanie Schuele, Vanderbilt University

**Brief Abstract:**
This investigation assessed whether stimuli presentation method influences performance on the Measure of Phonological Awareness (MOPA; Schuele, 2017). Thirty first graders complete the MOPA with audio-recorded as well as live stimuli. Order of presentation mode is counterbalanced across participants. We hypothesize that administration mode does not influence task performance.

**Abstract:**
The Measure of Phonological Awareness (MOPA; Schuele, 2017) is a criterion-referenced phonological awareness measure designed to aid educators in intervention planning for struggling learners in the early grades. The MOPA characterizes a student's phonological awareness development along a continuum of phonological awareness skills ranging from rhyme judgment to phoneme segmentation. In this study all tasks are administered; however, in educational practice, a flow chart guides the selection of tasks to minimize assessment time demands. The rhyme tasks as well as initial and final sound tasks include 10 items of increasing difficulty; the segmentation task includes 20 items of increasing difficulty. Ultimately, the MOPA will be publically available for educators to use to inform instruction. We expect, however, that educators will have difficulty reliably administering the MOPA, which could possibly undermine the standardization of stimulus presentation. In an effort to support reliable administration, we will audio record the test stimuli. It is possible, however, that administering the task using audio-recorded stimuli will influence performance. Thus, the purpose of this study is to determine whether administration mode affects task performance on the MOPA. We aim to answer the research question: Does administration mode significantly affect task performance on the MOPA?

**Method Participants:** Participants will be approximately 30 monolingual mainstream English-speaking first graders (Thomas-Tate, Washington, & Edwards, 2004). Procedures: Consent forms will be sent home with all children in first grade at a local elementary school. Trained research assistants will administer the MOPA in the hallway or in a quiet empty classroom. We use a within-subjects experimental design; the MOPA will be administered twice to each participant. For one administration, items will be presented by an audio recording. The researcher will still score the assessment. On another administration the researcher will verbally present each item. Thus, the only difference between the two conditions is administration mode (i.e., live or recorded audio stimuli). Order of administration mode will be counterbalanced across participants so that half of the participants receive the live administration first and the other half receive the audio-recorded administration first.

**Analysis:** Our research question addresses equivalence between two presentation modes rather than differences. Hence, we will analyze the data using a paired-samples test of equivalence to avoid a common pitfall of employing a traditional difference-based test (e.g., t- and F-tests) for assessing equivalence. That is, the probability of rejecting the null hypothesis (population means are equal) increases as sample size increases. An alternative analysis is to conduct a mixed-effect analysis with administration mode as a within-subject variable and order of presentation method as a between-subject variable. The repeated measures are the test scores of the MOPA. Main effects and interactions will be interpreted with caution to partition out the effects that are truly attributable to administration mode, rather than practice effects.

**Implications:** Automated task administration may be a viable method for ensuring fidelity of task administration, hence, supporting accurate characterization of children's phonological awareness skills for instructional planning.
Poster Title: Knowledge and Implementation of Response to Intervention: An Examination of Pre-Service Teachers

Presenter Name(s): Endia J. Lindo, Texas Christian University
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Brief Abstract:
This study investigates the effectiveness of RTI Prep (RTI-P) on the knowledge and perceptions of pre-service teachers in regards to Response to Intervention (RTI) and its implementation. Preliminary findings show preservice teachers engaged in RTI-P, demonstrated more knowledge of and competency in implementing RTI, compared to their peers.

Abstract:
The reauthorization of the Individuals with Disabilities Education Act (IDEA) in 2004 introduced Response to intervention (RTI) as an alternate model for determining eligibility for special education (Hallahan, Kauffman, & Pullen, 2015). The goals of RTI were to ensure all students received evidence-based instruction, have their progress frequent monitored, and for those at risk for learning disabilities, provide early intervention. Advocates of RTI claim that it would avoid the 'wait-to-fail' service model that was being employed and potentially reduce the number of students referred to special education (Boardman & Vaughn, 2007). Yet, more than a decade later and with near universal adoption of RTI in the United States, research has shown teachers continue to report feelings of inadequacy in implementing RTI and teacher preparation programs have faced many challenges in preparing educators in a manner that enhances their sense of efficacy regarding RTI and its components (Barrio, Lindo, Combes, & Hovey, 2015; Hazelkorn et al., 2010).

Condeman and Johnston-Rodriguez (2009) note it is imperative teachers be knowledgeable of and prepared to implement innovations, such as RTI, in order to provide better educational outcomes for at-risk students. To that end, Barrio et al (2015) and Hazelkorn et al (2010) highlight the need for teacher preparation programs to enhance coverage and practical application of RTI, emphasizing aspects such as progress monitoring and data-based decision making. The current study investigates the effectiveness of RTI Prep (RTI-P) on the knowledge and perceptions of 100 pre-service teachers near the end of their training regarding Response to Intervention (RTI) and its implementation. RTI-P is a multi-course, field based assignment designed to prepare pre-service special education certification candidates to implement key components of RTI. Based on surveys and focus groups, preliminary findings show preservice teachers engaged in RTI-P, demonstrated higher levels of knowledge and competency in implementing the components of RTI, compared to their peers. These findings serve to inform and possibly enhancing teaching education programs and professional development regarding RTI and data-based decision making.

References:
**Poster Title:** Reading instruction for students with intellectual disability: An observation study

**Presenter Name(s):** Esther R. Lindstrom, Lehigh University  
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**Brief Abstract:**
This study documents reading instruction provided to students with intellectual disability. Observations of seven special educators were analyzed to reveal content emphasis, student engagement, and instructional quality. Teacher self-report data revealed practitioner perspectives on research-based instruction and supported observation findings. Findings extend previous research and have implications for practice.

**Abstract:**
The aims of this study were to document features of reading instruction that teachers were providing to students with ID and to explore teachers’ rationale for their instruction. Data from classroom observations, measures of student achievement, and teachers’ descriptions of research-based reading instruction in their classrooms were used to answer the following research questions: (a) What is the instructional content emphasis of reading instruction provided by special education teachers to elementary students with ID?; (b) What are related features of instruction (i.e., grouping, materials, engagement, quality) during this time?; (c) What is the school’s intended reading instruction as outlined in students’ IEPs?; (d) How do teachers think about their instruction and their rationale for planning? In our study, we hypothesized that observed instruction would emphasize sight words over multicomponent reading. Additionally, we expected differences between teacher self-report of research-based instructional methods and observed methods, as well as limited knowledge on recommended practices. This study documents the content and quality of reading instruction provided to students with intellectual disability in kindergarten through third grade. Seven special education teachers were observed providing reading to 17 students in self-contained settings. Teachers were then interviewed on their perceptions of research-based reading instruction for students in this population. Findings indicate that instructional content extends beyond previously predominant sight word instruction to also include phonics, comprehension, vocabulary, and text reading. Instruction was mostly delivered to students working individually with a teacher. However, sample teachers spent large portions of instructional time managing problem behavior and addressing academic goals other than reading. Student engagement during reading instruction was generally rated at a medium level. Low-average instructional quality ratings were supported by teachers’ self-report of being underprepared and understaffed to meet students’ academic and behavior needs during reading instruction. Findings extend previous observation research on other populations and have implications for practice.
Poster Title: Examination of Intervention Research for Teaching Geometry Concepts and Skills to Students with Disabilities

Presenter Name(s): Meijia Liu, The University of Texas at Austin, The Meadows Center for Preventing Educational Risk; Diane Pedrotty Bryant, The University of Texas at Austin, The Meadows Center for Preventing Educational Risk

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Brief Abstract:
Geometry is essential knowledge for understanding mathematics and solving real-life problems. However, there is a paucity of geometry intervention studies for students with disabilities. The purpose of this poster is to present the findings from an examination of interventions for teaching geometry on geometry intervention for students with disabilities.

Abstract:
a. Rationale and Research Questions.
Geometry is a foundation for the development of reasoning and justification skills, according to the National Council of Teachers of Mathematics (2010). The Common Core State Standards (CCSS, 2010) sets explicit geometry standards. For students with disabilities, learning geometry is challenging compared to their typically developing peers' abilities with geometry (Clarke, et al., 2011). Students with disabilities demonstrate lower performance in mathematics, including geometry than typical-performing peers. One approach to changing this situation is through synthesizing the literature on effective interventions for geometry instruction of students with disabilities, identifying the areas of geometry that were not investigated, examining the quality of the existing literature on geometry intervention in order to encourage more researchers to focus on geometry teaching for students with disabilities. Judging from the articles commonly published in the special education literature, interventions for teaching geometry concepts and skills to students with disabilities is apparently an understudied area in special education compared to other mathematics domains such as whole number, early numeracy, and word problem-solving. Thus, the research questions of this study are to examine the literature to (1) determine the aspects of geometry focused on intervention studies for students with disabilities, (2) identify the specific types of intervention investigated to teach geometry concepts and skills, (3) examine the quality of geometry interventions, (4) report the specific instructional features and geometry outcomes of the research studies.

c. Research Design
We conducted an extensive search of peer-reviewed research articles (i.e., search criteria included research with clearly defined participants with disabilities, interventions that focus on geometry, outcomes that measured geometry performance) on geometry interventions to students with disabilities. All the studies were interventions (i.e., instructional strategy, educational technology, researcher-developed program). The search focused on literature published from 1975 to 2017. Based on the selection criteria, twelve articles were identified. All of them were conducted in the U.S.d. Results:
Preliminary data indicate that almost all students improved their understanding of geometry concepts or improved their geometry problem-solving skills after receiving instruction. Some findings indicated that students who received explicit instruction with object manipulation developed the concept of area and perimeter skills. Students who were shown teacher-developed video clips improve the geometry problem-solving skills with the help of handheld computers. However, there are only limited aspects of geometry focused in the intervention studies for students with disabilities (i.e. perimeter, area, volume problems of simple shapes). Only basic problem-solving skills were taught. Few studies investigated on the building the geometry concepts at the elementary level. Most of the studies chose to use visual manipulation programs, such as CSA, or concrete manipulatives, as well as educational technology to teach geometry. Although most of the studies were conducted after 2005, the quality of the studies varied, based on the CEC quality indicators standard’s (Cook et al, 2014), together with Horner et al. (2015) and Gersten et al. (2015). There were missing pieces in reporting the studies. Few studies reported the validity of the measures used during the intervention and not all of the included studies mentioned about the fidelity of the implementation of the intervention.

Discussion: The results from this synthesis indicate that students with disabilities benefit from instruction on geometry. Most of the intervention studies included participants in middle school and high school level. This indicates a need for early geometry intervention at the elementary level to help establish strong geometry foundational knowledge. Visual representations and technology were important interventions. Further research is needed to expand the literature and improve the quality of research. Additionally, future research should include more classroom teachers as interventionists for better replication for researchers and practitioners.
**Poster Title:** Mathematics Performance of First Graders with Limited English Proficiency

**Presenter Name(s):** Brittany Lee N. Martin, Vanderbilt University; Lynn S. Fuchs, Vanderbilt University,

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**Brief Abstract:**
Many studies have demonstrated the cognitive abilities underlying word problem solving and computation skills differ. Few studies have examined these differences in students with limited English proficiency. The purpose of this study was to explore the interactions between LEP status and risk status on computation and word problem solving abilities.

**Abstract:**
While developing their English language skills, students with limited English proficiency (LEP) tend to rely heavily on their knowledge of algorithms to complete basic computations (Lee & Jung, 2004). Although adequate computation is foundational for success with higher-order math problems (Fuchs et al., 2012), computational skill alone is not sufficient for advanced tasks such as word-problem solving (Fuchs, Fuchs, Compton, Hamlett, & Wang, 2015). This is not surprising considering word-problem solving requires text processing to decipher the problem situation and an interaction between language comprehension processes and problem-solving strategies (Fuchs et al., 2015). Many studies have demonstrated the cognitive abilities underlying word-problem solving and calculation skills differ; however, few studies have examined the extent of these differences specifically in students with limited English proficiency. The purpose of this study was to explore the interactions between a student's LEP status and risk status on two early mathematical skills - computation and word-problem solving. To answer this question, we examined pre- and posttest data from the participants in the control groups from the first two cohorts of an ongoing research project. Participants were 260 first-grade students from a southeastern metropolitan school district. Students were stratified by risk status (at-risk or not at-risk for math difficulty) based on performance on screening assessments at the start of first grade. Students were then assessed in the fall of first grade and again in the spring on basic computation skills (addition and subtraction fluency with answers from 0 to 18) and word-problem solving abilities. The authors then examined the performance of both at-risk and not at-risk students and examined how LEP status moderated this relationship. Two-way between-group analysis of variance (ANOVAs) were conducted to assess the impact of risk status and LEP status on computation and word-problem solving performance. On pretest computation measures, the interaction between language status and risk status was not significant; however, on the pretest word problem solving measure the interaction between language and risk status was significant. Post-hoc analysis found a significant difference in scores between LEP and non-LEP students who were not at-risk for math difficulty. On both the computation and word-problem solving posttest measures, the interaction between language and risk status were not significant. On pretest computation and word-problem solving measures, LEP students and native English-speaking students who were considered at-risk performed comparably on both computation and word problem solving measures. However, throughout the course of the school year LEP students struggled to keep up with their peers in both areas, as demonstrated by a .4 increase in effect size on computation measures and a .35 increase in effect size on word-problem solving measures. For students who were considered not at-risk for math difficulty, a similar trend appeared for computation measures, with students performing comparably at pretest. On word-problem solving measures, the effect size between LEP and non-LEP students was significantly large at pretest, $d = 1.0$. At posttest, this effect size had decreased, $d = .9$. 
Poster Title: The Effects of a Dropout Prevention Intervention for Adolescent English Learners

Presenter Name(s): Leticia R. Martinez, The University of Texas at Austin; Kelly J. Williams, The University of Texas at Austin

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Additional authors/presenters: Kelly J. Williams, The University of Texas at Austin; Jeremy Miciak, University of Houston

Brief Abstract:
This study is an RCT examining the efficacy of year one of an intensive reading intervention and a dropout prevention program on academic and school engagement outcomes for high school English Learners (ELs). Research findings of treatment effects and implications will be discussed.

Abstract:
This presentation describes the first year of a four-year randomized control trial study to determine the efficacy of two interventions for high school English Learners (ELs): (1) an intensive reading intervention for adolescents (RIA) and (2) a dropout prevention program (Check & Connect) (Sinclair, Christenson, Evelo, & Hurley, 1998; Sinclair, Christenson, & Thurlow, 2005). Participants were recruited from three, large high schools in a diverse urban district. To be eligible for participation in the study, students had to meet the following criteria: (1) a school designation of Limited English Proficient (LEP) or an LEP designation within the previous 5 years, and (2) a score below or within ½ standard error of the passing score on students’ eighth grade high-stakes reading assessment. Eligible ninth grade participants (n = 627) were randomized to one of four conditions within each school (1) RIA, (2) Check & Connect, (3) RIA plus Check & Connect, and a (4) Business as Usual (BAU) group, and received the intervention(s) for one year (grade 9). Reading interventionists and dropout prevention advisors were hired and trained by the research team to implement the interventions, and received materials and coaching to ensure high fidelity of implementation. Students will participate through the end of their 10th-grade year in the same condition (two-year treatment) and progress will be monitored for an additional 2 years (11th and 12th grades) to document school completion rates and reading development.

For students randomized to the RIA only and to combined RIA plus Check & Connect conditions, the reading intervention was provided daily through intensive instruction in word study, fluency, vocabulary, and reading comprehension. RIA classes were held for approximately 45 minutes a day for the entire school year (during their 9th-grade year) and were scheduled during participants’ elective periods. Students assigned to Check & Connect only or RIA plus Check & Connect met with dropout prevention advisors weekly and participated in support meetings to discuss school attendance, behavior issues, and failing grades on an as need basis. Students in the BAU comparison participated in schools’ typical instructional program.

We will estimate main effects of treatment for the reading intervention and for the dropout prevention intervention. We will also estimate the effects for the combined RIA and Check & Connect condition. Pretest and posttest data for the full sample for year 1 are collected and processed and will be analyzed in the fall of 2017. Research findings and implications will be discussed in terms of effective literacy instruction for secondary ELs who are struggling to read for understanding, strategies that increase school engagement among at-risk secondary students who are ELs, and scalable practices that reduce dropout among at-risk EL students.
Poster Title: Cognitive Abilities Moderate the Effects of a Math Intervention in At-Risk Preschoolers

Presenter Name(s): Amanda Martinez-Lincoln, The University of Texas at Austin; Marcia A. Barnes, The University of Texas at Austin
Presenter Email: amanda.martinezlincoln@utexas.edu; marcia.barnes@austin.utexas.edu

Brief Abstract:
Do cognitive and number-specific factors moderate the effects of an intensive pre-kindergarten mathematics intervention? Children with better working memory benefited more from the intervention, but the effects of the intervention were greater for children with lower levels of attention and approximate number sense acuity. Practical and theoretical implications are discussed.

Abstract:
Background: Early mathematics performance is a strong predictor of later general academic outcomes and life success (Duncan et al., 2007; Ritchie & Bates, 2013). Therefore, early effective interventions for young children at-risk for math difficulties are critical. Pre-K Mathematics Tutorial (PKMT; Starkey & Klein, 2012) is an intensive math tutorial intervention that has been shown to be effective for pre-k children at-risk for math difficulties. For the PKMT as for many other generally effective interventions, children showed variable response to intervention. There are several approaches to understanding why interventions are more or less effective for certain children. One approach is to ask is whether individual differences in specific cognitive abilities and/or early number sense moderate intervention effects.

Purpose: The purpose of this study was to examine whether domain-general cognitive and domain-specific factors moderate the effects of the PKMT for pre-kindergarten children at high risk for difficulties in mathematics.

Participants and Study Design: Children entering pre-kindergarten who were identified as at-risk for math difficulties, using a math screening measure, were recruited to participate. 518 children were randomly assigned to receive (1) the PKMT, (2) the PKMT plus additional attention training, or (3) no tutorial math intervention, as the business-as-usual group. The math intervention supplemented, but did not supplant Tier 1 math instruction. Children were assessed and tutored in their first language (English or Spanish). The main impacts of the intervention have been reported elsewhere (Barnes, Klein et al., 2016).

Analyses: A multilevel regression analysis was utilized to examine whether pre-intervention levels of visual-spatial working memory (a preschool version of a Corsi Blocks task; Bisanz, Sherman, Rasmussen, & Ho, 2005), attention (vigilance and executive attention, Child-ANT; Rueda, Rothbart, McCandliss, Saccomanno, & Posner, 2005), phonological awareness, and approximate number system (ANS) acuity moderate the effects of the PKMT intervention on two math outcomes.

Findings: Analyses indicate that children in both treatment groups who scored average or better (in relation to the entire study group) on visual-spatial working memory benefited more from the intervention than children who scored below average on working memory. Children who scored below the group average on attention and ANS acuity (i.e., Panamath) benefited more from the PKMT than children who scored above average on these measures. These moderator effects were found for the Children's Math Assessment (CMA; Klein & Starkey, 2012), but not for the TEMA-3.

Conclusions: These findings have practical and theoretical implications for young children at high risk for math difficulties. Specifically, by having a better understanding of the cognitive factors that moderate an intervention's effects, researchers may be able to design and test individualized adaptations of interventions that may prove to be maximally effective for students who come into the intervention with different levels of cognitive abilities. In addition, this type of work may provide clues about the cognitive requirements of particular interventions in a more explicit or precise way than is currently the case.
**Poster Title:** Teacher-Student Relationships and the Association with School-Related Outcomes

**Presenter Name(s):** Amanda M. McClelland, The University of Texas at Austin; Jessica R. Toste, The University of Texas at Austin

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**Additional authors/presenters:** Jessica R. Toste, The University of Texas at Austin; Alicia A. Stewart, The University of Texas at Austin,

**Brief Abstract:**
While quality of the teacher-student relationship (TSR) has been shown to contribute to school adjustment, students with disabilities are reported to have more negative relationships with their teachers. Thus, this synthesis sought to examine ratings of TSR for students and those with disabilities, as well as associations between TSR and school-related outcomes.

**Abstract:**
Positive relationships with teachers have been shown to have an important influence on students' school-related outcomes. Quality of relationship has been associated with academic achievement, behavioral competence, and overall school adjustment (e.g., DiLalla, Marcus, & Wright-Phillips, 2004; Pham & Murray, 2016; Toste, Bloom, & Heath, 2014). Further, longitudinal research has suggested that teacher-student relationship is predictive of future student outcomes (Hamre & Pianta, 2001). There is evidence that students with disabilities tend to have more negative, conflicted relationships with their teachers (Murray & Greenberg, 2001), which is particularly concerning as they are heightened risk for a host of negative schooling outcomes. However, there is suggestion that relationships with teachers may play a particularly salient role for students with disabilities. (Murray & Greenberg, 2001; Toste, Bloom, & Heath, 2014). A 2011 meta-analysis reported stable and significant positive relations between teacher-student relationship and both school engagement and achievement for K-12 students (Roorda, Koomen, Split, & Oort, 2011). The purpose of the present study was to update this meta-analysis and to examine findings specific to students with disabilities.

As such, we address the following research questions:
1. Are there reported differences between ratings of teacher-student relationship for students with and without disabilities?, and
2. What are the associations between teacher-student relationship and school-related outcomes of K-12 students with disabilities?

A comprehensive search of peer-reviewed research was conducted through four EBSCO online databases, as well as an extended hand search of previous syntheses, journals, and Google Scholar. This search resulted in XX47 studies that met the following criteria: (a) participants include K-12 students with disabilities; (b) teacher-student relationship is measured at the dyadic level via report of teacher and/or students; (c) includes at least one measure of school-related outcome (e.g., academic, classroom behavior); (d) measure of relationship administered at same time or prior to school-related outcome; and (e) published in peer-reviewed journal prior to 2017.

Of the included studies, 26 reported compared students with and without disabilities on ratings of teacher-student relationship. Twenty-six studies reported analyses examining associations between relationship and school-related outcomes for students with disabilities. Preliminary findings suggest that poor relationship quality is associated with students' feelings of rejection and problem behaviors, and positive relationship quality is associated with closeness and academic achievement in both reading and mathematics.
**Poster Title:** Dimensionality of Preschoolers' Informal Mathematical Abilities

**Presenter Name(s):** Trelani F. Milburn, University of Alberta, Florida State University (work conducted there)

**Presenter Email:** trelani@ualberta.ca

**Brief Abstract:**
To determine whether preschool mathematical abilities represented separable strands of mathematics, categorical confirmatory factor analysis was conducted and the results were consistent with a multi-dimensional four-factor model of Number and Operations, Measurement, Geometry, and Patterning. Furthermore, there were no differences in performance between males and females at this age.

**Abstract:**
Preschool children possess informal mathematical knowledge and these early competencies are predictive of their performance in formal mathematics in both early elementary school (Ginsburg, Klein, & Starkey, 1998; Purpura, Baroody, & Lonigan, 2013) and in high school (Watts, Duncan, Siegler, & Davis-Kean, 2014). Given the foundational role of preschool mathematical abilities, particularly for children who may be at-risk for poor academic achievement in this area, understanding the underlying structure of these early abilities is critical. In policy, preschool mathematical knowledge is considered multi-dimensional, in that, curricular expectations for instruction include activities related to number and operations, geometry, measurement, and patterning (Council of Chief State School Officers, 2010; National Council of Teachers of Mathematics, 2006; National Research Council, 2009). However, the extent to which these abilities constitute separable dimensions of informal mathematical abilities for children in this young age group has not been determined. If informal mathematical ability is a unidimensional construct representing a single underlying ability, any mathematical task (e.g., counting) would measure children's general mathematical ability and any curricular activity (e.g., counting practice) would promote this mathematical ability. Conversely, if informal mathematical ability is a multi-dimensional construct, then specific tasks would be necessary to measure discrete constructs and specific curricular activities related to each construct would be necessary to promote children's development in each construct. The current study examined the dimensionality of preschool informal mathematical ability for number and operations, measurement, geometry, and patterning. A total of 1630 preschool-age children from low-income families (Mean age = 4.46 years, SD = .37) completed the Child Math Assessment (CMA; Klein & Starkey, 2011), a measure designed to assess a broad range of informal mathematical skills. Categorical confirmatory factor analysis was conducted using item-level data to determine which of four theoretical models fit the data best: (1) a one-factor model of Informal Mathematical Ability, (2) a two-factor model of Number and Operations as one factor and Measurement, Geometry, and Patterning combined as a second factor, (3) a two-factor model of linguistic mathematical ability (Number and Operations and Measurement) and visuo-spatial mathematical ability (Geometry and Patterning), and (4) a four-factor model of Number and Operations, Measurement, Geometry, and Patterning. The best-fitting model was the four-factor model of Number and Operations, Measurement, Geometry, and Patterning. Furthermore, a post-hoc analysis indicated that the Number and Operations factor consisted of three first-order factors of Numbering, Operations, and Relations, in line with a previous study (Purpura & Lonigan, 2013). A Multiple Indicators Multiple Causes (MIMIC) model was used to determine if mathematical ability differed for male and female preschoolers on each of the four factors or on each of the 35 items of the CMA. Results showed no differences. These findings support the view that informal mathematical knowledge is a multi-dimensional construct comprised of each of these separable dimensions and that there was no indication of an achievement gap between males and females for these dimensions at the beginning of preschool. These results provide a framework for future research in informal mathematical achievement.
Poster Title: Preschool Math & Executive Functioning Intervention: A Pilot Study

Presenter Name(s): Lillie Moffett, University of Michigan
Presenter Email: lillmoff@umich.edu

Brief Abstract:
The present study piloted a 7-week preschool math and executive functioning intervention. 40 children were randomly assigned to the treatment group, and 20 to control group ('business as usual'). Findings illustrated a significant difference between treatment and control children on EF gains, but not math.

Abstract:
The strong relationship between math and executive functioning (EF) in young children has been widely demonstrated, although the causal evidence between the two is lacking. There are several effective preschool interventions that target math (see Clements & Sarama, 2011) and EF (see Tominey & McClelland, 2011), although few interventions have combined EF and math (with the exception of combining two separate curricula; Clements et al., 2012). The present study is concerned with performing a short-term intervention that integrates both EF and math activities, with the hopes of targeting children of the lowest EF and achievement levels. The present study conducted a 7-week math and EF intervention at a low-income, primarily Hispanic preschool center. 60 4-year-olds were recruited, with 40 randomly assigned to the intervention, and 20 assigned to a control group ('business as usual'; matched to treatment children on math ability). Although the long-term goal of this study is to adapt this intervention for specifically low-achieving preschoolers, all children were included to see if outcome differences existed at all between children. Children were tested on math (Woodcock Johnson Applied Problems) and EF (Head, Toes, Knees, Shoulders task) pre and post intervention. Ten activities were piloted, which taxed children’s EF but also integrated math concepts (i.e. adding/subtracting one, pattering, shape recognition, counting on etc.). In the first 3 weeks, children were taken out of their classroom in pairs (matched on math ability) for at least 15 minutes, 3 times per week. After cycling through all 10 activities, the last 4 weeks of the intervention were dedicated to integrating the intervention into the classroom-specifically adapting some activities to center and circle time contexts. At the end of the 7 weeks, children in the treatment group made significantly higher gains in executive functioning than children in the control group (p=.005), but there was no statistically significant group difference in math (p=.79). Due to the sample size, we were unable to investigate which factors were potential ‘drivers’ of this EF group difference (i.e. dosage regarding activity type and context, baseline achievement & EF scores of children.). At a descriptive level, however, children of the lowest EF (and average-level math scores) made the highest gains in EF. Future research, however, should statistically examine such factors, systematically compare this intervention to other existing EF/math interventions, and examine teacher feasibility.

* Follow-up assessments will be administered in November this year. And teacher training will occur next summer.

Poster Title: A Multi-Tier Approach to Improving Reading Skills of K-3 Students: Results of a State Pilot

Presenter Name(s): Michael Coyne, University of St. Joseph Nicholas Gage, University of Florida, Additional authors/presenters: Ashley Oldham, University of St. Joseph; Nicholas Gage, University of Florida

Brief Abstract:
The purpose of this study was to examine early literacy growth across two consecutive years of implementing a K-3 multi-tier reading model in four schools across four high priority school districts.

Abstract:
The purpose of this study was to examine early literacy growth across two consecutive years of implementing a K-3 multi-tier reading model in four schools across four high priority school districts. Four schools from four different districts participated in a multi-year state-level MTSS initiative. Schools were selected by the state to participate in the initiative based on low reading performance and their willingness to commit to systematic reading improvement. More than 75% of students in the schools were eligible for free and reduced lunch. Schools included approximately 66% Hispanic students, 17% Black students, 13% White students, and 4% other race/ethnicity. In year 01, all students in grades 1 through 3 were administered DIBELS Next subtests to determine baseline performance before implementing the full MTSS model in Years 2 and 3. In years 02 and 03, schools implemented a fully developed K-3 MTSS reading model across all three tiers. Participants received professional development, interventionist support, and assistance from expert external coaches. The multi-tier model was implemented following a consistent framework across schools including assessment procedures, instructional materials, interventionist training, intervention dosage and fidelity. In order to model early literacy skill growth across time and cohort, we used linear rescaling by benchmark period (Somers, Zhu, & Wong, 2011). We created z-scores from DIBELS baseline performance of Year 01 students at each grade level to serve as the reference group.

K: FSF, LNF, NWF-CLS, 1: PSF, NWF-CLS, DORF, 2: PSF, NWF-CLS, DORF, 3: PSF, NWF-CLS, DORF, DAZE.

We estimated a series of mixed-effects models to estimate the value-added effect of implementing the model across two consecutive years. Findings suggest that there was a positive impact on literacy skills, with increasing effects across years of implementation. Statistically significant differences, with small to moderate effects sizes, were found from baseline year to years one and two. Larger and more consistent effects were found in the earlier grades; smaller effects were found in the older grades where more advanced literacy skills are assessed.
Poster Title: Guided Noticing: Coaching vs. Video Self-Reflection in Special Education Teacher Training

Presenter Name(s): Anna Osipova, California State University Los Angeles; Diane Haager, California State University Los Angeles
Presenter Email: aosipov3@calstatela.edu; dhaager@calstatela.edu

Brief Abstract:
The poster presents a comparative analysis of the impact of two training approaches widely used in teachers' professional development: coaching and video self-reflection. The presentation explores which model is more powerful in improving the quality of academic language instruction for struggling ELLs and ELLs' oral and written academic language.

Abstract:
The poster presents a comparative analysis of the impact of two training approaches widely used in teachers' professional development: coaching and video self-reflection. In the study both approaches were implemented within the framework of an ongoing and contextualized professional development (PD) model that aimed to improve the quality of content area academic language instruction delivered by pre-service special educators to early adolescent English Language Learners (ELLs) at risk for academic failure. The poster presents the results of the study exploring 1) whether a PD model based on coaching is more powerful than a PD model based on video self-reflection in improving the quality of academic language instruction for struggling ELLs; and 2) how the changes in quality of academic language instruction within coaching vs. video-reflection condition influence ELL students' oral and written academic language. Using single subject design, the study examined the teacher quality of academic language instruction and students' use of oral and written academic language at word, sentence, and discourse levels. The participants included 16 pre-service special education instructors teaching in 4th-6th grades, and 16 early adolescent ELL students at risk for failure in literacy attending the social studies classes taught by the teacher-participants. Qualitative analyses of lessons' transcripts identified the patterns in teachers' instruction and students' use and structure of academic language in oral and written responses in each training condition. The analyses indicated that coaching and video self-reflection interventions have a potential for improving instructional quality but result in a variety of different instructional behaviors. Qualitative analysis revealed changes specific to each condition within the teachers' academic language instruction and students' oral and written responses. Throughout the study, teachers increased attention to the multi-tiered nature of academic language and demonstrated strategic approach to lesson planning. Teacher-student interactions revealed a qualitative shift from authoritative to more dialogic style. Focus ELL students' oral responses increased in length and complexity of word and sentence structure. Furthermore, teachers' questions and students' responses exhibited a qualitative shift towards a wider range of increasingly more complex higher order thinking skills. Students' essays improved in academic language use and structure at word, sentence and discourse levels. These results have implications for teacher training programs and for instructional approaches in teaching early adolescent ELL students at risk for academic failure.

Select References:
**Poster Title:** Investigating Construct Validity of the Test of Mathematical Abilities with Learning Disabilities

**Presenter Name(s):** Soyoung Park, University of Texas at Austin; Diane Bryant, University of Texas at Austin,

**Presenter Email:** soyounpark@utexas.edu; dpbryant@austin.utexas.edu

**Additional authors/presenters:** Brian Bryant, University of Texas at Austin

**Brief Abstract:**
This study investigated mean difference scores between selected learning disability diagnostic subgroups and a demographically matched comparison sample on the Test of Mathematical Abilities--Third Edition (Brown, Cronin, & Bryant, 2013). Investigating the differential performances of learning disability diagnostic subgroups on a test is critical evidence of a test’s validity.

**Abstract:**

**Purpose of Study:** One way of establishing a test’s validity is to study the performance of different diagnostic groups of people on the test (AERA, 2014; Anastasi, & Uribina, 1997; Hammill, McGhee, & Ehrler, 2017). Each group’s test results should be consistent with what is known or expected relative to the group’s cognitive makeup (Salvia, Ysseldyke, & Witmer, 2017). In this study, we investigate the different performances based on single, double, multiple learning disabilities (LD) diagnosis subgroups on the Test of Mathematical Abilities-Third Edition (TOMA-3).

**Method**

**Participants:** The data used in this study were drawn from the TOMA-3 normative sample. A total of 1,456 students ages 8-18 year from 21 states were tested between 2010 and 2011. Measures. The TOMA-3 was developed to assess mathematical concepts and processes which are essential to students’ learning, especially in school settings. The TOMA-3 includes four subtests and one supplemental subtest: (1) Mathematical Symbols and Concepts (MS), (2) Computation (CO), (3) Mathematics in Everyday Life (ML), (4) Word Problems (WP), and Attitude Toward Math (AT; supplemental). The averaged reliabilities for all five subtests round to or exceed .90, a most desirable level of reliability. The averaged coefficient for the Mathematical Ability Index is .96, a value indicating nearly perfect reliability. A site coordinator with standardized test experience completed the TOMA-3 testing.

**Statistical Analyses:** Each LD subgroup was matched with a non-LD sample based on age, gender, race, and ethnicity. The TOMA-3 subtest scores and the total composite score were used to examine the significant differences between the target group with a matched sample. An independent samples t-test was conducted. All statistical analyses were completed with SAS, Version 9.4.

**Results:** A statistically significant difference between the mean of the single LD diagnosis group and the matched sample were observed on the TOMA-3 subtests (MS: (30) = 4.29, .01; CO: (30) = 4.13, .01; ML: (30) = 4.19, .01; WP: (30) = 3.88, .01) and the composite standard score ( (30) = 4.94, .01). The magnitude of these differences ranged from the moderate to large. The double LD diagnosis group and the matched sample were significantly different (MS: (44) = 8.71, .01; CO: (44) = 8.01, .01; ML: (44) = 8.57, .01; WP: (44) = 7.91, .01) and the composite standard score ( (44) = 9.48, .01). The effect size of the differences ranged from the large to very large. The multiple LD diagnosis group and the matched sample were significantly different (MS: (28) = 10.79, .01; CO: (28) = 8.06, .01; ML: (28) = 7.46, .01; WP: (28) = 7.57, .01) and the composite standard score ( (28) = 9.66, .01). The effect size of the differences ranged from the very large to very large.
Poster Title: Transfer Measures in Comprehension: A Systematic Review and Evidence from the Field

Presenter Name(s): Samuel A. Patton III, Vanderbilt University
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Brief Abstract:
First, I describe the use of experimenter-created tests of reading and comprehension via a systematic literature review. Second, I present the use of researcher-created tests alongside standardized tests in evaluating the efficacy of a nonfiction comprehension intervention for struggling comprehenders in grades 3-5. Implications for researchers and practitioners are discussed.

Abstract:
Many interventions exist to help struggling students improve their reading comprehension, but in the research literature, standardized ‘far-transfer’ measures are the gold standard for evaluating their effectiveness. However, the inclusion of ‘near-transfer’ and ‘mid-transfer’ measures can provide additional, potentially valuable information in judging an intervention’s efficacy. A considerable number of meta-analyses of comprehension and comprehension-related interventions in which the authors have calculated separate summary effect sizes of researcher-created near-transfer tests and commercial far-transfer tests have tended to reveal larger effect sizes for the near-transfer tests (e.g., Elleman et al., 2009; Edmonds et al., 2009; Hebert et al., 2016; Solis et al., 2011). In assessing the quality of reviewed intervention studies, however, What Works Clearinghouse specifically requires that outcomes ‘not be overaligned with the intervention’ (p. 17). But this implies that there exists an acceptable means of assessing a treatment’s effectiveness using aligned (but not overaligned) measure - in other words, tests of near- and mid-transfer. Collecting data using such tests in addition to ‘gold standard’ far-transfer tests would provide researchers and practitioners alike a full suite of outcomes by which to determine an intervention’s effectiveness.

For this poster, I plan to present two different efforts into research on experimenter-created measures of reading and comprehension. First, I will describe the results of a systematic literature review of experimenter-created measures in reading comprehension intervention studies published since 2000. Second, I will present the methods and results from the third and fourth years of a 5-year study to develop an effective nonfiction comprehension intervention for poor comprehenders in grades 3-5. The intervention activities address many key components of comprehension instruction previously identified by researchers. The intervention also embedded working memory tasks to strengthen cognitive processes thought to underlie comprehension. Results of this randomized control trial are presented with a focus on the use of far-, mid-, and near-transfer measures of comprehension, highlighting the strengths and weaknesses of each for interpreting the program’s effectiveness.

The research questions are as follows:
1. What is the efficacy of the nonfiction comprehension intervention with and without embedded working memory?
2. How does the apparent efficacy of the intervention vary as a function of the data collected from far-, mid-, and near-transfer tests?

1333 students were screened, and eligible students were randomly assigned to one of three groups: Reading Comp with embedded Working Memory (RC[WM]), Reading Comp alone (RC), and business-as-usual Control. Students who met inclusion criteria on the screening measures were administered additional tests of reading comprehension (including experimenter-created near- and mid-transfer tests) and working memory before and after the intervention period. Generally speaking, results aligned with previous findings in the literature: effect sizes were positively correlated with closer proximity between measurement and treatment. Researchers may find the use of a suite of near-, mid-, and far-transfer measures for assessing treatment efficacy intriguing. When assessing a construct as complex as reading comprehension, for example, it may be a disservice to potentially valuable interventions to rely solely on non-aligned, far-transfer measures as the arbiter of their effectiveness.
Poster Title: Supporting States in Impacting Outcomes for Students with Disabilities

Presenter Name(s): Jill Pentimonti, American Institutes for Research; Sarah Arden, American Institutes for Research
Presenter Email: jpentimonti@air.org; sarden@air.org

Brief Abstract:
Staff from the National Center for Systemic Improvement will present results from the Center’s systematic review of State Systemic Improvement Plans, which outlines strategies states are using to improve results for students with disabilities. Findings relevant to identification and implementation of evidence-based practices will be presented.

Abstract:
In an ongoing effort to improve outcomes for students with disabilities, the Office of Special Education Programs (OSEP) revised its accountability system and shifted from a focus primarily on procedural compliance to Results-Driven Accountability (RDA), a framework that integrates compliance and improvement in child-level outcomes. RDA seeks to bring together state, district, school, and community/family stakeholders in an aligned manner with the goal of improving results for students with disabilities. While RDA has many components, one major element is the requirement that states develop, implement and report progress on a multi-phase State Systemic Improvement Plan (SSIP) that defines coherent improvement strategies as well as infrastructure changes and instructional strategies that the state will use to address state identified areas of need for children with disabilities (e.g., reading, math).

The National Center on Systemic Improvement (NCSI) provides states with technical assistance in implementing their SSIPs and refining their strategies for effective implementation. This presentation will report on data gathered from a systematic review of SSIPs, and will overview: (1) the evidence-based practices (EBPs) states included in their SSIP, (2) strategies states are using to implement the selected EBPs within districts (to include questions of fidelity), and (3) considerations for researchers to support states and districts in identifying and implementing EBPs.

Procedures for Systematic Review of SSIPs: In order to review SSIPs, NCSI Staff created a data collection coding tool based on OSEP’s State Report Organizational Outline. A review protocol was then developed to systematically and consistently analyze the SSIPs. Coders (n=13) completed a reliability training in advance of reviews and additional reliability checks throughout the review process. Identified EBPs: Data revealed some states identified specific curricula as EBPs (e.g., Reading Mastery Program), while others identified more general constructs (e.g., foundational skills of literacy). Further, many states also identified instructional frameworks as EBPs, to include: MTSS (55% of states), PBIS (32%), and UDL (21%). Implementation of EBPs: In regard to implementation, many states (69%) listed ‘setting up a job-embedded support system (e.g., coaches)’ as a strategy for ensuring fidelity when implementing EBPs. Sixty-nine percent of states also listed ‘establishing implementation teams at a state/local level for overseeing implementation through local plans’ as strategy for ensuring fidelity. Finally, 61% of states mentioned ‘providing a means for collection and use of data regarding practice implementation’ as a way to ensure fidelity.

Impacting Outcomes with Research and TA Supports: Within the Phase III SSIP reports, states indicated a series of next steps for continued implementation and discussed barriers to implementation thus far. Forty-three states (72%) indicated their anticipated barriers moving forward would include: selection and implementation of EBPs, insufficient funds, lack of alignment and braiding, limited communication across divisions, insufficient training, and lack of staffing. We suggest, that together with the data regarding the EBPs states selected, this information be used as a mechanism for supporting further implementation of SSIP plans by helping states align vertical communication, braid resources and funding mechanisms, and build relationships with LEAs to better support selection and implementation of EBPs.
**Poster Title:** Intensive Intervention in Mathematics across Elementary Schools: What Should Implementation Look Like?

**Presenter Name(s):** Kathleen Hughes Pfannenstiel, American Institutes for Research; Sarah Arden, American Institutes for Research

**Presenter Email:** kpfannenstiel@air.org; sarden@air.org

**Brief Abstract:**
This poster will review implementation data from an ongoing USDOE funded i3 grant that explores ways data-based individualization (DBI) can be used to support students with severe and persistent mathematics learning needs. This poster session will include DBI evidence-based protocol, DBI fundamentals, team structures and processes and outcome measures.

**Abstract:**
Since the late 1990s achievement trends for students with disabilities (SWD) in mathematics have been persistently low, despite steady progress of their nondisabled peers. The 2013 NAEP results revealed a mere 18 percent of SWDs met or exceeded proficiency targets in mathematics at fourth grade, compared to 45 percent of students without disabilities; for eighth graders, these numbers dropped 8 and 39 percent, respectively. These data suggest schoolwide efforts to improve outcomes for all students may be insufficient for SWDs. Research findings indicate one way to impact outcomes for SWDs and those with severe and persistent learning needs is through data-based individualization (DBI; NCII 2011). Data-based individualization provides a framework for intensifying intervention in which systematic student-level assessment data are used to determine when and how a student’s intervention should be modified and individualized and is often implemented within an MTSS framework 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.

In 2015, the Franklin Pierce School District (FP) and the American Institutes for Research (AIR) were awarded a 3-year Investing in Innovation (i3) grant focused on implementing DBI in mathematics in eight, high-needs elementary schools in FP. Since 2015, project staff have met monthly with two cohorts (four schools in each) of FP intervention teams, school administration, and district leadership to provide professional development and coaching supports to implement DBI. The project has two evaluation outcome goals: (1) student level outcomes (formative) and, (2) implementation progress (summative). This poster will reflect the summative evaluation data found after the commencement of year 2 of the i3 project. In order to measure progress towards implementation of DBI, project staff utilized a combined rubric from the Center on RTI and the National Center on Intensive Intervention to measure understanding and implementation of DBI within a multi-tiered system of support. Implementation interviews were held annually to measure: (a) systems and policies, (b) infrastructure and vision for programs, (c) communication with family and staff, (d) resources for intervention, assessment, data-based decision making, (e) multilevel instruction and intervention, (f) secondary intervention, (g) intensive math intervention, and (h) fidelity and evaluation. Each component of the rubric is ranked 1-5. Scores are categorized into components of DBI (i.e., intensive intervention) and those reflecting the broader MTSS system (i.e., core instruction, perception of MTSS).

In fall of 2015 scores measuring MTSS across Cohort 1 schools averaged a 2.5 out of 5 and increased to 3.9 after two years of implementation support. In the area of DBI, the average score was 1.9, which almost doubled after two years of support to 3.9. Similar trends were found in Cohort 2. Project staff noted implementation strengths (valid and reliable progress monitoring tools, decision rules for intervention, leadership support) as well as areas of growth (diagnostic assessments, school-based fidelity checks). Presenters will review strengths and areas of growth in light of implementation data and will provide suggestions for researchers using DBI as a way to impact student outcomes.
Poster Title: Children with High, Growing, and Delayed Alphabet Knowledge: Predictors and Kindergarten Readiness

Presenter Name(s): Shayne B. Piasta, The Ohio State University
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Brief Abstract:
Using multilevel growth mixture modeling, we found three patterns of alphabet knowledge development (high, growing, and delayed) that predicted children’s (n = 998) later kindergarten readiness. Demographic, home, and classroom factors differentiated the high from growing and delayed profiles but few characteristics differentiated the growing versus delayed profiles.

Abstract:
Young children’s levels of alphabet knowledge are correlated with continued academic success (e.g., National Early Literacy Panel, 2008). Yet, we know little about children’s development of alphabet knowledge over time, particularly as related to factors of risk and resilience and subsequent academic performance. To our knowledge, only Torrpa and colleagues (2006) have longitudinally documented growth in children’s alphabet knowledge, showing that Finnish children’s letter name knowledge development was related to their home learning environments and that both level and growth were indicators of later reading achievement.

In the current study, we examined the development of letter name and sound knowledge in a sample of U.S. children to address three research questions:
1. What are the patterns of growth in children’s letter name and sound knowledge across the preschool-kindergarten years?
2. What characteristics are associated with patterns of growth in children’s alphabet knowledge? and
3. Are patterns of growth in children’s letter name and sound knowledge predictive of children’s kindergarten readiness outcomes?

We assessed children’s (n = 998) letter name and sound knowledge in the fall of preschool, spring of preschool, and fall of the subsequent year using the Letter Recognition subtest of the Phonological Awareness Literacy Screening for Preschool (Invernizzi et al., 2004) and the Letter Sound Short Forms (Piasta et al., 2016). We also collected demographic, family history, and home literacy environment information via parent survey and conducted fall and spring observations of children’s preschool classrooms to examine the extent of children’s alphabet learning opportunities (Pelatti et al., 2014), quality of the classroom literacy environment (Dynia et al., 2016), and general quality of instruction (Pianta et al., 2006) as characteristics potentially predictive of alphabet knowledge development. Finally, we obtained state kindergarten readiness data for those children who matriculated to public kindergarten classrooms.

Multilevel growth mixture modeling (Muthén & Muthén, 2007) indicated three patterns of alphabet knowledge growth, replicated for both letter name and sound knowledge. In the ‘high’ profile, children began with and maintained high levels of alphabet knowledge. In the ‘growing’ profile, children began with low alphabet knowledge but exhibited substantial growth. In the ‘delayed’ profile, children also began with low alphabet knowledge but did not exhibit much growth over time. Using multilevel logistic regression to predict profile membership, several characteristics differentiated children in the high profile from those in the growing or delayed profiles, including age, family income, maternal education level, familial risk of reading difficulties, home literacy environment, extent of preschool alphabet learning opportunities, and general quality of preschool instruction. Few characteristics differentiated children in the growing versus delayed profiles. Moreover, profile membership significantly predicted children’s kindergarten readiness: Children in the high profile performed best, followed by those in the growing profile. Findings indicate the importance of considering not only level but also growth in alphabet knowledge as an indicator of risk and have implications concerning how we might support more optimal patterns of alphabet knowledge development.
Poster Title: Write to College: Self-Regulated Strategy Development Intervention for College Entrance Essay Exam

Presenter Name(s): Amber B. Ray, University of Hawai`i at Mānoa; Steve Graham, Arizona State University
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Brief Abstract:
We share results of a writing intervention study using Self-Regulated Strategy Development for improving students with high-incidence disabilities and struggling writers performance on the ACT writing assessment. SRSD instruction enhanced students' planning, ACT writing scores, inclusion of argumentative elements in compositions, and the use of transition words in text.

Abstract:
Rationale: Writing is a skill that presents a challenge for many students. While college admission decisions are based on many components, the college entrance exams, including the written assessments, are an important part of the process. Usefulness to Practitioners: SRSD instruction and strategies taught in this study are powerful tools teachers can use to prepare and help their students make meaningful gains on the college entrance writing exam. Application of the teaching procedures used in this study can help students with high-incidence disabilities and struggling writers to succeed on an important aspect of the college admissions process.

Relevance to Learners, Families, or Educators of Diverse Groups: The results of the study reveal that students with high-incidence disabilities and struggling writers can make meaningful improvements on their ACT essay writing abilities, when provided with test preparation on writing an argumentative essay for the ACT writing exam, through self-regulated strategy development.

Participant Outcomes: Develop a general understanding of using self-regulated strategy development (SRSD) for high school writersAccess to instructional materials for college entrance exam writing strategy

Evidence of Effectiveness of the Practice or Content, Summary of Research Literature: SRSD has been used to teach writing to high school students in several previous studies (Jacobson & Reid, 2010, 2012; Kiuhara, O’Neile, Hawken, & Graham, 2012; Mason, Kubina, & Hoover, 2013).

Research Questions: Does SRSD instruction for the ACT writing assessment enhance the quality of students’ advanced plans, overall ACT writing scores, number of argumentative essay elements, and number of transition words? Are the effects maintained over time? What are the effects of SRSD instruction for the ACT writing assessment on students’ genre knowledge, self-efficacy for writing, and general argumentative writing abilities?

Research Design: A randomized control trial was conducted with 20 high school students with high-incidence disabilities and struggling writers. Treatment students received ACT writing instruction which included learning an argumentative writing strategy, HIT SONGS3, and self-regulation strategies. Strategies were taught using SRSD instructional model which includes six instructional stages. Control students received ACT math preparation. Fidelity was assessed using an instructor checklist and observation of all lessons. Treatment fidelity was 100%. All essays were scored independently by the first author and a trained rater. Results: After completing SRSD instruction for the ACT writing exam all students made improvements. Planning: Effect Size (ES) 5.54 ACT Writing Score: ES 4.86 Argumentative Elements: ES 4.20 Number of Transition Words: ES 1.78 Genre Knowledge: ES 1.66 Self-Efficacy for Writing: ES 2.18 Generalization: ES 1.81 Effects of instruction on the ACT writing assessment were maintained over time with maintenance scores statistically higher than pretest scores.

Discussion of Research Findings: After receiving SRSD instruction, nine out of 10 treatment students in this study scored above the 2016 national average of 6.2 (ACT, Inc., 2017), with only one student scoring below, earning a score of 6. Highlighting that all students benefited from SRSD instruction. The results add to the evidence that SRSD instruction is effective for high school students with high-incidence disabilities and struggling writers.
Posters:

**Poster Title:** Could NIMH's Research and Domain Criteria Improve Learning Disability Classification and Identification?

**Presenter Name(s):** Laura Rhinehart, UCLA California State University Los Angeles

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**Brief Abstract:**
This poster will describe how the National Institute of Mental Health's Research and Domain Criteria (RDoC) might help conceptualize Learning Disabilities (LD). The poster will describe a theoretical model for examining low academic achievement using RDoC. Using this model, the poster will propose new models of identifying and describing LD.

**Abstract:**
Researchers studying the best ways to identify and describe learning disabilities (LD) face some of the same challenges that researchers identifying and describing mental health disorders and disabilities face. Specifically, it is difficult to determine the etiology of these disorders, and it is not always clear which individuals should be identified with a disorder/disability. As a response to these issues in mental health, the National Institute of Mental Health (NIMH) introduced Research and Domain Criteria (RDoC) as part of NIMH's Strategic Plan in 2008. One of the major benefits of RDoC is that it, 'frees scientists from traditional categories that have proven to be heterogeneous' (NIMH, 2015, p.16). In line with this, RDoC does not define disorders or mention thresholds or cut-points for disorders. The RDoC framework has five domains of functioning: negative valence systems, positive valence systems, cognitive systems, systems for social processes, and arousal/regulatory systems. Under each of these domains are seven units of analysis, including behavioral and self-report measures. Researchers using the RDoC framework base classification of mental disorders on scientific research like genetics and neuroscience. In practice, this means that behavioral and self-report measures that have been biologically linked to the related construct are acceptable, while observed symptoms are not weighed as heavily. This poster will present a conceptual framework based on RDoC to examine the symptom of low academic achievement, which often results in LD classification. Given current definitions of LD, this presentation will focus on the cognitive system domain and links between this domain and LD. For example, RDoC breaks cognitive systems down to the following constructs: attention, perception, declarative memory, cognitive control, and working memory. Each of these constructs is broken down further into subconstructs, and each subconstruct includes associated tasks. For example, under the construct of cognitive control, one of the subconstructs is Performance Monitoring. Using RDoC, Performance Monitoring can be measured using the following tasks: Flanker tasks, Simon tasks, and Stroop tasks. These tasks are consistent with RDoC because they minimize the influence of linguistic and cultural diversity, which has been a challenge for many tests that claim to measure cognitive ability. Although this presentation will focus on the RDoC’s cognitive system domain, it will also examine links between LD and other relevant domains of functioning, including negative valence systems, positive valence systems, and the systems for social processes.

Additionally, this poster will review associations between learning disabilities and comorbid conditions in each RDoC construct. These conditions include ADHD, depression, and anxiety. In practice, using an RDoC framework could provide support for subgroups of students with LD, based on the various subconstructs of cognition. Another implication of these associations is that subgroups of students based on performance on RDoC constructs might better predict treatment outcomes as part of Response to Intervention.
Poster Title: Examining the Effect of Audience Awareness Interventions on Writing Quality: A Meta-Analysis

Presenter Name(s): Julia V. Roehling, University of Nebraska-Lincoln; Pam Bazis, University of Nebraska-Lincoln
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Additional authors/presenters: Michael Hebert, University of Nebraska-Lincoln

Brief Abstract:
Audience awareness is thought to separate competent writers from struggling ones. The purpose of this meta-analysis was to examine the effectiveness of interventions aimed at developing students’ audience awareness when writing. Outcome measures included communicative adequacy and overall quality of written products.

Abstract:
One factor that appears to distinguish competent writers from struggling ones is audience awareness or a sense of audience (e.g., Monahan, 1984; Sanders-Reio, Alexander, Reio, & Newman, 2014). Students with a high degree of audience awareness have the ability to take into consideration the informational needs and expectations of their readers and to tailor their writing, accordingly (e.g., Kroll, 1978a; Kroll, 1978b; Wollman-Bonilla, 2001). As such, it may be worthwhile for teachers to target audience awareness during writing instruction. Researchers have developed instructional interventions aimed at improving students’ audience awareness (e.g., Holliway & McCutchen, 2004; Moore & MacArthur, 2012). The purpose of this meta-analysis is to examine the effect these interventions have on the quality of children’s and adolescent’s written texts. To identify studies, we ran electronic searches using the terms ‘writ* and audience aware*’ and ‘writ* and sense of audience’ across six databases (i.e., Academic Search Premier, PsycInfo, PsycArticles, Education Index Retrospective, ERIC, and ProQuest International). Forward and backward searches of the studies identified from these electronic searches were also conducted. In the end, this systematic search process yielded 18 relevant studies. The grade level of the participants ranged from 1st to 9th. The outcome measures used in the analysis reflect constructs related to communicative adequacy and overall quality.

Preliminary findings suggest that writing instruction aimed at developing audience awareness may be an effective way to enhance students’ writing quality (ES = .50). In addition to presenting the results of the meta-analysis, we describe the different types of audience awareness interventions and discuss which ones appear to be the most beneficial for students.

References:
Poster Title: Sentence Combining Instruction for Students who are Blind

Presenter Name(s): Mackenzie Savaiano, University of Nebraska-Lincoln; Michael Hebert, University of Nebraska-Lincoln
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Additional authors/presenters: John Goodrich, University of Nebraska-Lincoln

Brief Abstract:
This study used a multiple probe across participants design to examine the effectiveness of sentence combining instruction with students who are blind. Instruction focused on adjective use, as this is a skill shown to be difficult for students with VI. Measures of sentence combining and passage writing were examined.

Abstract:
Writing is an area with a need for more research. This need is intensified when discussing students with visual impairments (VI), including blindness. While several meta-analyses have examined effective writing practices (e.g., Graham & Perin, 2007), there is no research on the effectiveness of these practices with students with VI. Wide variations in writing methods and abilities among students with VI exist (Erin & Wright, 2011; Kreuzer, 2007; Ryles, 1997). Of note for this study is existing research suggesting that adjective use is an area of deficiency for students with visual impairments (Kreuzer, 2007). Sentence combining is one instructional strategy that has been shown to be effective for improving sentence writing skills, writing fluency, and writing quality in students with disabilities (Graham & Perin, 2007), but has not been used with students with VI. Because not much is known about writing instruction for students with VI, this study was designed to examine the effectiveness of sentence combining with this low-incidence population.

Research Questions:
1. Is there a functional relation between teaching sentence combining with a focus on adjectives and writing more complex sentences in descriptive passages for students with visual impairments?
2. Is there a difference between providing written sentence combining instruction and providing oral sentence combining instruction, when examined through visual analysis?

Method:
The current study uses a multiple probe across participants, single-subject design study. We recruited four students with visual impairments who use braille for writing. Students with additional disabilities that prevented them from writing using a traditional braille writing tool (e.g., brailewriter) were excluded from the study. Students were in grades 3-5 and completed the study at the University Reading Center. Measures included sentence combining exercises and descriptive passage writing. Both measures were scored for percent of correct word sequences. Each session introduced three target vocabulary words related to a unifying topic. A total of 20 topics were covered across sessions. Instruction included three modeled examples, three guided practice examples, and ten independent practice examples that served as the sentence combining probe for each session. Sessions included exercises to combine two sentences and exercises to combine three sentences.

Findings:
This research is underway. Preliminary results from our first student suggest the possibility of a functional relationship between sentence combining instruction and increases in students' correct word sequences.

References:
Poster Title: The Impact of Multisensory Instruction on Word Spelling

Presenter Name(s): Nora Schlesinger, Kennesaw State University, Arizona State University
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Brief Abstract:
This study investigated whether multisensory language instruction promoted better word spelling than structured language instruction for second graders with typical reading (TD; N=6) or with dyslexia (DYS; N=5). A single-case design was used. The multisensory intervention did not provide a clear advantage.

Abstract:
The purpose of this study was to investigate whether the use of simultaneous multisensory structured language (multisensory) instruction promoted better word spelling for second grade children with typical development (TD; N=6) or with dyslexia (DYS; N=5) than structured language (structure language) instruction alone. Both the multisensory and structured language interventions provided explicit systematic phonics instruction; however, the multisensory intervention also utilized simultaneous engagement of at least two sensory modalities (visual, auditory, and kinesthetic/tactile).

The use of non-English graphemes (letters) to represent two pretend languages were used to control for children's lexical knowledge. Word spelling was selected as a dependent variable because grapheme-phoneme correspondence allows children to shift from reliance on visual cues to phonetic processing (Ehri & Wilce, 1985). Utilization of grapheme-phoneme correspondences allows for the formation of orthographic mapping for sight word reading and spelling from memory (Ehri, 2014). An integrated multiple baseline, multiple probe across subjects single-case design, with an embedded alternating treatments design, was used to compare the efficacy of multisensory and structure language interventions. Participant's graphed data was visually analyzed and individual Tau-U and weighted Tau-U effect sizes were calculated for the outcome variable of word spelling. This empirical study was highly controlled, ensuring scientifically valid results.

First, non-English graphemes were used to better target simultaneous multisensory input as a variable and provide control for participants' prior letter and lexical knowledge, including phoneme to grapheme correspondence. Secondly, the use of visual analysts naïve to the study's purpose helped control for Type I errors (Ferron & Jones, 2006). In addition, the integrated design followed WWC (2013) established criteria. Furthermore, this study's unique integrated design (Shadish & Sullivan, 2011) and control of Type I errors added important information to the use of single-case design as well as the feasibility of using integrated single-case design to empirically study reading impairments.

This well-controlled study provided important missing information regarding simultaneous multisensory input as an efficacious reading and spelling intervention. Results supported structured language instruction within multisensory based programs as effective in promoting basic literacy skills. However, simultaneous multisensory input did not provide a treatment effect above and beyond the structured language effect. It is speculated for this study other components inherent to structured language may have directly impacted treatment effects.
**Poster Title:** A Synthesis of Reading Comprehension Interventions for Persons with Mild Intellectual Disabilities

**Presenter Name(s):** Alexandra E. Shelton, University of Maryland, College Park
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**Additional authors/presenters:** Jade Wexler, University of Maryland, College Park

**Brief Abstract:**
A synthesis of the extant research on reading comprehension interventions for individuals with mild intellectual disabilities (ID) in grades 4 through 12 and postsecondary programs is presented. Findings from 12 studies published between 2001 and 2017 revealed that single-component interventions typically result in better passage comprehension outcomes than multicomponent interventions.

**Abstract:**
In order to meet typical reading and academic demands that students face beginning in the upper elementary grades through postsecondary years, students need to be able to read and understand complex text. Authors of several seminal reading intervention syntheses for students in grades 4 through 12 confirm that using explicit instruction to teach students how and when to use evidence-based literacy practices (e.g., summarizing text, identifying story elements, and self-monitoring) can help struggling readers as they get older and encounter complex text more frequently (e.g., Edmonds et al., 2009; Scammacca, Roberts, Vaughn, & Stuebing, 2015). While the authors of these previously conducted syntheses provided guidance on effective reading interventions for struggling readers and students with learning disabilities (LD), they do not address the needs of students with mild intellectual disabilities (ID) specifically, who tend to have greater deficits than students with LD but receive less instruction than them (Bouck & Satsangi, 2015). Therefore, the purpose of the present synthesis was to determine the effectiveness of interventions that target the reading comprehension outcomes of individuals with mild ID in grades 4 through 12 and postsecondary programs.

Studies that qualified for inclusion in our corpus were published between 2001 and 2017 and tested the effects of single-component or multicomponent reading interventions on sentence and/or passage comprehension outcomes. We defined single-component interventions as interventions that only targeted reading comprehension (i.e., reading comprehension instruction without instruction on word reading, fluency, or vocabulary). Multicomponent interventions were defined as interventions that provided ‘instruction in more than one component of reading’ (Edmonds et al., 2009, p. 290), one of which was reading comprehension. All studies utilized an experimental design, quasi-experimental design, or single-case research design (SCRD). Authors of studies provided sufficient information to calculate effect sizes, including Cohen’s d (Cohen, 1988) for group design studies and percentage of non-overlapping data (PND; Scruggs, Mastropieri, & Casto, 1987) for SCRD studies. Based on our criteria, 12 studies (in 11 articles) were eligible for inclusion in our corpus.

Our corpus of studies assessed intervention effects on reading comprehension using standardized and researcher-developed measures. Results from single-component group design interventions (n = 5) revealed small to large effects (d = -0.01-4.09), and the PND of the one SCRD study with a single-component intervention was 100%. Results from multicomponent group design interventions (n = 3) also revealed small to large effects (d = 0.22-1.46), yet the SCRD studies with multicomponent interventions (n = 3) were not effective (PND = 0%-18.25%). These synthesized findings indicate that single-component interventions tend to be more effective than multicomponent interventions in improving the reading comprehension outcomes of individuals with mild ID. Practical implications as well as limitations and recommendations for future research will be presented.
Poster Title: Real-time Performance Feedback to Improve Teachers' Instructional Practice: A Review

Presenter Name(s): Anne Sinclair, Vanderbilt University; Samantha Gesel, Vanderbilt University
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Additional authors/presenters: Lauren LeJeune, Vanderbilt University, Chris Lemons, Vanderbilt University

Brief Abstract:
The purpose of this review was to evaluate the quality of the evidence base for real-time PF delivered to pre-service and practicing educators via technology. We conducted a comprehensive literature search, and coded all relevant studies for rigor and quality. Findings pending.

Abstract:
Researchers have outlined several reasons for the persistence of the research to practice gap in special education (Greenwood & Abbott, 2001). Effectively training and supporting teachers in the implementation of EBPs may be one way to close the research to practice gap and improve student outcomes (Brock et al., 2017). However, typical models of professional development for teachers that include a one-day in-service or workshop followed by little to no follow up support have been shown to be ineffective in improving teacher fidelity to EBPs (Yoon et al., 2007).

Several researchers have found that providing ongoing support to teachers via performance feedback (PF) and coaching are effective practices for improving teacher behavior (e.g., Brock et al., 2017; Kretlow & Bartholomew, 2010). However, PF is a broad category, that encompasses a wide range of practices and outcomes. Research studies have examined different modes of PF delivery, different PF content and different teacher and student outcomes. The broad spectrum of PF categories make it useful to examine specific components of PF content, delivery methods, and outcomes for which it is useful.

At least two reviews examined the timing of PF offered to teachers (Scheeler et al., 2004; Solomon et al., 2010). In a descriptive literature review, Scheeler and colleagues (2004) identified the immediacy with which teachers receive PF as the ‘only attribute that clearly demonstrates efficacy as a characteristic of effective feedback’ (p. 404). This rationale has been used to justify many studies investigating PF delivered with the greatest possible immediacy (i.e. in real-time). Though a second review (Solomon et al., 2012) did not identify significant statistical effects for the immediacy of PF, it did find that study protocols that provided immediate feedback had descriptively larger effects than PF provided later. Given these results and the rapid advancement of technology to facilitate real-time PF, it may be useful to investigate the effectiveness of immediate PF offered to teachers during teaching sessions in natural environments. The purpose of this review was to evaluate the quality of the evidence base for real-time PF delivered to pre-service and practicing educators via technology. Our research questions were: (a) What is the methodological quality of the research base for providing real-time PF to increase teacher implementation of instructional practices for students with disabilities? and (b) Is the evidence sufficient to designate real-time PF as an evidence based practice for improving teacher practice?

We conducted a comprehensive literature search to identify research studies that investigated the effect of covert, real-time PF delivered via technology to preservice and practicing teachers on teacher implementation of instructional practices for students with disabilities. We adapted the quality indicators developed by the Council for Exceptional Children (CEC, 2014) and applied them all relevant studies. Studies that met all quality indicators were evaluated for magnitude of effects. Results pending analysis.
Poster Title: Motivated Behavior: A Predictor of Writing Performance for Young ELL's?

Presenter Name(s): R. Alex Smith, University of Missouri; Erica S. Lembke, University of Missouri
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Brief Abstract:
This study integrated Curriculum Based Measures in Writing (CBM-W) and behavioral data for 70 English language learners in the 1st through 3rd grades to explore whether or not the inclusion of behavioral data improved the predictive validity of CBM-W and identified student groups that responded differentially to general writing instruction.

Abstract:
English language learners (ELs) are the fastest growing sub-population of students in the U.S. and the most recent writing assessments by the National Assessment of Educational Progress indicated that ELs performed below all other students, including those with disabilities (National Center for Educational Statistics, 2012). These assessment results indicate a need for early identification of risk and intervention in writing for ELs.

Motivation (e.g., self-efficacy, interest, value) is often underscored as critical in learning to write (Bruning & Kauffman, 2016). For young students, observed task-specific behavior is often used as a proxy measure of motivation. Motivated academic behavior is behavior that creates a favorable condition for learning (e.g., on-task, completes work) while unmotivated behavior (e.g., off-task, failure to complete work) restricts both the number and quality of opportunities to learn. The purpose of this study was to examine how the integration of a measure of motivated behavior with a measure of academic skills identified groups of young ELs with varying degrees of risk and responsiveness to general writing instruction.

Seventy ELs in the 1st-3rd grades completed two forms of word dictation, a word level Curriculum Based Measure of Writing, in the fall, winter, and spring. Teachers completed a measure of observable academic behavior during writing instruction in the fall, winter, and spring for each participant. Participants also completed the writing sub-test of a common standardized assessment for English Language Proficiency in the winter. Analysis is on-going but hierarchical regression will be used to identify how much additional variance a measure of behavior can explain beyond word dictation, both administered in the fall, in performance on the winter standardized test of writing. This variable-centric analysis will be followed up by a person-centered analysis in the form of cluster analysis. Cluster analysis on fall word dictation and the behavior measure will be run to identify student group. Once student groups are identified and assigned to participants, growth and seasonal scores on word dictation will be described by groups and analyzed with appropriate linear regression procedures. Possible implications include the ability to predict EL responsiveness to general writing instruction according to student groups and more accurately predicting performance on the criterion measure by integrating academic and behavioral measures. Results will inform proposals for a larger study that allows for Latent Profile Growth Analysis.

References:
Poster Title: High decoding and low comprehension in children with Autism spectrum disorders: Not so fast...follow the data

Presenter Name(s): Michael Solis, University of California Riverside Danielle Cravalho, University of California Riverside,

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Brief Abstract:
The purpose of this presentation is to report findings from a reader profile study of students with Autism Spectrum Disorders in grades 4-8 and a follow-up single case design word-study intervention. Sources of data include standardized measures of reading and language, reading probes, and procedural integrity. Preliminary results will be presented with discussion of the implication of the findings.

Abstract:
The base of literature regarding students with Autism spectrum disorders (ASD) and reading performance frequently refers to a unique profile of high decoding and low comprehension (Goldberg, 1987; O'Connor & Hermelin 1994; Patti & Lupinetti 1993; Whitehouse & Harris 1984). These findings along with the inherit issues of pragmatic language for this population appear to have influenced much of the research on reading interventions to be focused primarily on addressing problems with reading comprehension with much less attention to addressing word-reading performance and the potential need for intervention. There are two purpose of this presentation: (1) to report findings from a reader profile study of students with ASD (N = 47), (2) to report the findings from a single-case design (SCD) study of a word reading intervention for students with ASD (N=5). These separate yet related investigations were designed to answer the following research questions: How are students with ASD currently performing in reading and related language outcomes? How do students with ASD with word-reading deficits respond to an adapted word-study intervention?

Participants. Students with ASD in grades 4 - 8 (N = 47) with average cognitive performance and a history of not passing the state reading test and/or reading goals included for the Individualized Education Plan (IEP). A subset of students (N = 5) with low comprehension and low word reading performance were selected for the SCD study. Measures. WJIII LW-ID, TOWRE, WJIII RF, WJIII-PC, TOSREC, KBIT-2, TLC Listening Comprehension, CELF-5, Recalling Sentences, Researcher-developed reading probes. SCD Word Study Intervention. Utilizing the techniques described by the National Center on Intensive Interventions (2013), we adapted the word study reading program that was in use by the school district, Words Their Way (Bear et al. 2016), by infusing explicit instruction and corrective feedback through a data-based individualization (DBI) approach to intervention.

Data Analysis. For standardized reading and language assessments, standards scores, percentile ranks and group means and standard deviations will be reported. For data collected from the SCD study, visual analysis of findings will be reported in addition to interobserver agreement of dependent measures and procedural integrity.

Results and Discussion. Preliminary results of the reader profile study indicated that over 30% of students with ASD had comorbid difficulties of low comprehension and low word reading skills. Results from the SCD study indicated immediate and consistent improvements in word reading outcomes across all participants. The findings from the reader profile investigation point towards researchers and practitioners taking into account reading performance when considering appropriate interventions for students regardless of the trends associated with their disability category. The SCD study provides evidence of the value of adapting previously developed word-study programs to provide interventions with increased intensity. Findings will be discussed as part of laying out a research agenda for identifying effective reading interventions for student with ASD.
Poster Title: If Time Allows: The Independent Pleasure Reading Habits of Teacher Candidates

Presenter Name(s): Yan Wei, Southern Connecticut State University
Presenter Email: weiy2@southernct.edu
Additional authors/presenters: Louise Spear-Swerling, Southern Connecticut State University; Mia Mercurio, Southern Connecticut State University,

Brief Abstract:
This session explores the independent pleasure reading habits and reading volume of teacher candidates, including two different measures of reading volume, an author recognition test for fiction and another for nonfiction.

Abstract:
Purpose: Many studies of independent reading have focused on children. However, a few studies (e.g., Nathanson, Pruslow, & Levitt, 2008) have administered reading habits questionnaires to teachers or teacher candidates and shown worrisome levels of 'aliteracy,' a disinclination to read for pleasure despite adequate ability to read. These findings are alarming because scholarly panels (e.g., Snow, Griffin, & Burns, 2005) have noted the importance of teachers’ ability to serve as good models of literacy for their students. Independent pleasure reading habits could be key to effective literacy instruction. The purpose of this presentation is to explore relationships between candidates’ independent pleasure reading and the relationship between these variables and the indicator of teacher candidates' success in teacher preparation program.

The research questions are as follows:
1. What specific habits of pleasure reading do teacher candidates report, and do these habits vary by certification (e.g., candidates seeking special education certification vs. elementary certification)?
2. Does reading volume, as measured by author recognition measures, vary by certification?
3. What is the relationship between teacher candidates’ self-reported pleasure reading habits, and their performance on the author recognition measures?
4. Do teacher candidates’ self-reported habits of enjoyment in the areas of math, music, or writing differ from those in the area of reading?

Participants: A total of 100 undergraduate and graduate level pre-service teacher candidates/in-service teachers participate in this research study.

Methods: There will be four measures for participants to complete in writing: 1) background information questionnaire; 2) reading habits questionnaire; 3) an author recognition test involving popular fiction authors; and 4) an author recognition test involving popular nonfiction authors. As part of the background questionnaire, participants are asked some additional questions, for example, whether they have learned to play a musical instrument; whether they engage in math activities for enjoyment, such as Sudoku; and whether they write for enjoyment. These questions are included mainly to determine whether candidates’ habits of enjoyment in these areas differ from their habits in reading - for example, whether candidates are more/less likely to report engaging in math activities for enjoyment than reading activities.

Results: We will analyze our qualitative data drawing from a grounded theory approach (Glaser & Strauss, 2009). To ensure the creditability and trustworthiness of our finding, we will use multiple measures identified by the CEC quality indicators for qualitative research (Brantlinger et al., 2005). Final results and implications to research and practice will be reported.

References:
Poster Title: Technical Adequacy of Vocabulary-Matching Curriculum-Based Measures in a University Special Education Course

Presenter Name(s): Pamela M. Stecker, Clemson University; Abigail A. Allen, Clemson University
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Brief Abstract:
Undergraduate education majors (n = 114) in an introductory special education course took eight vocabulary-matching measures over a semester and completed a survey indicating their satisfaction with the measures as a self-monitoring tool for learning course material. Results include reliability, validity, and slope for eight alternate forms.

Abstract:
Educators at all levels require reliable and valid assessments to measure student learning. One method of assessing content knowledge is vocabulary-matching Curriculum-Based Measurement (CBM), which has demonstrated evidence of reliability and validity in secondary-level content-area classes (e.g., Espin et al., 2013). However, only one descriptive study investigated the use of vocabulary-matching in a college course (Larson & Ward, 2006) and did not determine the technical adequacy of the measures. Technically adequate measures are necessary at the university level for instructors to accurately gauge student performance, but also provide an opportunity for teaching students about progress monitoring and examining their own learning. This study evaluated technical features of vocabulary-matching measures in an introductory special education course and preservice teachers’ satisfaction with the measures to support their learning.

Research Questions:
1. Do vocabulary-matching measures used in an introductory course on special education demonstrate evidence of reliability, criterion-related validity, and growth over a semester?
2. How do preservice teachers rate their satisfaction with using vocabulary-matching CBM across a semester?

This study spanned a 15-week semester in three sections of an introductory special education course. Participants (n = 114) were undergraduate general and special education majors. Students took a total of eight 4-minute, 20-item vocabulary-matching measures every other week covering critical terms in the textbook (Hallahan, Kauffman, & Pullen, 2015). Students then graphed their performance. Vocabulary items were identified from the text glossary and evaluated by two special education experts. Each 20-item probe had 22 definitions (20 correct and 2 distractors) and were randomly selected with replacement for distribution across probes according to procedures from past research (Espin et al., 2013). Additionally, participants took a pre-/post-test multiple-choice vocabulary assessment, a pre-/post-test multiple-choice progress monitoring knowledge assessment, and a post-test multiple-choice cumulative final exam covering course content. Participants rated their satisfaction with taking the CBMs and relative contribution of the vocabulary activities to their knowledge about progress monitoring. Data analysis procedures included descriptive data; Pearson product-moment correlations for alternate-form reliability and concurrent and predictive criterion validity; Cronbach's alpha for internal reliability; and an ordinary least squares (OLS) regression to determine the slope of the scores.

Preliminary results showed that the vocabulary-matching measures demonstrated evidence of moderate alternate form reliability (r = .45-.75), low to moderate concurrent validity (r = .29-.58), and low to moderate predictive validity (r = .28-.49) with both vocabulary and knowledge criterion tests. Additional data analyses are ongoing.

References:

Presenter Name(s): Paul K. Steinle, The University of Texas at Austin; Elizabeth A. Stevens, The University of Texas at Austin

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Brief Abstract:
This synthesis updates Wexler et al. (2008), synthesizing fluency intervention research from 2006 to 2016. We examined the overall effects of reading fluency interventions on the reading fluency and reading comprehension outcomes for students in grades 6-12, as well as instructional features of interventions having positive effects. Keywords: fluency intervention, reading fluency, reading comprehension, secondary

Abstract:
In 2015, 24% of eighth-graders and 28% of 12th-graders performed below a basic reading level (NAEP, 2015). Secondary students who are delayed in reading may struggle not only with comprehension skills, but also basic, automatic word identification, decoding and fluency (Manset-Williamson & Nelson, 2005). Fluency serves as a bridge between decoding and successful comprehension of text; if students recognize words rapidly and with ease, more concentration can be spent on inferring meaning from text (Fritschmann & Solari, 2008). Struggling readers need reading fluency intervention to improve automatic word recognition and allow students to focus on understanding text (Kamil et al., 2008). Although much is known about effective instruction on the foundational skills of reading for students in the elementary grades, less is known about how to effectively remediate struggling readers at the secondary level (Vaughn et al., 2010). Recent syntheses examined fluency interventions in the elementary grades (e.g., Stevens et al., 2016). Wexler et al. (2008) conducted a systematic review of the effects of fluency interventions between 1980 and 2005 for struggling readers in grades 6 through 12. Findings indicated positive effects for improving students’ reading fluency outcomes, but the improved fluency rate did not always result in improved comprehension (Wexler at al. 2008).

The reading fluency intervention research conducted since 2005 has not yet been synthesized. This synthesis extends the Wexler et al. (2008) review to examine the effects of reading fluency interventions on the reading fluency and reading comprehension outcomes of students in grades 6 through 12 conducted since 2005. The following research question was addressed: Which fluency interventions are associated with positive outcomes in reading fluency and comprehension for struggling readers in grades 6 through 12? An initial electronic search yielded 2,623 abstracts, which were reviewed to identify studies that met inclusion criteria. The search yielded 11 studies that met the following inclusion criteria: (a) participants were identified as struggling readers in grades 6 through 12; (b) the intervention targeted reading fluency; (c) studies used an experimental, quasi-experimental, or single-subject design; and (d) the dependent variable addressed reading fluency or reading comprehension. Studies that met the inclusion criteria were coded using a coding protocol developed for education-related intervention research (Vaughn et al., 2014). The following data was extracted from each study: (a) participant information (e.g., age, grade level, number of participants with LD, etc.); (b) research design; (c) treatment fidelity; (d) description of treatment and comparison group(s); (e) clarity of causal inference; (f) measures; and (g) results and effect sizes. Data extraction and interpretation is ongoing and will be completed by January 1, 2017. Effect sizes for groups designs and single case designs will be reported, including the features of fluency interventions associated with improved reading fluency and reading comprehension outcomes. Limitations and implications will also be presented.
Abstract:
Prior research has established a positive correlation between academic engagement and student achievement (Carini, Kuh, & Klein, 2006; Coddig & Smythe 2008; Fredricks et al., 2004; Kuh, 2009). Unfortunately, students that struggle academically may exhibit passive and active resistance to engagement in academic tasks. Even when tasks are carefully matched with an appropriate level of skill, students may avoid academic tasks. Therefore, teachers require effective strategies and techniques that promote initial and sustained engagement in academic tasks. Presently, few interventions exist that have proven effective for students with a demonstrated history of avoidance behaviors. Furthermore, such interventions must be feasible and usable when implemented in classroom settings. This poster presents the results of a study exploring the effectiveness of a behavioral intervention to reduce latency to task engagement for students that exhibit avoidance behaviors for academic tasks. A multi-component intervention based on planning, goal setting, and performance feedback (Stevenson, 2015) was evaluated using a multiple baseline design across participants, replicated across classes. The setting for the intervention was a middle school reading intervention class in a suburban school district. Participants included three students with learning disabilities in reading and three students without diagnosed learning disabilities.

Design tactics were consistent with the quality indicators of Single Case Experimental Design (SCED; Horner, Carr, McGee, Odom, & Wollery, 2005). Features include assessment of implementation fidelity, inter-observer agreement, and formal assessment of usability and feasibility. Results of visual analysis indicate a functional relation between implementation of the intervention and changes in latency to task engagement for all 6 participants. Results of quantitative analyses using Tau-U were consistent with visual analysis. Detailed information on the intervention implementation and implications for classroom teachers and interventionists will be discussed.

Post**er Title**: Math Disabilities and Cognitive Growth in ELL Children: Does Bilingualism Help?

Present**er Name(s)**: H. Lee Swanson, University of California-Riverside, University of New Mexico; Jennifer Kong, University of California-Riverside

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Brief Abstract:
The purpose of this study was to determine if growth in math performance is related to growth in working memory (WM) in ELL children. Because, executive processing is associated with bilingualism and WM, we tested the hypothesis that growth math is related to the executive component of WM. through a series of mixed regression models.

Abstract:
The purpose of this study was to determine those components of working memory (WM) that play a significant role in predicting growth in ELL children (N=157) with serious math difficulties (MD). A second interest was determining if bilingualism proficiency compensates for poor math performance.

A battery of tests was administered in English and Spanish that assessed computation, reading, vocabulary, inhibition and components of WM in grade 1 children with follow-up testing in grades 2 and 3. The results indicated that growth in the executive component of WM was related to growth in math performance even when covariates (STM, vocabulary, reading, fluid intelligence) were entered into the latent growth model. Although comparable in math computation at grade 1, proficient bilingual children with MD outperformed less proficient bilingual children with MD children on measures of math calculation, fluid intelligence, reading and Spanish WM at grade 3. For children without MD matched at grade 1, proficient bilingual children outperformed less proficient bilingual children on measures of Spanish STM, and English and Spanish WM at grade 3.

Support is found for the notion that (a) growth in executive processing underlies growth in math computation and (b) increases in bilingual proficiency bolsters math performance and related cognitive process in children with MD.
Poster Title: REWARDS for Reading: Feasibility of Integrating Reading Intervention with Self-Determination Training for Fourth Grade Struggling Readers

Presenter Name(s): Jessica Toste, The University of Texas at Austin
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Brief Abstract:
The upper elementary grades are critical to long-term academic success for students with LD. The purpose of this pilot study was to investigate the feasibility of combining an intensive, short-term supplemental multisyllabic word reading and fluency intervention (REWARDS Intermediate) with a self-determination training (SDLMI) for fourth grade students with or at-risk for reading disabilities.

Abstract:
The purpose of this pilot study was to investigate the feasibility of combining an intensive, short-term supplemental multisyllabic word reading and fluency intervention (REWARDS) with a self-determination training (SDLMI) for fourth grade students with or at-risk for reading disabilities. With a notable decrease in word reading instruction in the upper elementary grades, struggling readers receive fewer instructional opportunities to develop proficient word reading skills, yet these students face greater amounts of texts with more complex words (Chall & Jacobs, 2003; Wanzek, Wexler, Vaughn, & Ciullo, 2010). Poor decoders, even those who can decode monosyllabic words, often have difficulty with multisyllabic words—yet the average number of syllables in words that students read increases steadily throughout their school years (Hiebert, Martin, & Menon, 2005; Nagy & Anderson, 1984). As such, it is necessary to identify instructional practices that will support the continued reading development of students into the upper elementary years. One program with potential is Reading Excellence: Word Attack and Rate Development Strategies (REWARDS; Archer, Gleason, & Vachon, 2006). REWARDS Intermediate can be used supplement reading instruction for students with reading difficulties as well as identified reading disabilities; it is an intensive, short-term intervention. Despite the commercial success of REWARDS, there is currently no independent research on the program’s effectiveness, and extant studies do not meet criteria outlined by the What Works Clearinghouse. Furthermore, we have yet to fully explore the potential of targeting other factors that are known to influence student performance, such as motivation. There is evidence that reading skills and motivation are highly associated, and that there may be a bidirectional relationship between the two (Morgan & Fuchs, 2005; Toste, Didion, Peng, & McClelland, 2017). That is to say, the constructs causally influence one another—students lose motivation because of repeated failure in acquiring reading skills; but also, low motivation makes it less likely that they will engage in reading practice and increase performance. One motivational factors, self-determination, has been shown to be malleable through training. The Self-Determined Learning Model of Instruction (SDLMI; Wehmeyer, Palmer, Agran, Mithaug, & Martin, 2000) was designed to provide a model of teaching to enable educators to teach students to self-direct the instructional process as a means to achieve educationally relevant goals and enhance self-determination. The SDLMI has been extensively tested, but it has not yet been evaluated among students with reading disabilities, nor do we know its potential effects on reading achievement when implemented alongside an academic intervention. As such, we conducted a feasibility study to investigate the potential of integrated this reading intervention with a self-determination training component (e.g., REWARDS+). This study is currently underway and preliminary findings will be available in January 2018. We recruited 12 fourth grader with or at-risk for reading disabilities, based on school nominations and screening eligibility criteria. Students are tutored individually, three times each week for 25 lessons total. We report student assessment data, as well as feasibility and usability data collected from students, tutors, and classroom teachers.
**Poster Title:** Predicting Narrative Writing Quality with Levels of Language Measures in Grades 4-6

**Presenter Name(s):** Gary A. Troia, Michigan State University
**Presenter Email:** gtroia@msu.edu

**Brief Abstract:**
Fictional narrative papers written by students in grades 4-6 were evaluated with a variety of measures representing word, sentence, and discourse levels of language productivity, accuracy, and complexity. Analyses suggest that a levels-of-language framework may be a productive way to evaluate students' writing performance in this genre.

**Abstract:**
A total of 362 students from grades four (n = 107), five (n = 124), and six (n = 131) participated. Of the participants, 53.3% (n = 193) were female and 64% (n = 233) were White. Students selected one of two narrative title prompts and were given 30 minutes to compose a fictional story using any aspects of the writing process they wished. Inter-rater reliability estimates among five independent raters ranged from .76 to .98 for total quality.

Measures representing word, sentence, and discourse levels of language productivity, accuracy, and complexity were either hand calculated or derived from Coh-Metrix. At the word level, measures included handwriting style (cursive vs. manuscript), percent word accuracy (words free of spelling and capitalization errors), type-token ratio (TTR) for content words, mean number of syllables/word, mean frequency of content words, and mean textual lexical diversity (MTLD). At the sentence level, measures included mean punctuation errors/sentence, percent grammatically correct sentences, number of sentences, percent complex sentences, mean sentence length, and mean number of words ahead of the main verb. At the discourse level, measures included writing process use (none, one aspect, combination), total words written (TWW), incidence of connectives, and narrativity. For handwriting style, there was 84% exact agreement; for writing process use, there was 90% exact agreement. Inter-rater reliability for the remainder of the variables ranged between .75 and .91.

Given gender, ethnicity, and prompt each significantly impacted multiple writing measures, we held all three constant when conducting statistical analyses. We found no significant differences between grades for 5 of the 17 measures. For three measures, younger students exhibited statistically greater percent word accuracy and higher TTR for content lexemes in their narratives but wrote qualitatively inferior papers. Conversely, for two measures older students had fewer mean number of punctuation errors per sentence and used fewer components of the writing process. There was a clear grade level progression for three of the measures: students wrote significantly longer papers with respect to number of sentences and words (these were highly correlated and only TWW was retained for further analyses) as grade level increased and increasingly used more manuscript handwriting in their papers. The remaining measures exhibited non-linear changes across grades.

Using hierarchical regression analyses, 62.5% of variance in narrative writing quality was explained by all predictors, with the following nine variables contributing significant portions of variance, listed in their order of relative importance based on Pratt's index (1987): TWW, percent word accuracy, percent grammatically correct, mean number of punctuation errors per sentence, prompt, handwriting style, process, narrativity, and TTR for content lexemes. However, for students in the bottom quartile on narrative quality, only percent word accuracy, TWW, mean punctuation errors/sentence, mean syllables/word, TTR for content lexemes, and process contributed significant portions of variance (43.1% total) and for students in to top quartile, only TWW and TTR for content lexemes contributed significant portions of variance (44.8% total). These findings generally support the application of a levels-of-language framework for evaluating written expression, at least for narrative texts.
**Poster Title:** Observational Study: What and How Teachers Teach in Intensified Tier 3 Instruction  

**Presenter Name(s):** Yan Wei, Southern Connecticut State University; Kimberly Bean, Southern Connecticut State University  
**Presenter Email:** weiy2@southernct.edu; beank2@southernct.edu  

**Brief Abstract:**  
The purpose of the proposal is to present what and how teachers teach in secondary schools' intensive classrooms to document research-based instructional behaviors and occurrence of reading components and reading pedagogy associated with improving reading comprehension of students with learning disabilities.

**Abstract:**  
As secondary students are considered to be a fast-growing group in special education services, almost 80% of students with disabilities experienced serious problems learning to read and exhibit low reading comprehension scores when taking test (Catts, et al., 2008). This observational study documents the level of research-based teaching behaviors and occurrence of literacy components for adolescents with disabilities by observing literacy instruction in intensive classrooms.

**Purpose.** This presentation will explore the typical practice in the areas of adolescent literacy concerned with the content and pedagogy of appropriate reading comprehension instruction in intensified classrooms. Participants and Settings. Observation occurred over five consecutive instructional days in intensive classrooms. Ten special education teachers from five secondary schools in East Coast of the United States participated in this observation study.

**Procedures.** All sessions are observed and audio recorded by two researchers. Specifically, data collection is conducted in real-time using Time-based Recording (Partial Interval Recording or PIR) beginning when the teacher begins instruction and ending when the teacher stopped instruction. Observations occur over five consecutive instructions for each participant. For this project, time sampling estimates the percentage of time (a) engaged in reading instruction (what to teach), and (b) spent in each research-based reading pedagogy and instructional activities for students with learning disabilities (how to teach). The intensity and duration of the intensified instruction as well as the group size are also documented.

**Data Analysis.** Construct validity as well as content validity are tested using bivariate correlation in regression analyses. Quantitative interval data is analyzed using a series of ANOVAs to determine a descriptive account of each observation tool foci in intensive classes, and differences in foci between schools. Inter-/intra-observer reliability are calculated.

**Implications.** This presentation will provide a structure for administrator and supervisor observation in the areas of adolescent literacy concerned with the content and pedagogy of appropriate reading instruction in intensive classrooms. Additionally, it will further support in-service teachers through investigating effective and evidence-based literacy instructions at intensified settings.

**Reference:**  
Poster Title: Effects of an Intensive Reading Intervention for High School English Learners with Disabilities

Presenter Name(s): Kelly J. Williams, The University of Texas at Austin, The Meadows Center for Preventing Educational Risk
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Brief Abstract:
This study examines the impact of a year-long, intensive reading intervention on reading outcomes (word study, vocabulary, and comprehension) for ninth-grade English Learners with disabilities. Research findings describing the treatment effects and implications for designing and implementing intensive reading interventions for ELSWDs will be discussed.

Abstract:
In the United States, approximately 9.4% of students in public schools are identified as English Language Learners (McFarland et al., 2017) and ELs are the fastest growing subgroup of students (Batalova, Fix, & Murray, 2007; Francis et al., 2006). ELs performed significantly lower on the eighth and twelfth grade NAEP reading assessments than their non-EL peers (NCES, 2016). Similar trends in reading achievement exist for students with disabilities (SWDs), and these students perform significantly lower on the reading subtest of the NAEP in eighth and twelfth grade, than their peers without disabilities (NCES, 2016). Additionally, students who are identified as ELs and also have disabilities (ELSWDs), have even lower reading scores on the NAEP in eighth and twelfth grade, than each group individually (NCES, 2016). While it is known that adolescent ELSWDs have deficits in reading, there is limited evidence on reading interventions for them.

The purpose of this study was to examine the effects of an intensive reading intervention (RIA) and its impact on reading outcomes (word reading, vocabulary, comprehension) for ninth grade ELSWDs. The study aims to answer the following research questions: (1) What are the effects of a year-long intensive reading intervention on the reading achievement of adolescent ELSWDs? (2) Does EL designation (current vs. former) moderate the efficacy of the intervention?

Data was collected from a randomized control trial of the RIA with a large sample of current and former high school ELs who are struggling readers (n = 370). The current study uses this data, but disaggregates results for SWDs (n = 87). To be eligible for participation in the original study, students had to meet the following criteria: (a) a school designation of Limited English Proficient (LEP) or an LEP designation within the previous 5 years, and (b) a score below or within ⅓ standard error of the passing score on students’ eighth grade high-stakes reading assessment. Eligible participants were blocked by school and then randomly assigned to the RIA or to a business as usual (BAU) condition. Five interventionists were hired and trained by the research team to deliver the intervention. Students assigned to RIA attended their reading intervention class for their entire ninth-grade school year (approximately 3.75 to 4.25 hours weekly) in groups of 10-15 students. Phase I of RIA emphasized advanced word study, fluency, vocabulary, and comprehension strategy instruction. Phase II focused on application of Phase I skills in science and social studies content area units. Students in the BAU participated in elective classes such as band or chorus during the RIA. Pre-test and post-test data has been collected and processed and will be analyzed in the fall of 2017.

Main effects of the RIA for reading outcomes will be estimated using a series of ANCOVA models and a Benjamini-Hochberg procedure (Williams, Jones, & Tukey, 1999) to control for the false discovery rate. Findings will be discussed with emphasis on the implications for designing and implementing intensive reading interventions for adolescent ELSWDs.