**Poster title:** Using cognitive interviews for item development and identification of cognitive characteristics of students eligible for AA-MAS

Enhanced Assessment Grant: Adapting Reading Test Items to Increase Validity of AA-MAS (ART 2%)
Participating states: Montana, Maine, New Hampshire, Rhode Island, Vermont
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This study had three objectives: 1) to use cognitive interviews (in triangulation with an analysis of assessment results) to identify the cognitive barriers faced by students with disabilities taking a high school reading assessment (Almond et. al., 2009); 2) to identify the cognitive characteristics of students who might qualify for AA-MAS; and 3) to analyze the usefulness of item manipulations developed to minimize identified cognitive barriers.

This poster describes the findings for the second objective. Cognitive interviews were conducted with students with disabilities to better understand their cognitive processes as they completed high school reading assessment items. The interviews were completed in two rounds; first with the original items, and then with manipulated items. In each round, students were asked to speak aloud all their thoughts as they read the passages and answered items. This process permitted students to describe their thinking processes, and allowed researchers to identify the specific cognitive barriers students faced as well as the cognitive processes they used to answer the items. In addition to cognitive interviews with students, data collected included teacher interviews, school transcripts and IEPs, and state assessment scores. The transcripts, IEPs, and scores allowed researchers to make connections between cognitive interview results and student access to grade-level curriculum.

The first phase of the study identified two broad categories of cognitive barriers: linguistic barriers that included the structure of the stem (open vs. closed question format), vocabulary, order of answer options, attractive distractors, and lack of question clarity. Formatting barriers included lack of visual links between each item and its corresponding passage text and physical distance of the item from the corresponding passage text. In the next phase the assessment items were manipulated in order to minimize these barriers, and the second round of interviews looked at how students responded to the manipulations.

In this poster we provide a descriptive analysis of the students who participated in the second round of cognitive interviews as well as student case studies. The study sample was drawn from students who fit the following criteria: students with disabilities, who had not reached proficiency on the high school reading assessment, and whose disabilities did not limit verbal communication. Within that sample, students had varied levels of participation in general education classes, varied levels of performance on the state assessment, and varied levels of cognitive skills. The in-depth case studies reveal that they also perform inconsistently across different settings. Among the cognitive challenges for students, we identified short term
memory limitations, inability to identify important information from text, challenging vocabulary, inability to draw inferences, and inappropriate use of prior/outside knowledge.

The following brief summaries of three case studies illustrate the varied characteristics of the students in the study. Information for each student was gathered from their IEP, transcript, cognitive interview, and performance on the ART2% pilot assessment.

**Richard: Sufficient opportunity to learn?**

Richard is a tenth-grader with a specific learning disability that affects his comprehension, decoding skills, and ability to derive meaning of words in the context of sentences. He is currently reading at a 4.0 grade level. He spends less than 40% of his day in regular education and is in a special education English class. His cumulative grade point average is 0.89. He scored within the Almost Proficient range on his state reading assessment and answered more than half of the questions correctly during the cognitive interview (9 of 16). This relatively strong performance is at odds with his special education placement and his low GPA. During the cognitive interview, Richard’s speech impediment posed a challenge, and he was vague about his reasoning, often saying he chose his answer because of “the way it sounds to me.”

**Emma: Fairly consistent low performance**

Emma is a twelfth-grader with a specific learning disability that affects her classroom behavior. Her IEP describes her as caring, friendly, and thoughtful, with a good sense of humor. However, she faces severe emotional issues that disturb her concentration and engagement with her schoolwork. She spends 20-60% of her time in special education classess focused on work completion, managing her behavior, and work experience. Emma seemed fatigued at the start of the interview, was easily distracted and frustrated, and a very slow reader. She attempted 10 questions, skipping six, answering one correctly and three incorrectly. She also performed at the lowest level on the state assessment, corroborating her general low proficiency level. Interestingly, while her performance on the ART2% pilot assessment was low (32%), eight of the 32 cognitive interview students had lower scores. Her interview was difficult to analyze due to a lack of output, making her a good example of a student who does poorly with no clear explanation of the cognitive processes that are challenging for her.

**Tom: Mixed performance, shy, easily distracted**

Tom is a twelfth-grader who completes his classwork, but teachers report he does not complete homework. Although his IEP said that he was “nearing proficient in reading comprehension,” his state reading assessment score did not align with that statement, falling in the very low category. Tom had one of the largest differences between his very low state assessment score and his higher cognitive interviews results (62%), and performance on the ART2% pilot (50%). In the interview, Tom described passions that demonstrate literacy skills but not in accepted school-based contexts, such as graphic novels, and throughout high school he has been placed in special education or very basic English classes. His variation in performance indicates that
there may be a gap between what Tom knows and can do and his state assessment score. Given his higher scores on the pilot and relative success with the cognitive interview, Tom could be a candidate for an AA-MAS.

References