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Gena Nelson

Boise State University

Robin Coddling

Northeastern University

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Coding Protocol: A Meta-Analysis of MCOMP and MCAP Curriculum-based Measurement

Gena Nelson

Assistant Professor
Boise State University
genanelson@boisestate.edu

Robin Coddling

Associate Professor
Northeastern University
r.coddling@northeastern.edu

Abstract

The purpose of this document is to provide readers with the coding protocol that authors used to code 26 studies that met inclusion criteria for a meta-analysis. The focus of the meta-analysis was to determine the average correlations between MCOMP and MCAP curriculum-based measurement (CBM) and mathematics achievement criterion measures, as well as to determine the moderating factors of this relationship. Studies focused on grades 2 through 8 MCOMP, MCAP, and mathematics achievement. We coded 26 studies published between 2005 and 2021, including 15 peer-reviewed journal articles and 11 doctoral dissertations. Across studies, we coded variables such as basic study information, participant demographics, general CBM information (e.g., administration time of year, publisher), criterion measure information (e.g., state test, norm-referenced achievement measure, time of year), administration lag time between the CBM and criterion measure, and the correlation.

Keywords: meta-analysis, curriculum-based measurement, math, MCOMP, MCAP

CBM MCOMP and MCAP Meta-Analysis Code Book

Variable Name	Code Options	Code Descriptions
Authors	Names	All authors' last names
Year	Year	Year of publication
Group Descriptor	Anecdotal or NA	Provide information about the specific group this is related to if the authors split the presentation of correlations in ways other than grade level. For example, by district or school, or by students (e.g., students with disabilities compared to students without disabilities; meets expectations, fails to meet expectations). Use NA if this does not apply.
Correlation Descriptor	Anecdotal	Add a brief (3-4 word) description of the correlation that is unique compared to other correlations in this study. Use terms such as the CBM name, criterion name, and time of year for the CBM.
Sample Size	Number	Record the sample size, if possible, the sample size that is specific to this correlation.
CBM Measure Type	Select one: 0 = MCOMP 1 = MCAP 2 = MCOMP & MCAP 3 = Other	<p>CBM (GOM; include): Index long-term growth in the curriculum across a wide range of skills; Standardized with reliability and validity; Material is controlled for difficulty by grade level; Outcomes may suggest when and if instructional modifications are needed but is not designed to suggest what those specific instructional modifications should be. Two primary types in math: mixed skills computation and application (sometimes referred to as concepts+application).</p> <p>Subskill Mastery Measures (exclude): Assess distinct skills in the learning process; Require a shift in measurement with teaching of each new objective (or skill in the hierarchy); Evaluate knowns and unknowns; determine instructional, mastery, and frustration levels to drive instruction/intervention; Periodic assessment is used to assess whether the student has mastered the skill/objective</p> <p>MCOMP = Mixed skill computation: Computation: mixed skills reflecting critical computation skills at each grade level. The measure aligns with end of year grade-level outcomes/expectations. Exclude subskill mastery that are not aligned to grade level outcomes - in math single-skill (1-X skills) may measure something different than mixed skill computation.</p>

		<p>MCAP = Math applications: critical grade level skills reflecting money, measurement, word problems, graphs/charts, and geometry; points were assigned instead of digits because some items involved selection of the correct answers (most problems required a numerical response). Aligned with grade level outcomes, measuring various skills across domains.</p> <p>Select which type of measure you are reporting a correlation for. If you select “Other” the study likely should not be included in this analysis.</p>
CBM Measure Name	Record the specific name of the CBM	E.g., AIMSweb, easyCBM, researcher-developed, DIBELS
CBM Citation	Record the citation	Record any citation given for the measure
Content of the CBM Measure	Anecdotal	Specify the skills measured. For example, for an M-COMP measure specify which operations were included (e.g., single digit addition, multi-digit subtraction). Record the specific operations, whole number vs rational numbers, and number of digits, as well as if regrouping was included. Copy/paste of measure description.
CBM Grade Administration	Number	Report the specific grade level of the CBM administration that you are providing correlations or slope for.
CBM Administration Time of Year	Anecdotal	Report the specific time of administration (e.g., fall, winter, December, May) that you are reporting a correlation for. This is the CBM administration time. If more than one descriptor is given (e.g., winter January, then give both). If the study specifies that the measure was given at the beginning of the year, use Fall and if the study specifies that the measure was given at the end of the year, use Spring. It’s really important if we have the time of year as a month that we record this to approximate the number of weeks between CBM and Criterion measure administration.
CBM Type of Score	Select one: 0 = fluency /rate 1 = total correct 2 = Not reported/Unclear	This code reflects the type of score derived from the CBM. Rate = fluency, digits correct per minute Accuracy = total correct, total digits correct

Timed Administration	Select one: 0 = not reported 1 = measure was not timed (open ended) 2 = measure was timed	Select whether or not the CBM was timed.
What was the Administration Time	Number and Unit, or NR or NA	Record the number of minutes (or seconds if less than a minute) for the administration format. Include the unit “min” or “s” <ul style="list-style-type: none"> ● Use NR if the measure was timed but the authors do not provide the specific time. ● Use NA if the measure was open-ended.
Criterion Measure	Name	Record the criterion measure that this correlation is associated with.
Criterion Measure Type	Select one: 0 = not reported 1 = state test 2 = other CBM 3 = norm-referenced math achievement measure 4 = researcher developed measure 5 = unclear 6 = other	Select the type of criterion measure that was used: <ul style="list-style-type: none"> ● Not reported = the authors stated that a criterion measure was used but did not provide any information about the measure to determine what type it was. ● State test = any state end of year test ● Other CBM = the authors used another CBM ● Norm-referenced math achievement measure = any known norm-referenced math achievement measure such as the SAT-10, TEMA, TOMA, WJ-Applied Problems, WJ Calculation, etc. ● Researcher developed measure = any measure that is researcher developed and not norm-referenced ● Unclear = this code is reserved for studies that use a measure that may be unclear because it’s not a well-known norm-referenced measure (e.g., foreign studies) or you can’t find any information about the measure ● Other
Criterion Measure Time of Year	Anecdotal	Report the specific time of administration time of the criterion measure (include benchmark window such as fall, winter, spring, and/or specific months).
Criterion Measure Grade	Number	Report the specific grade level of the criterion measure administration that you are providing correlations or slope for.

Does the study specifically report the number of weeks of months between the CBM and criterion measure?	Select one: 0 = no 1 = yes	Some studies will report the exact/approximate number of weeks or months between the administration of a CBM and Criterion measure for the correlation that is reported.
Weeks, Months between CBM and Criterion used for the Correlation	Number and Unit	Specify the number (14) and unit (weeks).
Correlation	Decimal	Record the given correlation between the CBM and criterion measure. Include as many decimal places as given in the manuscript.