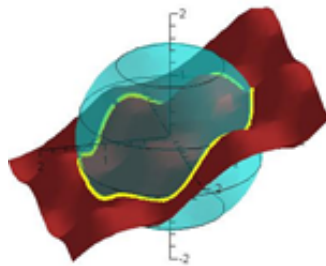




INTERSECTION POINTS

The Newsletter of the Research
Council on Mathematics Learning



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The Research Council on Mathematics Learning seeks to stimulate, generate, coordinate, and disseminate research efforts designed to understand and/or influence factors that affect mathematics learning.

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President's Column



Megan Che
Clemson University

Just as each of us is likely gathering momentum, focus, and energy taking us into a fresh academic year, RCML is busily preparing for a number of upcoming events, including RCML proceedings submissions, elections of new officers, and opportunities for grants and awards. In order to ensure that you are receiving the latest from RCML, be sure to stay informed through this newsletter as well as through any of our social media platforms, including our website, Facebook page, and Twitter feed.

Getting back into a regular teaching schedule after summer activities reminds me of what I love about teaching and what I love about having the privilege to do scholarship. Though I was very reluctant to leave high school teaching, I find that the relationships and curiosity that sustained me in a high school classroom continue to sustain me in

university classrooms: relationships that center around an unwavering belief in students' potential to contribute meaningful ideas to our class, and curiosity about how students think and make sense of important and complex ideas. From my point of view, our field's understandings about mathematics teaching and learning are connected to one or both of these nodes of relationship and curiosity.

Indeed, it seems to me that many currents in our field have recently emerged from a closer focus on what might and can happen with mathematics teaching and learning when this generative relationship and (or) curiosity are less alive in classrooms. For instance, the conversations we are and have been engaging with around how context interplays with mathematics learning—or even the justice of acknowledging that contexts *do* interplay with mathematics learning, are central to better understanding students' thinking, reasoning, and feeling when generative relationships and (or) curiosity are disrupted. Understanding and perturbing the educative violence (Leonardo & Porter, 2010) that most often ensues within students upon such disruption is, to my way of thinking, at the crux of the dynamic and critical work in our field around the connections between context and mathematics teaching and learning.

I always appreciate opportunities (such as the start of an academic year affords) to think about how I think about the nature of what we do, but—even more—I value being able to dialogue with colleagues about their ways of seeing our endeavors. It is in and with the RCML community that I find a unique space for thinking through and about many of these living questions that, in my mind, comprise the heart and soul of our field. So, I am eagerly looking forward to our upcoming conference in Las Vegas and the chance to continue or begin these conversations with you. I hope to see you there!

Leonardo, Z., & Porter, R. K. (2010). Pedagogy of fear: Toward a Fanonian theory of 'safety' in race dialogue. *Race Ethnicity and Education*, 13(2), 139-157.

Connection Points



Jonathan David Bostic
Bowling Green State University

We can do better!

In my local area of northwest Ohio, the phrase “You will do better in Toledo” is found throughout. This phrase recently turned 105 years old and is a reminder that in all of our states, we can make an impact locally. If we can do better in education, then we should advocate for ways to be better.

Assessment and learning are linked ideas that should inform one another (Black & Wiliam, 1998; Fennell, Kobett, & Wray, 2017). Classroom (aka short-cycle) and formative assessments are meant to provide feedback to the respondents and/or other professionals (e.g., teachers, parents/guardians, and educational stakeholders). Summative assessments, however, are intended to indicate performance on a given set of criteria. These assessment types are all used in schools and each type should clearly answer the question: How does the assessment user know that the assessment measures what it claims (Bostic, Krupa, & Shih, 2019)?

Validity evidence helps to convey an argument that answers that question. “Validity refers to the degree to which evidence and theory support the interpretations of the test scores for proposed uses of the tests. Validity is, therefore, the most fundamental consideration in developing tests and evaluating tests” (American Education Research Association, American Psychological Association, & National Council on

Measurement in Education [AERA, APA, & NCME], 2014, p.1). Presentations at the annual meeting of the Research Council on Mathematics Learning and publications in *Investigations in Mathematics Learning* demonstrate a growing interest in making certain that validity evidence for quantitative assessments is communicated and explored in studies of quantitative assessment development and uses, as well as interventions using those quantitative assessments.

There are five sources of validity evidence: (1) test content, (2) response processes, (3) relations to other variables, (4) internal structure, and (5) consequences from testing/bias (AERA et al., 2014). Reliability is important but not one of those sources (AERA et al., 2014).

Researchers interested in learning more about the five sources of validity should consider one of the many published, peer-reviewed articles in *Investigations in Mathematics Learning*. Personally, my team has developed observation protocols and measures of mathematics knowledge and framed validity arguments for those assessments around the five sources. Greater quantity and/or quality of evidence is warranted for more robust validity arguments. Examining test content and internal structure or reliability is wholly insufficient and likely to lead to spurious findings (AERA et al., 2014; Bostic et al., 2019). Teachers can use a tool called the Validity Evidence Instrument to examine assessments in light of the five sources that do not take more than a couple minutes (Gerber, Lavery, & Bostic, in press). Preservice and inservice teachers need resources that can assist them to think about validity related to assessments they administer to their students. While not yet tested, there is no reason that researchers and teacher educators cannot also use the same Validity Evidence Instrument for their courses. Ultimately, the quality of the claims made from results and interpretations stems from the strength of the validity evidence related to a particular assessment. Broadly speaking, test results that have significant implications necessitates coherent and robust validity arguments that draw upon all five sources of validity evidence and additionally, high quality evidence.

I recently served on a state-level content advisory committee meeting for one end-of-course test. Grade-level mathematics teachers and two mathematics education faculty, in addition to two Department of Education representatives served on the content advisory committee for this end-of-course test. This end-of-course test has some high-stakes implications for students, teachers, and districts. For example, results are used to calculate a teacher's value-added score and concomitantly, lead to a report card "score" for every district. During the 1.5-day meeting, ideas about validity evidence for results and interpretations for the test rolled through my mind frequently. For many of the

items this committee reviewed, this was the fourth time these items were reviewed for grade-level appropriateness and mathematical correctness. That is a great opportunity to make sure items are appropriately connected to the content/construct! The committee's feedback provided test content evidence. When I asked what data from students could be shared (i.e., response processes evidence), I was told that students do not see the items until they are piloted alongside "live" items. Live items are test items that lead to generating a student's final score. Piloting items alongside live items has potential to provide evidence for internal consistency. At times, there were discussions about bias but the committee was reminded that a separate bias committee performs that review. Therefore, evidence of bias in some form was gathered. Evidence for relations to other variables would be investigated after piloting using psychometric analysis. Department of Education representatives informed me that think alouds, cognitive interviews, or eye-tracking data were not gathered thus there was no evidence of response processes. Additionally, students completing this test were not asked to participate in interviews or surveys post-administration to gather consequences from testing. Finally, readability analysis was not performed on any of the items on this math test.

A Department of Education representative informed me that the content committee functions as the means to check readability; albeit, our committee was only informed after a full day of reviewing items, which included word problems. I was appalled that such a high-stakes test was not subjected to a robust validity study. Reflecting upon my experience leads me to the conclusion that mathematics educators need to be prepared to ask questions, challenge the status quo, and do better for everyone. All students deserve high quality assessments that measure what they intend.

All teachers and teacher educators ought to feel confident using assessments to inform their instruction. Administrators and policy makers should know that when assessment results are used to make evaluative judgements about schools and teachers that the assessments have been rigorously validated. What can you do to promote thinking about validity and improvements in mathematics testing? This article provides a few resources for you to consult. Teachers and teacher educators can use the Validity Evidence Instrument (Gerber et al, in press). Ask questions such as: (1) What validity evidence is tied to the assessment's results and interpretations? (2) How will the assessment be used? Finally, partner with assessment scholars, psychometricians, mathematicians/statisticians, educational psychologists, and other mathematics educators and build a relationship with them around ways to include quantitative assessments. Validity arguments come from gathering quantitative and qualitative data to draw a conclusion so partnerships with scholars who have different expertise can be

quite productive. Many articles published in *Investigations in Mathematics Learning* highlight work formed through those partnerships, which may help you be prepared to think about validity. Let's work together and do better for students, teachers, society, and research.

American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.

Black, P & Wiliam, D. (1998). Assessment and Classroom Learning. *Assessment in education: Principles, policy & practice*, 5(1), 7-74.

Bostic, J., Krupa, E., & Shih, J. (2019). Introduction: Aims and scope for *Assessment in mathematics education contexts: Theoretical frameworks and new directions*. In J. Bostic, E. Krupa, & J. Shih (Eds.), *Assessment in mathematics education contexts: Theoretical frameworks and new directions* (pp. 1-11). New York, NY: Routledge.

Fennell, F., Kobett, B., Wray, J. (2017). *The formative 5: everyday assessment techniques for every math classroom*. Thousand Oaks, CA, US: Corwin.

Gerber, D., Lavery, M., Bostic, J. (in press). Making valid instructional decisions: Teaching educators to consider validity evidence. In S. L. Nichols & D. Varier (Eds.) *Teaching on Assessment*. Charlotte, NC: Information Age Publishers.

The Bill and Marjorie Speer Memorial Scholarships

Description

RCML recognizes the importance of supporting the professional development of both non-tenured faculty members and graduate students through scholarships. Through these two Memorial Scholarships, both non-tenured faculty members and graduate students will be able to engage in professional activities at the annual conference by

applying the scholarship toward their conference expenses. Two scholarships will be awarded in the amount of \$750 each. These awards are given in honor of the dedication, mentorship, and service of Bill and Marjorie Speer to the membership of RCML.

To Qualify

Graduate Student

A potential awardee for this Graduate Student scholarship must:

- Be a current graduate student
- Have been a member of RCML for at least one year,
- Have attended at least one conference
- Be a graduate student when attending the conference for which the fellowship was awarded.

Non-Tenured Faculty Member

A potential awardee for this Non-Tenured Faculty Member scholarship must:

- Be a non-tenured faculty member whose current appointment is a tenure-track position at a college or university.
- Be a current member of RCML (encompassing both 2019 and 2020 membership years)
- Have not been previously awarded an RCML Memorial Scholarship.
- Have attended at least one RCML conference prior to application submission. Preference will be given to a candidate who has presented at least one time.
- Submit a current curriculum vita for review, and articulate one's research agenda as a summary of this curriculum vitae.
- Must have a presentation session accepted for the 2020 annual meeting in Las Vegas, NV.

To Apply

Graduate Student

A candidate for this scholarship must be nominated by a current RCML member.

To nominate a graduate student for this reward, a current member must send:

1. A letter of nomination that describes how the nominee deserves to receive this award and whether (and how) the nominator believes this graduate student will continue to engage in professional activities through participation with RCML.

2. One additional letter of support from a current RCML member.
3. Both letters should be attached to an email and sent to the chair of the selection committee, Megan Che, at sche@clemsn.edu.

Non-Tenured Faculty Member

A candidate for this scholarship is to submit a Word document or PDF that includes the following:

1. Name, Current Employment Institution, Mailing Address, Email Address, Office Phone Number, Cell Phone Number, and Years Attending an RCML Conference (including whether he/she was a speaker).
2. Title of 2020 Accepted Conference Presentation and 50-word abstract of the session.
3. An essay that explains how the applicant's research relates to the Mission of RCML. This should be an approximate 300-word elaboration of how the candidate's current line of research contributes to the RCML mission statement, which is: *RCML seeks to stimulate, generate, coordinate, and disseminate research efforts designed to understand and/or influence factors that affect mathematics learning.* The final paragraph is to affirm how the 2020 conference presentation will contribute to the candidate's research agenda.
4. A copy of the applicant's current vita.
5. A copy of #1-4 should be attached to an email and sent to the chair of the selection committee, Megan Che, at sche@clemsn.edu.

Award – Each Awardee will receive \$750.

Deadline – All applications must be submitted on or before November 15, 2019.

Information about these awards are also located at the RCML website (<http://www.rcml-math.org/awards-and-scholarships>).

The Heddens Distinguished Service Award

Description: RCML recognizes notable and extensive service to the mathematics

education community and the RCML organization with the James W. Heddens Distinguished Service Award. Potential awardees are those who have been a member of RCML for at least ten (10) years and who have shown substantial participation and leadership in RCML activities such as contributing innovative ideas, paper presentations at meetings, committee work, holding an office, membership work, and reviewing for the journal. Nominations for this award must come from current members of RCML.

What is required: To nominate a person for this reward, send:

1. A letter of nomination describing the nominee's contribution to the organization along with supporting information as available.
2. Letters of support from 2 past presidents of the RCML.

Awardee: The Awardee will receive a one-year membership to RCML as well as an honorarium. This award *may* be given annually.



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