Test Score Validity: The Roles of Intelligence Mindsets and Feedback

Matthew S. Swain[1], Alan Socha, & Donna L. Sundre
James Madison University

Low-stakes assessment scores have been known to contain construct-irrelevant variance attributable, in part, to test-taking motivation. This threat to the validity of score interpretation is greatest when student test-taking motivation is low and students fail to demonstrate all they know and can do (Wise & DeMars, 2005). Given the relationship of test-taking motivation on performance (Wolf & Smith, 1995), assessment practitioners would be remiss to ignore and fail to curb low test-taking motivation.

Providing score feedback to the examinee may help mitigate low test-taking motivation. This practice is encouraged by the *Standards for Educational and Psychological Testing* (AERA, APA, NCME, 1999) and research has shown students are interested in receiving feedback about their performance (Olsen & Wilson, 1999). Moreover, some studies have observed higher mean test scores after promising feedback to examinees (Sundre, Erb, & Russell, 2009).

Assessment practitioners at our institution have noted most students do *not* seek test score feedback when offered (~62% did not in 2012). We posited this behavior may be due to a student's personal theory of intelligence (TOI). Dweck (1991, 2007) describes two types of mindsets in achievement situations: *entity theorists*, who believe that intelligence is fixed and *incremental theorists*, who believe that intelligence is malleable.

Beliefs about intelligence appear to be quite powerful during learning. Mangels et al. (2006) recorded the cognitive neural processing of individuals while completing and receiving feedback on a test of general knowledge. When presented with feedback, individuals who had an entity theory of intelligence elicited more defensive neural processing responses and were less likely to encode the correct answer as opposed to incremental theorists. This study suggests TOI may influence feedback-seeking behavior when presented with the opportunity.

Most importantly, TOI may explain how feedback can become an opportunity to learn. Mueller and Dweck (1998) noted that *entity* minded fifth-graders were more interested in how others performed and blamed their failures on their lack of ability, whereas *incremental* minded students valued learning opportunities and attributed poor performance to a lack of effort. Therefore, we wanted to explore the relationship between TOI and feedback opportunities.

Data for the current study was collected in August 2013. All participants completed a scientific reasoning test, a test-taking motivation instrument, and the TOI instrument. Students were randomly assigned to testing conditions where testing instructions did or did not mention a subsequent feedback opportunity.

We hypothesize that those who seek feedback will be comprised of more *incremental theorists* than *entity theorists*. Additionally, students were offered two types of feedback: their scores compared to faculty standards (criterion-referenced) or compared to other students (norm-referenced). Students must select one (but will later be offered the other type as well). We hypothesize *entity theorists* will seek norm-referenced feedback first because of their tendency toward performance goals whereas *incremental theorists* will prefer criterion-referenced feedback in an attempt to fill gaps in their understanding. Multinomial regressions are currently being conducted to predict feedback-seeking behavior from TOI.

This study has important implications for testing practice. Test score feedback may have differential effects: *incremental* students may use the opportunity for feedback to increase test-taking effort, a known correlate of test performance; however, effort may only increase when students are informed of the feedback opportunity. Conversely, the promise of feedback may not increase test-taking effort for *entity* mindsets. Practitioners concerned with the effect of low test-taking effort on the validity of assessment scores may need to consider student intelligence mindsets when offering feedback.

---

[1] Corresponding Author:
Matthew S. Swain, 2nd year Assessment & Measurement Program Ph.D. student, James Madison University, swainms@jmu.edu