Multiple Measures Assessment Project and Non Cognitive Variables Updates

Common Assessment Initiative Steering Committee

June 18, 2015

http://www.rpgroup.org/projects/multiple-measures-assessment-project
Agenda

● Phase I Activities
  ○ Pilot college engagement
  ○ Decision trees
  ○ High school transcript information (English and math rule sets)
  ○ Disproportionate impact
  ○ Noncognitive variables
● Phase II Activities
Phase I Activities

● CalPASS Plus data warehouse
● 16 Multiple Measures rule sets
● NCV research plan
● Nine training webinars
● Two In-person convenings
● Co-ordinated Multiple Measures Implementation Summit at Long Beach City College
● Multiple Conferences - RP Conference, Student Success and CAIR
● Presentations
  ○ CAI Steering Committee
  ○ Multiple Measures Working Group
  ○ CAI Professional Development Committee
  ○ Chancellor’s Office Advisory Group on Counseling
  ○ SSSP Advisory Committee
  ○ State Academic Senate
  ○ California State Board of Education
  ○ Basic Skills Initiative Coordinators Statewide Meetings
Phase I Activities - Pilot College Engagement

- Twenty pilot colleges
  - CalPass Plus cohort upload tool
  - Applied rule set to spring 2015 cohort
  - Analyzed rule set based on retrospective cohort in fall 2015
  - Piloting Noncognitive Variables (NCVs) scales in fall 2015

- Multiple Measures in Action
  - Bakersfield College
  - Butte College
  - Chabot College
  - Contra Costa College
  - Fresno City College
  - Peralta Community College District
  - San Diego Community College District
  - Santa Barbara College
  - Sierra College
Why Multiple Measures?

- Tests alone have shown to have poor predictive validity
- They provide a way to reduce under-placement
- They provide a more complete picture of student ability
- Multiple measures assessment is mandated
Engineering Flowchart

DOES IT MOVE?

- No
  - Should it?
    - No
      - No Problem
    - Yes
      - No
      - Yes
      - No Problem

- Yes
  - Should it?
    - Yes
    - No Problem
    - No
Variables that predict CC success

English
- Cumulative HS GPA
- C+ or better in AP English class
- Score on English CST

Math
- Cumulative HS GPA
- Grades in Algebra II, Statistics, Trigonometry
- Enrollment in Calculus, Algebra I
- Taking a challenging CST
- Score on math CST
- Delay between HS and CCC
English transfer-level rule sets

**Direct matriculants**
- 11th grade HS Cum GPA >= 2.7
  - OR
  - C+ or better in AP English

**Non-direct matriculants**
- 12th grade HS Cum GPA >= 2.7
  - OR
  - C or better in AP English
  - OR
  - Cumulative GPA >= 2.3
  - &
  - 12th Course GPA >= 2.7
GE math transfer-level rule sets

Direct matriculants
11th grade Cum GPA >= 3.2
OR
Cumulative GPA >= 2.5
&
CST >= 288
&
Algebra II - C or better

Non-direct matriculants
12th grade Cum GPA >= 2.8
OR
CST >= 284
&
Took Trigonometry in high school
OR
Trigonometry - B or better
Potential Impact of New Multiple Measures Models

<table>
<thead>
<tr>
<th>Category</th>
<th>Historic</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Transfer Level</td>
<td>48%</td>
<td>73%</td>
</tr>
<tr>
<td>Placement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English Level Success</td>
<td>72%</td>
<td>71%</td>
</tr>
<tr>
<td>English Throughput</td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>Math Transfer Level</td>
<td>52%</td>
<td>62%</td>
</tr>
<tr>
<td>Placement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math Transfer Level Success</td>
<td>30%</td>
<td>62%</td>
</tr>
<tr>
<td>Math Throughput</td>
<td>38%</td>
<td>51%</td>
</tr>
</tbody>
</table>
Underrepresented minority students' & non-URM students’ transfer-level placements: Multiple measures vs. traditional placement

### English
- URM: Trad.: 40%
- URM: MMs: 55%
- n-URM: Trad.: 60%
- n-URM: MMs: 74%
- Difference: 55% - 40% = 15 points

### Math
- URM: Trad.: 22%
- URM: MMs: 33%
- n-URM: Trad.: 41%
- n-URM: MMs: 53%
- Difference: 53% - 22% = 31 points
Disproportionate Impact

• Having more ways for students to demonstrate ability to succeed appears to improve equity
• Proposed rules reduce disproportionate impact, but by themselves do not eliminate it
• Revitalized interest in equity across gender, ethnicity, age, disability, foster youth and veteran status
Definition: Noncognitive

Sets of behaviors, skills, attitudes, and strategies that are crucial to academic performance in [students’] classes, but that may not be reflected in their scores on cognitive tests.

Farrington, Roderick, Allensworth, Nagaoka, Keyes, Johnson, & Beechum (2012; p. 2)
Character

Noncognitive Traits + Habits

Social & Emotional Skills

Growth Mindset

21st Century Skills

Soft Skill

Grit
Indicators: Noncognitive (Goldberg, 1993)

“Big 5” Personality Traits:
• Agreeableness
• Extraversion
• Neuroticism
• Openness to experience
• Conscientiousness
# Noncognitive Factors

<table>
<thead>
<tr>
<th>Often measured by existing instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic skills</td>
</tr>
<tr>
<td>Time management</td>
</tr>
<tr>
<td>Task precision</td>
</tr>
<tr>
<td>Self-management</td>
</tr>
<tr>
<td><strong>Social support &amp; engagement</strong></td>
</tr>
<tr>
<td>Motivation</td>
</tr>
<tr>
<td>Use of learning strategies</td>
</tr>
<tr>
<td>Self-regulation</td>
</tr>
<tr>
<td><strong>Self-efficacy</strong></td>
</tr>
<tr>
<td>College identity</td>
</tr>
<tr>
<td>Family involvement</td>
</tr>
<tr>
<td><strong>Conscientiousness</strong></td>
</tr>
<tr>
<td>Social adjustment</td>
</tr>
<tr>
<td>Team work</td>
</tr>
<tr>
<td><strong>Mindfulness</strong></td>
</tr>
<tr>
<td>Hope</td>
</tr>
<tr>
<td>Realistic self-appraisal</td>
</tr>
<tr>
<td>Leadership experience</td>
</tr>
<tr>
<td>Community involvement</td>
</tr>
<tr>
<td>Help seeking</td>
</tr>
<tr>
<td>Wellness</td>
</tr>
<tr>
<td><strong>Grit</strong></td>
</tr>
<tr>
<td><strong>Perseverance</strong></td>
</tr>
<tr>
<td>Commitment</td>
</tr>
<tr>
<td><strong>Focus</strong></td>
</tr>
</tbody>
</table>
Added Value (Schmitt, et al., 2011)

- If noncognitive measures are included...
  - Increase in the proportion of African-American and Latino students admitted to selective institutions
  - Few discernible differences in academic performance compared to those admitted based on cognitive-only composite
- Another data point to possibly place students who score slightly lower on cut scores to more advanced course in sequence
  - No indication of systematic differences among subgroups
  - Unclear about age differences
  - Need to examine disproportionate impact
Research Findings

- Existing instruments offer different measures of similar/same non-cognitive concepts
  - Reliability, validity and predictive studies limited, particularly for course placement
- Context and circumstance are important
  - Reduce disparities in course placement for students from historically underrepresented groups
- Noncognitive measures might best be used to complement existing assessments
  - Results could inform early and ongoing support services and interventions
Must Haves:

● Use existing non-cognitive instruments that have been validated
  ○ Data system allows for the inclusion of non-cognitive measures

● Clear messaging to students about the assessment
  ○ Ability to examine relationship between cognitive and non-cognitive measures across various courses, educational pathways

● Attention to subgroup differences (incl. traditional vs. nontraditional, age, gender, race/ethnicity, SES)
Recommendations

- Limit assessment to a core set of factors
  - Consider focus on conscientiousness and motivation

- Measures serve as a complement to existing cognitive assessments
  - Explore predictive utility

- Results inform support services and interventions
  - Design counseling and tutorial services to address needs

- Fund evaluation to assess validity, reliability and predictability by subgroups
  - Consider nontraditional student groups
# Sample Scales

See handout for selection criteria:

<table>
<thead>
<tr>
<th>Administration</th>
<th>College Student Self-Assessment Survey (CSSAS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validity</td>
<td>GRIT Scale</td>
</tr>
<tr>
<td>Reliability</td>
<td>HOPE Scale</td>
</tr>
<tr>
<td>Diversity of Research Respondents</td>
<td>Unfolding Five Factor Model (UFFM-I) Conscientiousness Scale</td>
</tr>
<tr>
<td>CCCs Using Instrument</td>
<td>Mindset</td>
</tr>
<tr>
<td>Implications for Diverse Contexts / Populations</td>
<td>Non-cognitive Questionnaire – Revised 2 (NCQ-R2)</td>
</tr>
<tr>
<td>Specific NCVs Measured</td>
<td></td>
</tr>
<tr>
<td>Specific NCVs/Subscales Associated with College Outcomes</td>
<td></td>
</tr>
</tbody>
</table>
Phase II Activities

- Support and recruit CAI pilot colleges
- Implement rule sets for fall 2015
- Implement NCV scales
- Assist pilot colleges in developing a comprehensive research plan
- Provide student-level outcomes data and NCV data back to research team
- Run analysis on student-level data from fall 2015
- Validate use of self-reported transcript data
- Develop online user platform
- Re-run models with Smarter Balanced test
- Make presentations and develop publications
- Recommend a final model and NCV scale for inclusion in CAI platform