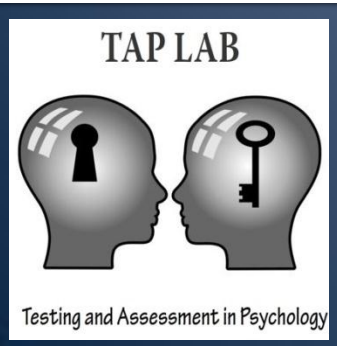
Development of Assessment Tools for the Evaluation of Select Psychology Learning Outcomes



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Purpose of Assessment

- Determine if students are meeting learning objectives across all sections of PSY 121, Methods and Tools in Psychology
  - Psychology as a Science
  - Critical Thinking
  - Ethics
  - Information Competence
  - Effective Communication
- Consistency in course content
- Identify learning gaps

Current Study

- **PSY 121, Methods and Tools in Psychology**
  - **6 sections**
  - **Fall, 2011**
- **Pretest and posttest**
- **Indirect and direct measures**
  - **50 Indirect items**
  - **48 Direct items**
- **N = 108,**
- **Response Rate 88%**

Individual Area of Interest for Current Study

- Direct vs. Indirect Measures of Student Learning Outcomes
- Pretest to Posttest
- Overconfidence
- N=67, 43% failed validity check
- Eliminated those who did not participate in both the pre- and post-tests

Indirect and Direct Methods of Assessment

Indirect

- "knowledge survey"
- Students rate on a Likert scale their confidence or ability to answer questions on course content
  - Items can be broad course topics or the same items from direct measure

Direct

- Evaluate student acquired knowledge and skills
- Pretests and posttests
  - account for individual differences in prior knowledge
  - demonstrate value-added

Prior Studies
Direct vs. Indirect Measures

DIRECT

- Significant gains in student learning pretests and posttests (Bell & Volckmann, 2011, Price & Randall, 2008)
- Limiting due to classroom time needed to cover necessary course content (Nuhfer & Knipp, 2003)
- Limit the ability to measure higher levels of learning (Wirth & Perkins, 2005)

INDIRECT

- Student confidence level in perceived knowledge and abilities increases pretest to posttest (Bell & Volckman, 2011, Bowers, Brandon & Hill, 2005, Clauss & Greedney, 2010, Nufher & Knipp, 2003, Price & Randall, 2008, Wirth & Perkins, 2005).
- Posttest confidence scores paralleled exam grades (Bell & Volckmann, 2011, Nufher & Knipp, 2003, Wirth & Perkins, 2005) and final course grades (Wirth & Perkins, 2005)
- Posttest confidence scores NOT a good indicator of later test performance (Price & Randall, 2008, Bowers, Brandon & Hill, 2005, Clauss & Greedney, 2010) and grades (Bowers, Brandon & Hill, 2005)
- Students who scored lower on the final exam were overconfident in the estimated ability (Bell & Volckmann, 2011)

Hypotheses & Results

- H_1: Average posttest indirect scores will be higher than average pretest indirect scores.

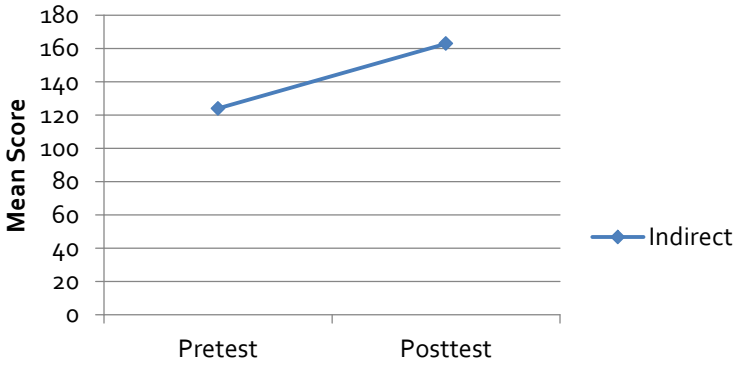


Figure 1. Mean change in pretest to posttest indirect measures $t(66) = -14.56$, $p < .001$, $d = -2.42$, $CI_{.95} = -44.99, -34.14$ resulting in higher posttest indirect scores supporting Hypothesis 1.

- H_2: Average posttest direct scores will be higher than average pretest direct scores.

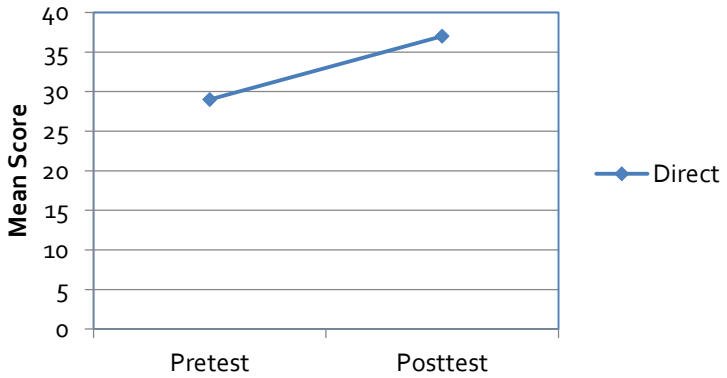


Figure 2. Mean change in pretest to posttest direct measures $t(66) = -11.31$, $p < .001$, $d = -1.30$, $CI_{.95} = -8.46, -5.92$ resulting in higher posttest direct measure scores supporting Hypothesis 2.

Hypotheses & Results

- *H*3: Posttest indirect scores should correlate in a positive direction with posttest direct scores.
- *H*4: Posttest indirect scores should correlate in a positive direction with grades

- *H*3: No statistically significant relationship was found between posttest indirect scores and posttest direct scores, $r(67) = .16$, $p = .195$.
- *H*4: No statistically significant relationship was found between posttest indirect scores and final grades, $r(67) = -.03$, $p = .839$

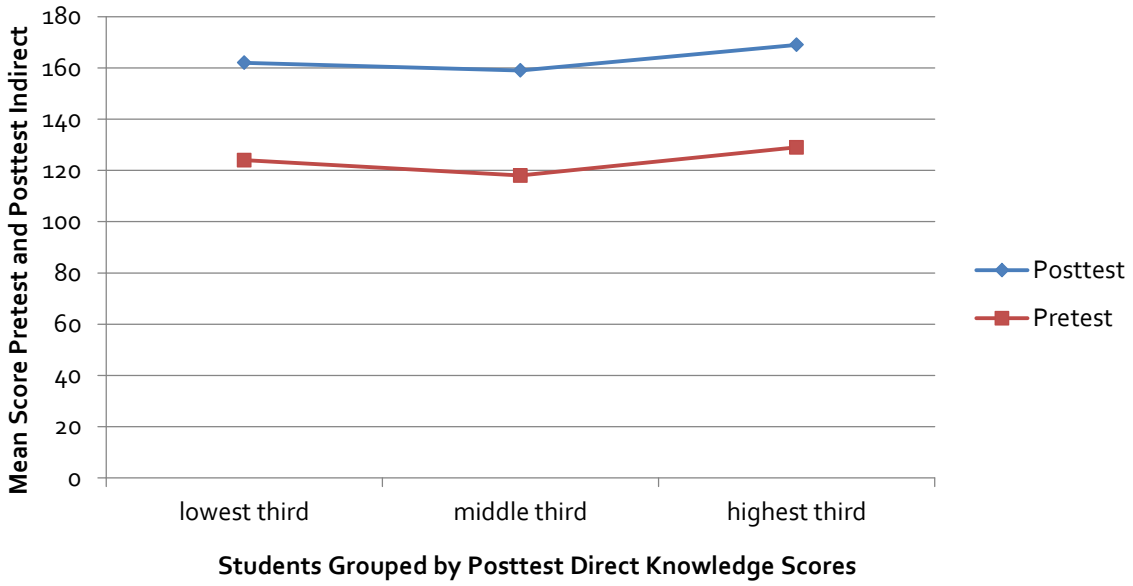
Hypotheses & Results

- H_5: Posttest direct scores should correlate in a positive direction with grades.

- H_5: A statistically significant relationship was found between posttest direct measure scores and final grades, $r(67) = .53$, $p < .001$

Research Question and Results

- *RQ*1: Will direct measure low scorers be more confident in their knowledge and abilities than high scorers?



Discussion

RESULTS SUMMARY

- Indirect and direct measures showed increases from pre to post
- Indirect measures do not correlate with knowledge or grade
- Conclude indirect is not an accurate measure of student learning
- Lower scorers overconfident in abilities

FUTURE RESEARCH

- Item level analyses
  - identify learning gaps in course topics
  - Confidence ratings
  - Correlate indirect measures with direct measures
- Provide pretest direct/indirect results to students
- Include posttest results as part of course grade.
- Develop course guidelines for content consistency across sections

Past Research

- AP students… (Educational Testing Service [ETS], 1998)
  - Perform better in subsequent courses
  - Maintain higher GPAs
  - Enroll in "harder majors" and double-major
  - Are not very ethnically diverse (Geiser & Santelices, 2006)

Past Research

- SAT Scores
  - Supposedly the best predictor of academic success in college (Collegeboard.com, 2012b)
  - Having an SAT score requirement for admissions or scholarship eligibility may result in adverse impact (Cohn, Cohn, Balch, & Bradley, 2004)
  - May also have other uses, too (Park, Lubinski, & Benbow, 2007)

Hypotheses & Results

- H_1 = AP students perform better than non-AP students in Psy-121
- No significant difference between grades, (t = .979, p = .06)

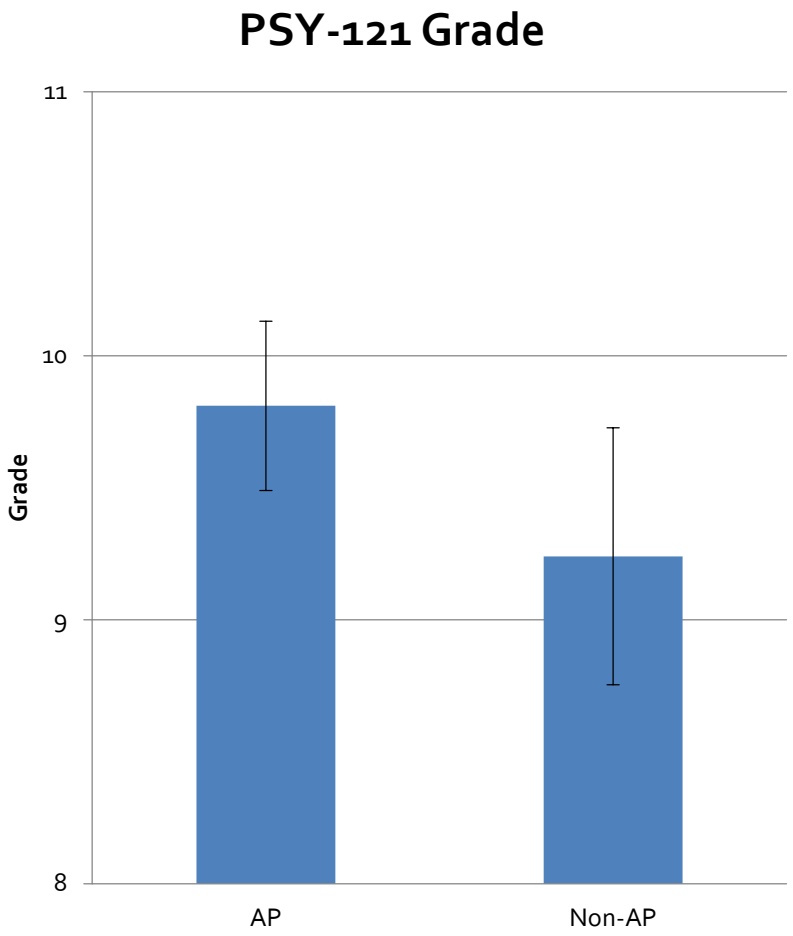


Figure 1: Grade difference between AP & Non-AP students in Psy-121. (A grade of 8 =B, 9 = B+, 10 = A-)

- H_2 = AP students perform better than non-AP students in our PSY-121 Assessment
- The difference between the performance of AP and non-AP students on the direct measure was not significant (t = 1.586, p = .133)

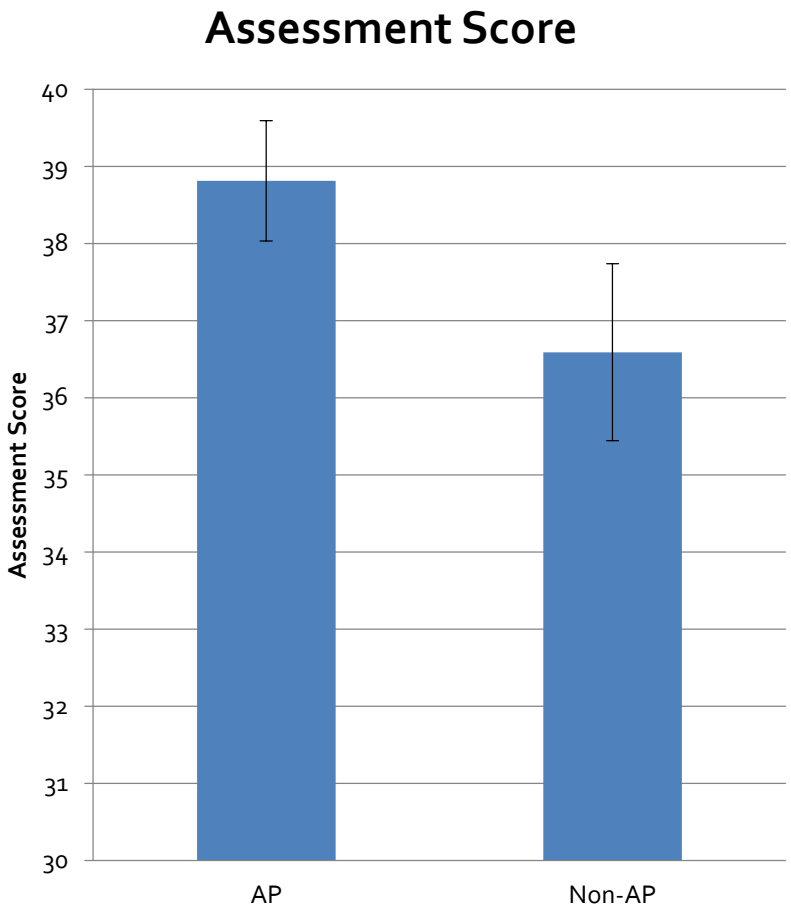


Figure 2: Assessment score difference between AP and non-AP students. (Score range is from 0-48.)

- H_3 = Students with higher SAT scores receive higher grades in Psy-121 and a higher score in our assessment
- For AP students, SAT is invalid when predicting grade (r = -.043, p = .866), but valid when predicting assessment score (r = .607, p = .008**)
- For Non-AP students, SAT is slightly more valid when predicting grade (r = .161, p = .537) but less valid when predicting assessment score (r = .434, p = .072)

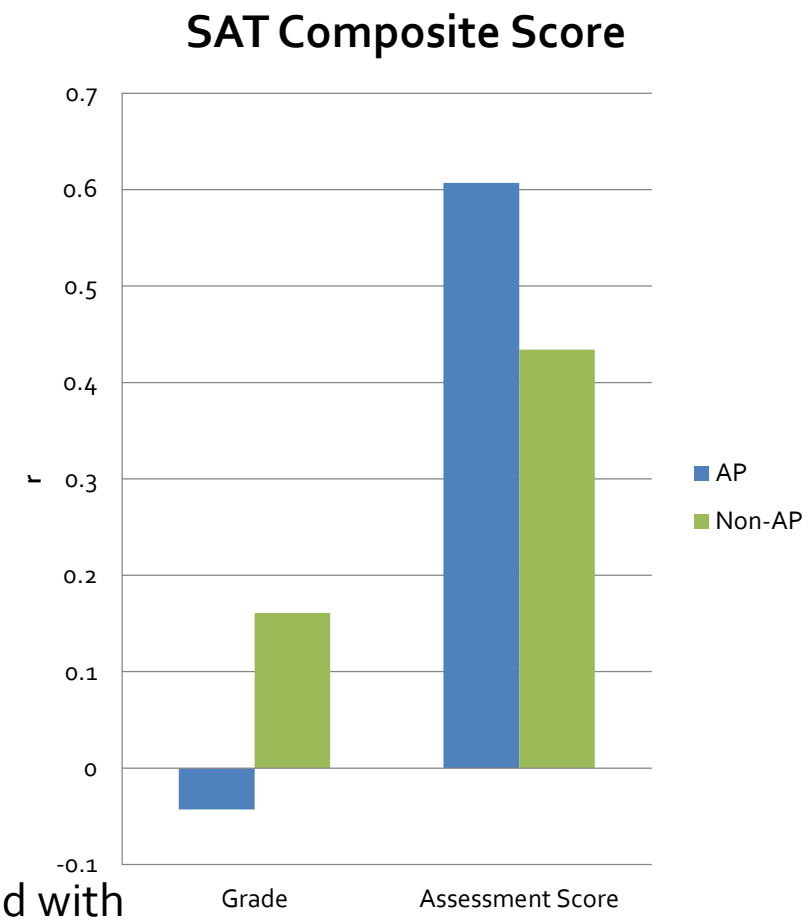


Figure 3: SAT Math+Verbal scores correlated with Psy-121 grade and assessment score for AP & Non-AP students.

- H_4 = Students who score higher on our assessment received a higher grade in Psy-121
- Not significant for AP students (r = .402, p = .071) but is significant for Non-AP students (r = .765, p < .001**)

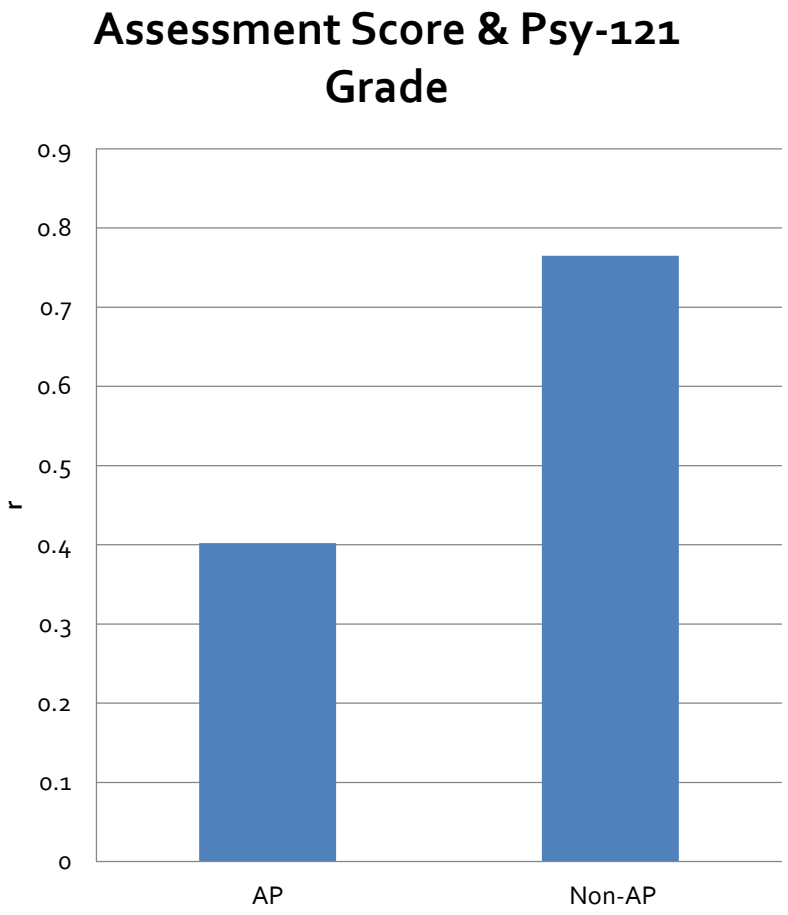


Figure 4: Correlation between AP & Non-AP assessment score and grade in their Psy-121 course.

Discussion

- There is no significant difference between the grades of an AP student and a Non-AP student in subsequent courses
  - But what about the long-term?
- A need to do long-term GPA studies using the SAT due to inconsistencies in grade predictions
- Possible adaptations to our Psy-121 Assessment instrument for diagnostic uses
- Perhaps correlate SAT "ability level/tilt" with major upon graduation