Assessing Critical Thinking in Psychology Majors

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Spring 2012
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Aims

• Evaluate critical thinking among junior and senior Psychology majors (Psy 301) via two measures:
  – Rubric applied to course embedded assignment (adapt previously assessed critical thinking measure)
  – Objective measure

• Evaluate critical thinking in previously studied PSY 232 using objective measure
PSY 232: Developmental Psychology

- 3 credit course
- Meets General Education Requirements
- One of group of 3 courses of which majors must take 2

Course Description: Comprehensive understanding of human development and growth from birth to senescence.
PSY 301: Introduction to Experimental Psychology

- 4 credit course
- Required for all Psychology majors
- Course description: Lectures, demonstrations, and laboratory experiments introduce the student to basic methodological principles and experimental techniques applied in psychological research.
Objective Measure

• A 5-item objective multiple-choice measure was administered at the end of Fall 2011 semester.
  \[ n = 68 \text{ (2 sections of Psy 301)} \]
  \[ n = 52 \text{ (Psy 232)} \]
• Competence = 3 correct answers
• Expectation: 75% of students will be competent
Ann has a terrible cold and takes an over-the-counter medication recommended by a friend. Two days later she gets better and decides that the medication is effective. How would your psychology training lead you to respond to this?

a) Ann is right – this medication should be recommended to others.
b) Without a control condition there is no way to be sure that the medicine had any effect

c) Because Ann is not “blind” to the treatment condition there may be a placebo effect.
d) A sample of one person is not adequate to draw conclusions

e) b, c, and d are all correct
Results for Objective Measure

- **Objective measure**
  - Psy 301-section1 (n=29): 79% competent
  - Psy 301-section 2 (n=39): 71% competent
  - Both sections of Psy 301 combined (n=68): 75% competent
  - Psy 232 (n=52): 71% competent
  - Overall (n=120): 73% competent
Rubric for Course Embedded Assignment

• 20-item, 3-Point Likert scale
  – 5 Constructs:
    • Explanation of Issues
    • Research Design
    • Empirical Evidence
    • Conclusions, Implications and Consequences
    • Multifaceted Perspective
  – Rated as 1 = Developing, 2 = Competent, and 3 = Highly Competent.
  – Anticipated results: at least 75% of students achieving competence.
<table>
<thead>
<tr>
<th>Explanation of Issues (1)</th>
<th>Critical Thinking Skills</th>
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<tbody>
<tr>
<td>(Problem/Issues relevant to situation in context is clearly stated)</td>
<td>- States problems clearly</td>
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<td></td>
<td>- States/explains relevance of the topic</td>
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<td>- Summarizes background issues effectively</td>
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<td>- Makes connections between different theories/facts/observations</td>
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Evidence (2)

(An Appropriate (for assignment) variety of reputable sources are selected and used)

- States hypothesis clearly
- Supports hypothesis with literature
- Explains sample characteristics
- Explains procedure and materials clearly
Empirical Evidence (Evaluates empirical evidence to reach a valid conclusion)

- Reports statistical indicators accurately (eg t, p, CI)
- Demonstrates understanding of statistical methods
- Summarizes statistical results concisely
- Uses scientific writing in summarizing results
<table>
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<tr>
<th>Conclusion, Implications, Consequences</th>
<th>▪ Reflects the link between the results and the hypothesis in the conclusion</th>
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<tbody>
<tr>
<td>(A comprehension conclusion synthesizes sources and has a nuanced consideration of implications and consequences)</td>
<td>▪ Considers limitations when discussing implications of results</td>
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<tr>
<td>▪ Demonstrates creativity in future research recommended</td>
<td>▪ Distills the most important part/point of the study</td>
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<tr>
<td>Multifaceted Perspective</td>
<td>Considers multiple perspectives when interpreting the study, including cultural perspectives.</td>
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<td>--------------------------</td>
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<tr>
<td>(Demonstrating openness to considering different perspectives and ability to critically evaluate)</td>
<td>Connects results explicitly to previously mentioned literature</td>
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<td>Discusses application/implication in findings to real world settings</td>
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<td>Develops sound arguments based on reasoning and evidence</td>
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Method

• A random sample of 30 lab reports out of the 47 junior and senior Psychology majors (64%) from 2 sections of 301 (15 papers/section).
• Each lab report was evaluated by two raters: one rater was the Evaluation Assistant and the other rater was the lab instructor for the other section. (Lab instructors did not rate papers from their own students).
• Established inter-rater reliability
Inter-rater Reliability
Results

• Construct 1 (Explanation of Issues) and Construct 3 (Empirical Evidence/Results) meet level of competency with a mean score of 2 or above.

• Constructs 2 (Research Design), 4 (Conclusions, Implications and Consequences), and 5 (Multifaceted Perspective) fell below the competent threshold of a mean score of 2.

• Construct 4 (Conclusions, Implications, and Consequences) met level of competency for rater 2.
Results (Cont’d)

• Within each construct students achieved competence on some skills except for Construct 5 (Multifaceted Perspective).
• Overall, the goal of competence for 75% or more students was demonstrated for 8 skills.
Conclusions for Objective Measure

• Objective Measure: 75% of students for PSY 301 and 71% of students in PSY 232 demonstrated competence on objective measure.

• This was a follow-up to an evaluation in Fall 2009. While improvement was shown, the measures were not the same so must be interpreted cautiously.
Conclusions for Rubric Measure

• We were successful in measuring critical thinking via a rubric for assignments in Psy 301.
• Inter-rater reliability was established for this rubric.
• Means were around or above 2.0 for 4 constructs for Rater 1 and 3 constructs for Rater 2.
• Greater than 75% of students were judged competent on 8 of the 20 constructs.
Future Directions

• The previous rubric will be used for students’ papers in Psy 232 Fall 2011 to further evaluate competence in critical thinking skills and compared to results from Fall 2009.

• Psy 301 instructors are already incorporating some of the feedback from this report and may develop further curricular changes.

• Results will be shared with department faculty.

• Aim to longitudinally follow development of critical thinking in students during their undergraduate training.