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Practice Makes Perfect: Improving Learning of At-risk Students

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Practice Makes Perfect: Improving Learning of At-Risk Students
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Data Acquisition and Analysis: At-Risk Students

Data to Assess Learning: We coded responses to exam items binomially (correct/incorrect).

Exams:
- 10 Exams
- 2 or 4 chapters per exam
- 40 multiple choice Qs each
- 1 topic per question

Mixed Logit Analysis: Created a model to account for exam data based on effects of predictor variables while statistically controlling for random variables.

Best-Fitting Model: Excluded high-school rank and ACT scores as complex models did not improve the prediction of exam data and were rejected as over-fit.

Predictors: Quiz &Note matrix grades

Random: Student & Question

Implications for Psych 100

- Note Matrices and Online Quizzes enhance learning for at-risk students and students in other sections, maybe by orienting them to critical concepts.
- At-risk students who performed well on Quizzes and Note Matrices had exam accuracy similar to students in other sections, suggesting that these interventions prepare students for success in traditional sections.
- Additional lectures covering a breadth of material do not predict learning, however, review of familiar content may better predict learning.

Research Questions

We investigated learning in at-risk students in the EOP section by focusing on 3 questions:
1. Do interventions that increase exposure to testing situations improve learning?
2. Do interventions that support text reading and comprehension improve learning?
3. Do these interventions also improve learning in the general population of Intro Psych students?

Methods

Subjects: At-Risk Student Demographics
N: 10
Sex: 9 Females; 1 Male
Year: 7 Freshmen; 2 Sophomores; 1 Junior
Ethnicity: 8 African American; 2 Latino/Hispanic

Conditions: Pedagogical Interventions
Num Lectures: 4-7 days new content/chapter
Note Matrices: 18, 1 per chapter
Quizzes: 10, 20 multiple choice Qs

Procedures
Num Lectures: Combined lecture/discussion
Note Matrices: Take home, graded study guides
Quizzes: Available online after lectures

T-Test Analysis of Raw Quiz Scores

<table>
<thead>
<tr>
<th>Correlation</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiz:Exam</td>
<td>0.54</td>
</tr>
<tr>
<td>NM:Exam</td>
<td>.01</td>
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</tbody>
</table>

Comparison: Students Not At-Risk

Subjects: 38 same-section students
Conditions: Pedagogical Interventions
Num Lectures: 2-4 days new content/chapter
Note Matrices: 18, 1 per chapter
Quizzes: 9, 10 Multiple choice Q

Procedures
Num Lectures: Combined lecture/discussion
Note Matrices: Take home, graded study guides
Quizzes: Available online after lectures

Quizzes and Matrices Predict Exam Performance in Students Not At-Risk

Subjects: 38 same-section students
Conditions: Pedagogical Interventions
Num Lectures: 2-4 days new content/chapter
Note Matrices: 18, 1 per chapter
Quizzes: 9, 10 Multiple choice Q

Procedures
Num Lectures: Combined lecture/discussion
Note Matrices: Take home, graded study guides
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Future Research

- Do these interventions improve performance in Introductory Psych more generally?
- What are other techniques that can orient students to critical concepts?
- What are the common factors in effective interventions of at-risk students?
- Are these interventions effective for other at-risk populations such as students with learning disabilities?

References

Luke, Grison, Shigeto, & Watson, 2010, Poster at NITOP

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