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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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•29 graduate TAs and 1 faculty member teach 2700 Introductory Psychology students annually. This year we developed an assessment program to improve student learning and graduate teaching training (Shigeto et al., 2010).

•We studied the value of pedagogical tools developed for students in the Educational Opportunities Program (EOP).

•EOP selects students based on demographics and academic vulnerabilities for a special intro psych section.

•This section has an extra day per week for content presentation and additional student development support.

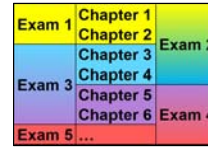
•These interventions have been demonstrated to enhance learning in minority students (Treisman, 1992).

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



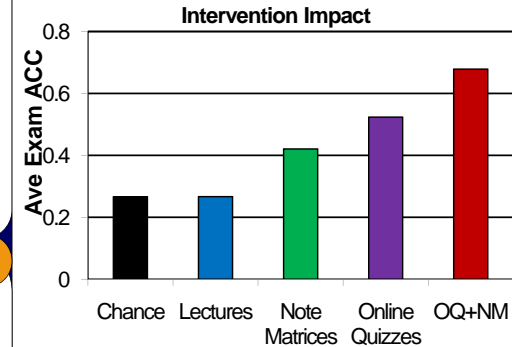
Mixed Logit Analysis: Created a model to account for exam data based on effects of predictor variables while statistically controlling for random variables.

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

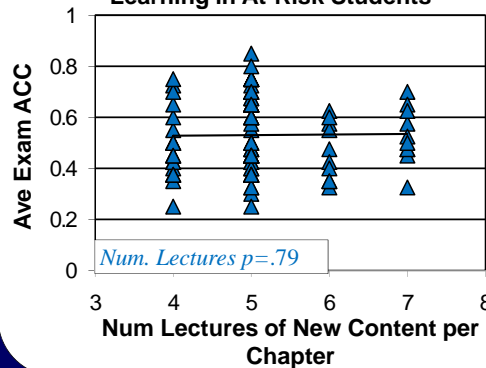
Implications for Psych 100



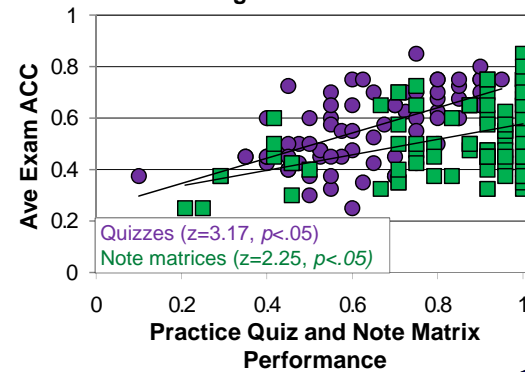
- Note Matrices and Online Quizzes enhance learning for at-risk students and students in other sections, maybe by orienting them to critical concepts.
- At-risk students who performed well on Quizzes and Note Matrices had exam accuracy similar to students in other sections, suggesting that these interventions 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.

Results: At-Risk Students

No. Lectures Does Not Predict Learning in At-Risk Students



Quizzes and Note Matrices Predict Learning in At-Risk Students



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:	Partial graded notes (Cornelius & Owen-DeSchryver, 2007).
Quizzes:	Available online

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

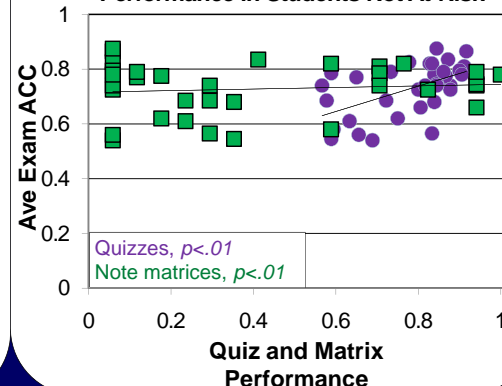
Procedures

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

T-Test Analysis of Raw Quiz Scores

	Correlation	P value
Quiz::Exam	0.54	<.004
NM::Exam	.01	<.0001

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



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 for at-risk students?
- Are these interventions effective for other at-risk populations such as students with learning disabilities?

References

Shigeto, Grison, Luke, & Watson, 2010, Poster at NITOP
 Luke, Grison, Shigeto, & Watson, 2010, Poster at NITOP
 Cornelius & Owen-DeSchryver, 2008, *Teaching of Psychology*, 35, 6-12.
 Treisman, 1992, *The College Mathematics Journal*, 23, 362-372.

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