Exploring the Impact of Self-Explanation Prompting on Performance and Exam-Taking Behavior in a Pharmacotherapy Course

NDSU SCHOOL OF PHARMACY

Authors

Dan Cernusca & Elizabeth Monson

**North Dakota State University
School of Pharmacy**

Purpose

Analyze the effectiveness of self-explanation prompting in pharmacy education for *increased success of*...
- Students' academic success;
- Required licensure examinations.

Self-Explanation

A strategy often used by proficient students use prior knowledge successfully solve problems (Chi et al., 1989)

Previous research showed that:

- prompted rather than spontaneous, self-explanation could enhance learning achievements (Ionas et al., 2012);

- self-explanation prompts can range from targeted to generic.

Methods

Research Design

Sequential mixed-methods approach:
- **Qualitative** identification of 10 behavioral patterns grouped in 4 exam-taking behavioral outcomes based on ExamSoft snapshot data
- **Quantitative quasi-experiment**:
  - Control: 3 difficult case-based MCs
  - Intervention: similar questions with added self-explanation prompt

### Data Sources

Deidentified ExamSoft Snapshots
- All exam-taking actions (view, answer, change-answer) with a time-stamp

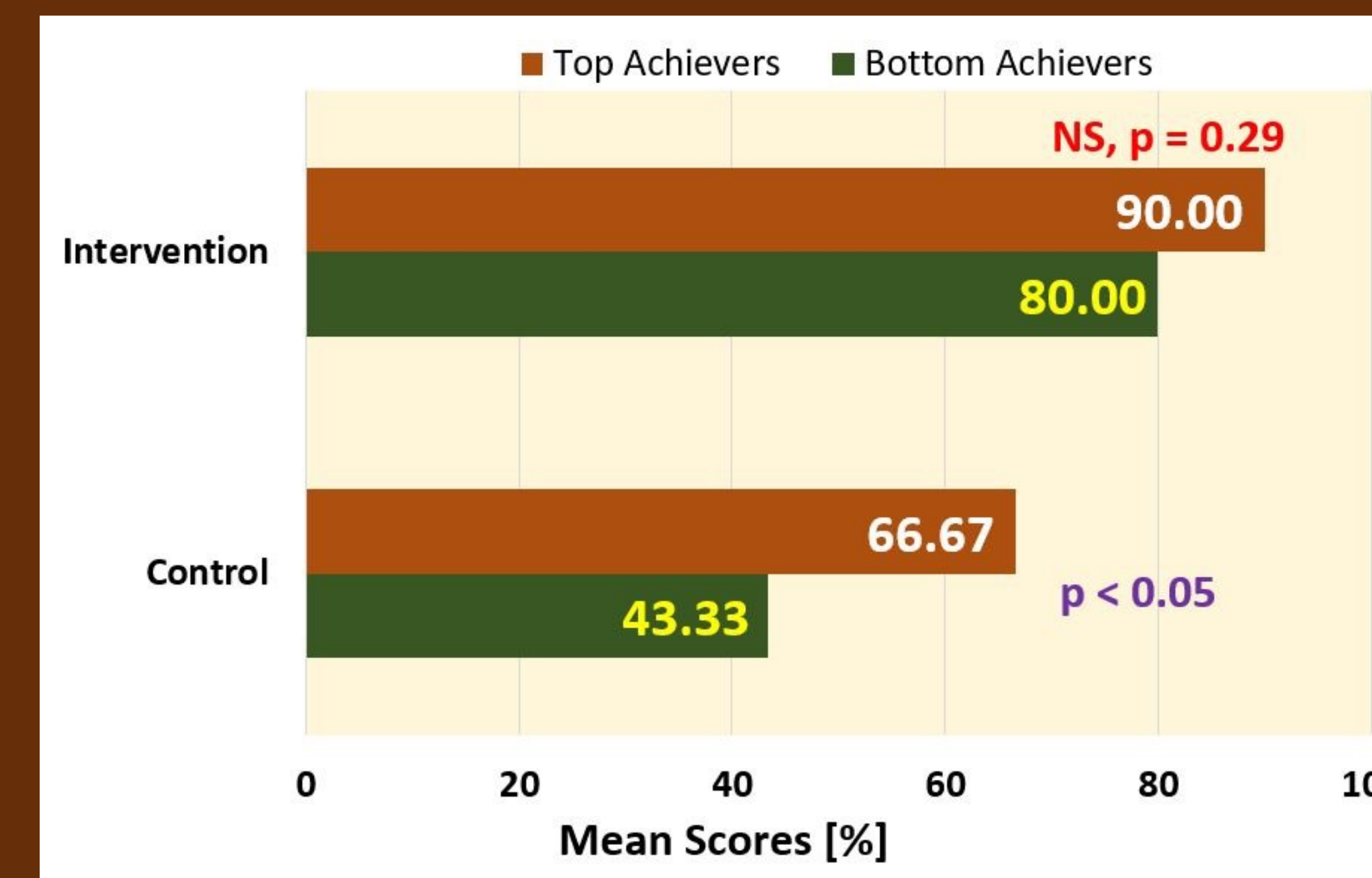Correct/incorrect answers retrieved from the ExamSoft Exam-takers Results report.

Sampling & Sample Size

The 10 top performers and the 10 bottom performers in the overall exam were selected for this study.

Use of self-explanation prompts *closed the score gap* between top and bottom performers for target assessment items
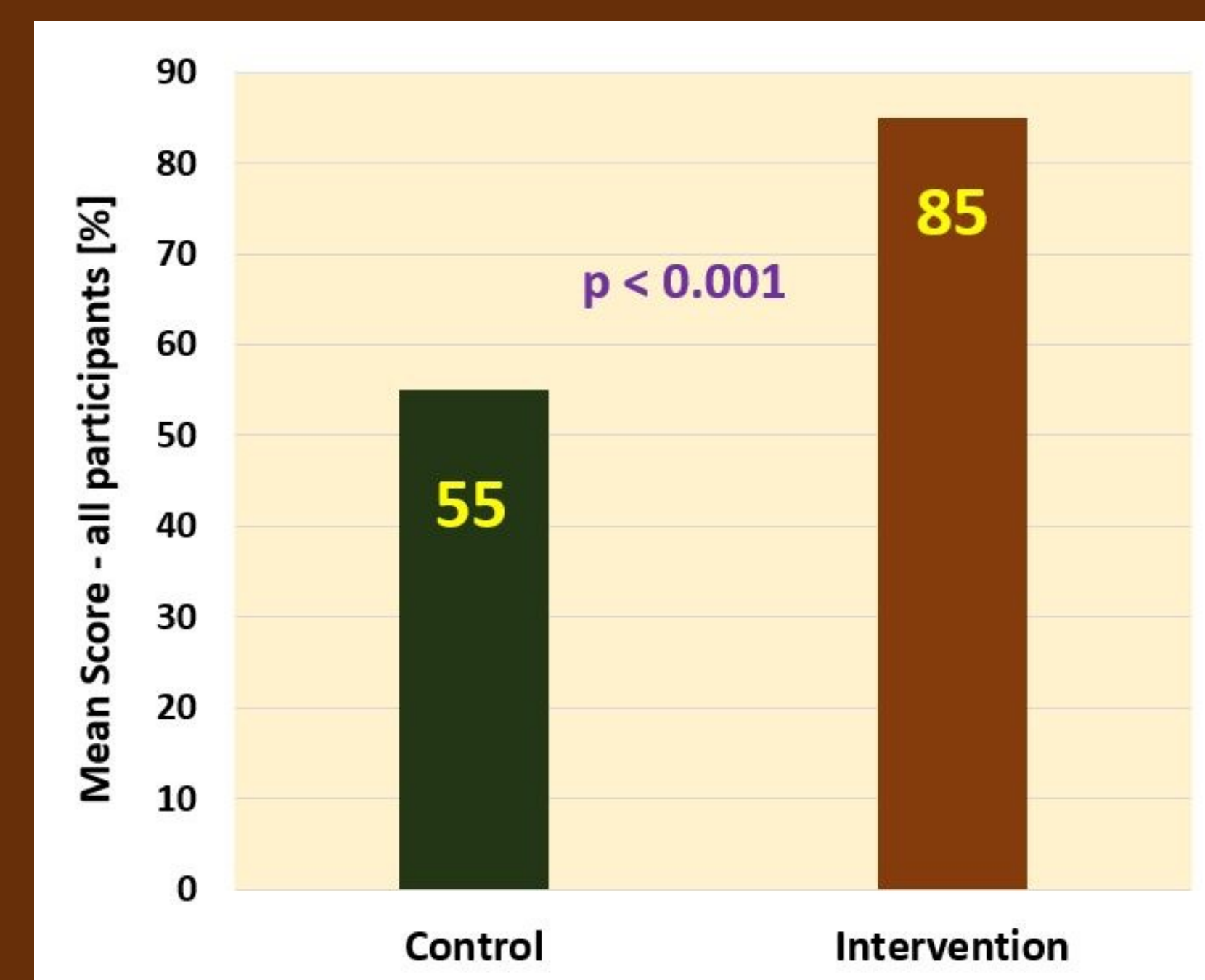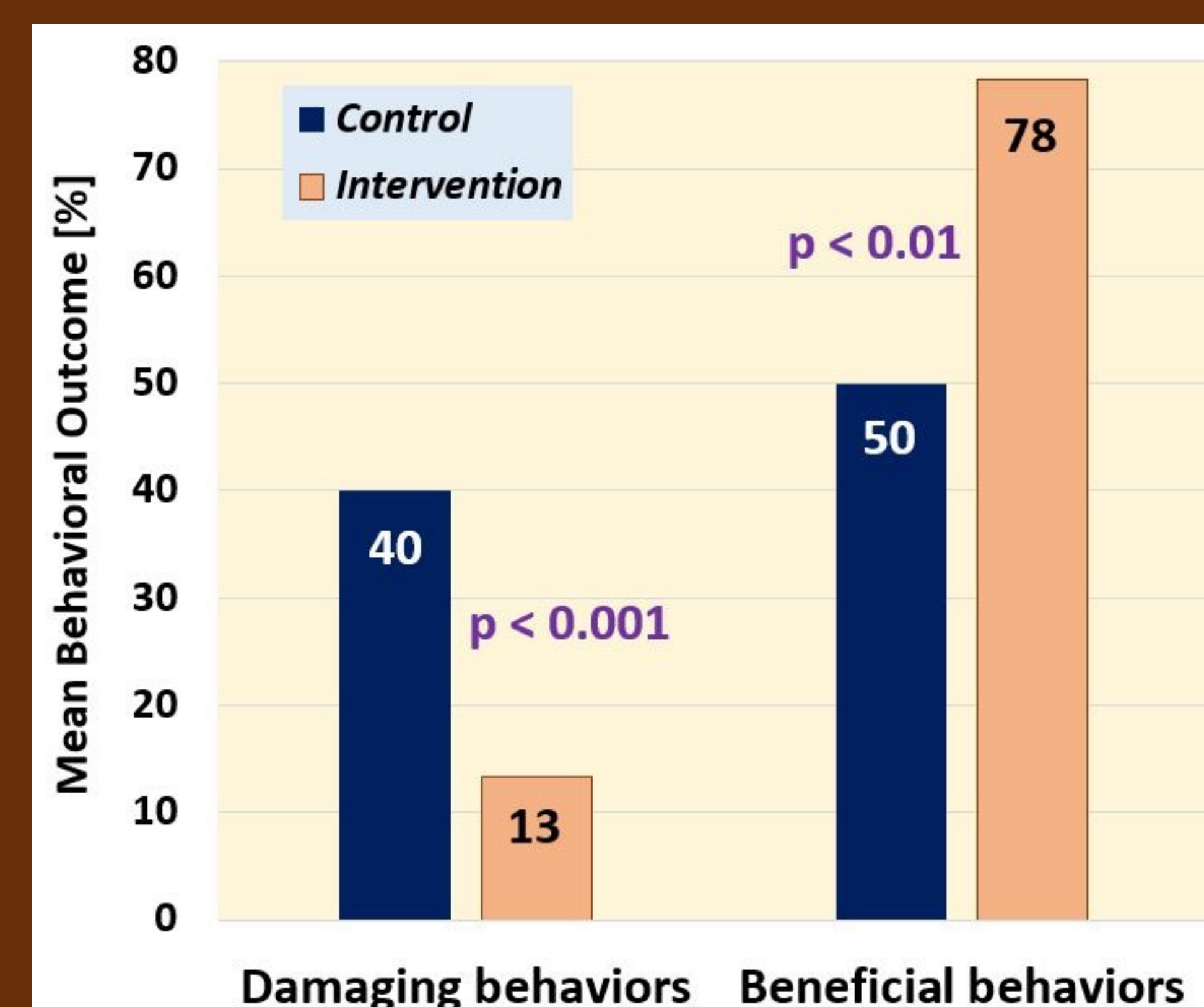

Overall Score (control vs. intervention)

Top/Bottom Performers(control vs. intervention)

A self-explanation scaffolding strategy, from targeted to generic, has the potential to *help students* build *effective self-explanation beneficial behaviors*

Behavioral Outcomes

Beneficial exam-taking behaviors

- **Correct answer: first view => final**
- **Wrong answer => Correct to final**

Damaging exam-taking behaviors

- **Correct answer => Wrong to final**
- **Wrong answer: first view => final**

Sample Assessment Item

MD is a [... xxxx ...] male with Stage 4 kidney disease. For the past year his calcium, phosphate and PTH labs have been increasing and despite initial treatment with dietary restriction of phosphate, his labs remain elevated.

Labs were drawn as follows: SCr: 1.36 mg/dL Albumin: 2.3 g/dL (3.5-5 g/dL) Serum Ca2+: 9.5 mg/dL (8.6-10.2 mg/dL) Vit D: 20 ng/mL (Sufficient) PO4-: 5.5 mg/dL (2.7-4.5 mg/dL) PTH: 810 pg/dL (10-65 pg/dL).

Which of the following would be the best recommendation to lower his PTH?

[Self-explanation prompt – control questions]

When evaluating this question think back to what laboratory values are needed to initiate treatment and the overview of treatment.

Correlational Analysis

Control questions showed a statistically significant, medium-to-strong correlation with the overall exam score, **r = 0.59, p < 0.01**

Intervention questions behaved totally different, showing no correlation with the overall exam score, **r = 0.15, p = 0.53**

Conclusions

The results of this study *indicate that the* positive impact of self-explanation prompting on performance outcomes are substantiated for pharmacy students

A progressive reduction in prompting focus from targeted to generic format can foster *enduring self-explanation skills* in pharmacy students,

Inform pharmacy programs about *the potential effectiveness of self-explanation prompting* on student success

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