Distracted , Stressed, and Confused: The Effects of Distraction and Stress on Memory Retention

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Background & Rationale

Previous research has investigated the effects of test anxiety and memory impairment due to stress, but the literature has failed to analyze the interplay of these factors with environmental distraction. Our study aims to fill in this gap by examining the association between distraction, stress, and information recall to identify optimal testing experiences within the academic environment.

Hypotheses

- We hypothesized that one's ability to recall and retain information will significantly decrease in a distracted environment.
- We suspected that if we present students with a high stress situation, such as a graded test, we then could expect an increase of anxiety, which would lead to a decrease in score when compared to a non-graded test.
- We expected that the combination of stressful and distracted conditions will result in the worst performance of material recollection compared with either the stress or distraction condition alone.

Research Questions

- How do distractions affect memory recall?
- How will students perform in situations with increased academic stressors (graded tests) compared to those with reduced academic stressors (non-graded tests)?
- How do students respond to the combinational effect of created stress levels and distractions?

Experimental Design

Independent Variables ($Y_1$and Y_2)**:**

- Environmental Distractions
- Situational Stresses

Dependent Variables ($X_1$and X_2)**:**

- Recall Accuracy
- Student Stress Behaviors

Experimental Design: PxE Within-Subjects

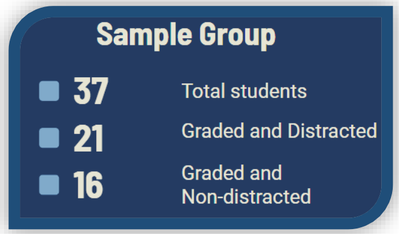
Conditions

For this experiment, the research team evaluated the following test **conditions**:

- Distracted, Graded
- Non-distracted, Graded
- Non-distracted, Non-graded

Distractions included:

- The research team conversing loudly with the professor
- Frequent time and grade reminders from the professor and research team
- Zipping and unzipping a backpack, fumbling for objects
- Text tones and loud phone calls within and outside of the classroom

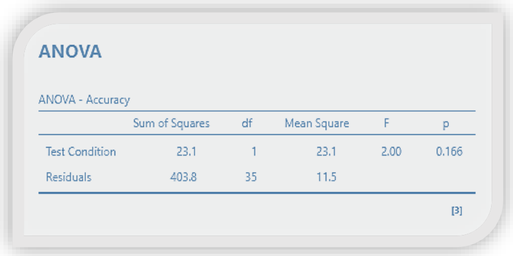


Methods & Procedure

1. We received IRB approval and participant consent.
2. The lead researcher and her assistant provided the same short answer quiz to two sections of the same sophomore Education seminar.
3. The control group took the test as normal with no distractions. The other group took the same test, but the researchers had interposed distractions during the test. Both tests had a timed duration of 15 minutes
4. Students were debriefed and provided with contact information.
5. The lead researcher compared consent responses to the participant data, validating it appropriately, then began data analysis using SPSS to perform a 2-way ANOVA.

Findings & Discussion

Despite hypothesizing that the combined stressful and distracted conditions would have the worst impact, retention scores remained relatively consistent for all students in all academic conditions. While there was a slight positive correlation between stress and negative retention in the non-distracted, graded group, the P-value was not statistically significant, and true factor correlation is speculative at best.


ANOVA

ANOVA - Accuracy

	Sum of Squares	df	Mean Square	F	p
Test Condition	23.1	1	23.1	2.00	0.166
Residuals	403.8	35	11.5		

[3]

Potential Applications

- We believe that our research will help to bolster existing knowledge about the topic of memory retention and help teachers modify classrooms to better assist learning retention within college settings.
- Understanding how stress, distraction, and memory recall are interrelated is imperative for effectively managing student test anxiety. Professors and administrators can improve academic success based upon the knowledge of how stressful stimuli affect their students' test performance.

Future Directions

In the upcoming months, the research team anticipates initiating phase 2 of this pilot study, which will include the following changes:

1. Testing in 4 traditional (non-seminar) courses with students from various majors and years.
2. Incorporating biofeedback.
3. Testing at the beginning, rather than the end, of the semester.

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