

Supplementary Analyses – Verbatim Overlap and Student Note-Taking Preference

Data collected at both Princeton and UCLA suggested that students who expressed a preference for taking longhand notes generally took notes with less verbatim overlap, even when assigned to a laptop condition. See Supplementary Figures S1–S3. These students, however, did not consistently take significantly *fewer* notes than laptop-preferring students. Students who did not express a preference, or who professed to use both methods, were not included in this analysis. Some cells therefore contain comparatively few participants ($n < 10$); in particular, the “prefer longhand” assigned to the laptop condition in Study 1, and the “prefer laptop” assigned to the longhand condition in Studies 2 and 3. Thus, we are hesitant to draw broad conclusions from these data, though they are suggestive of a difference in underlying note-taking strategies for these groups of students.

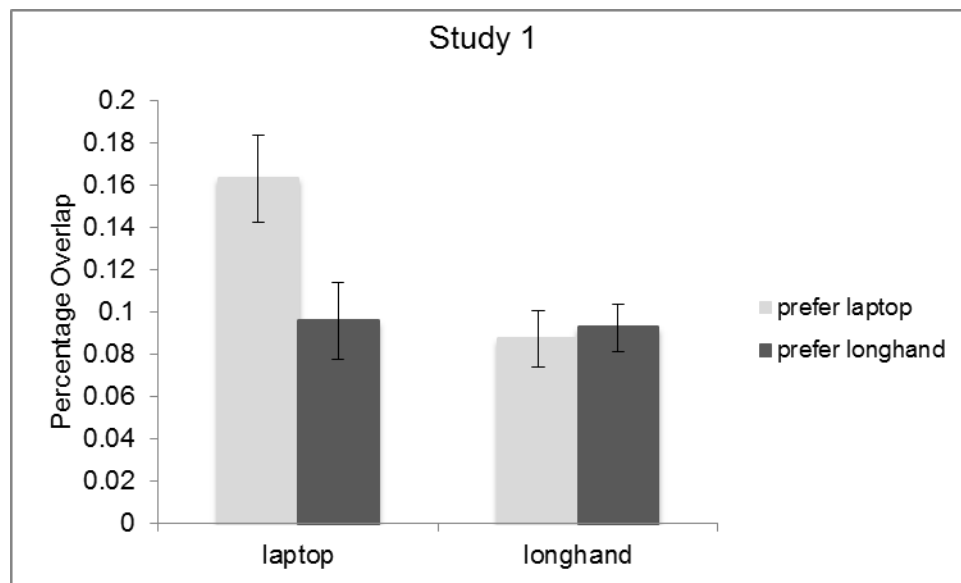


Figure S1. Student note-taking preference, assigned condition, and extent of verbatim overlap in Study 1. Interaction $F(1, 49) = 4.34$, $p = .042$, $\eta^2_p = .08$.

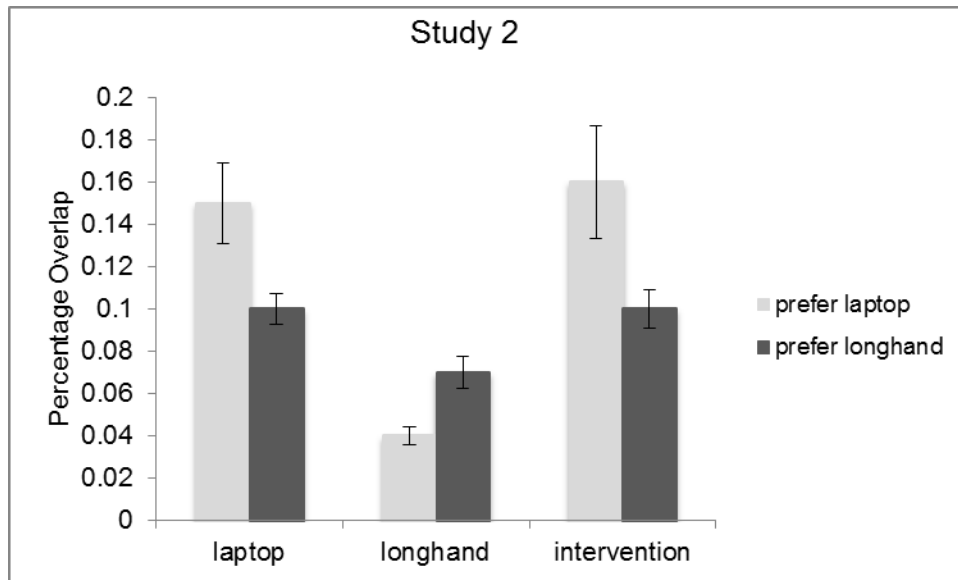


Figure S2. Student note-taking preference, assigned condition, and extent of verbatim overlap in Study 2. Interaction $F(2, 103) = 4.51, p = .013, \eta^2_p = .08$.

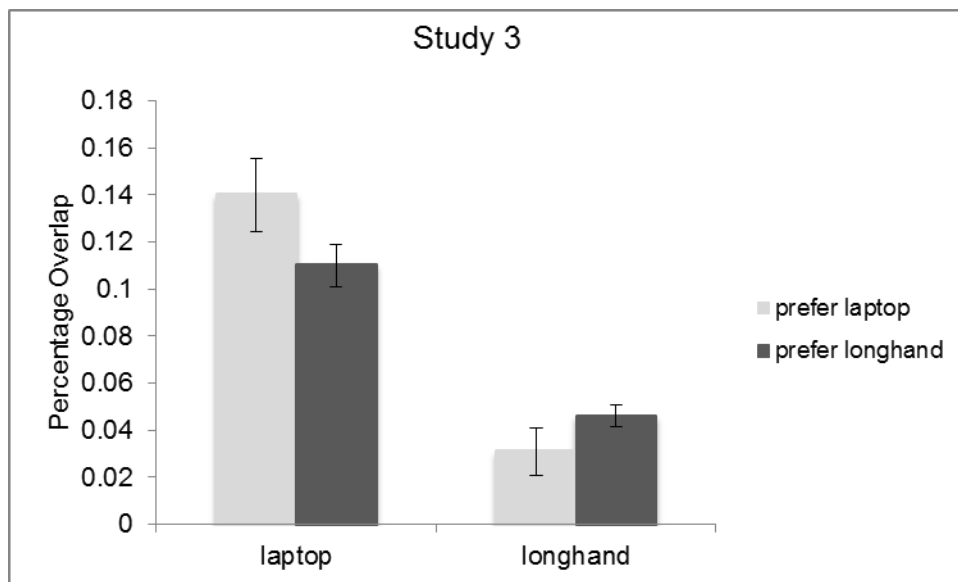


Figure S3. Student note-taking preference, assigned condition, and extent of verbatim overlap in Study 3. Interaction $F(1, 72) = 3.75, p = .05, \eta^2_p = .05$.

Generalizing to Naturalistic Environments

In the main paper, we focused on lab studies to maintain rigorous experimental control and isolate causal relationships. However, it is possible that students use different note taking strategies in the artificial lab environment than they would in real classroom

settings (despite being instructed not to). Moreover, it may be that the assessment tools used in the lab differ in fundamental ways from classroom exams – we observed different trends for different question types (factual vs. conceptual) and it is plausible that question types used in actual classroom assessments would not elicit these effects. Therefore, we reviewed student notes to see if the effect of note-taking medium, and the mechanism of verbatim overlap, would be present in more naturalistic real-world notes and assessments.

To test this, students in introductory psychology classes from Fall 2011 and Fall 2012 were recruited to submit their class notes to participate in the study. Participants were compensated with M&Ms and emailed feedback about their notes based on content analyses. Thirty-seven participants (approximately a 10% response rate) agreed to submit their notes.¹ As long-hand notes are more easily discarded after the semester, and because computerized notes were easier to submit, we were primarily able to collect notes from students who used laptops.

No transcript of the full text of the course lectures was readily available, so the extent of verbatim overlap was measured by comparing the notes with the text of the PowerPoint slides used in class. The extent of verbatim overlap was similar to that of the laptop group in the lab studies ($M=16.7\%$, $SD=8.8\%$); logically, the amount of notes taken was far greater ($M=17,079$ words, $SD=5881$).

We examined the relationship between verbatim overlap and amount of notes taken on midterm and final exam performance. The midterm consisted entirely of short-answer questions, while the final included short-answer as well as longer essay questions.

¹ Two students who provided laptop notes were excluded; one because she sent the notes from a different course, and one because he only provided notes from one lecture. Additionally, four students provided longhand notes, an insufficient number to allow conclusions to be drawn; those data were not analyzed in this study.

Verbatim overlap ($\beta = -.45$, $p = .01$, $R^2 = .17$) and amount of notes taken ($\beta = -.39$, $p = .022$, $R^2 = .13$) were both significant predictors of midterm score. Verbatim overlap was a significant predictor ($\beta = -.46$, $p = .01$, $R^2 = .18$) and amount of notes was a marginal predictor ($\beta = -.26$, $p = .13$, $R^2 = .06$) of final exam score.

It is noteworthy that while the effect of verbatim overlap in the naturalistic environment was consistent with the findings of the two lab studies, the effect of quantity of notes was not. For these students, a greater quantity of notes was associated with worse performance on the midterm exam, and trended that way for the final exam as well. It may be that the benefit of note quantity is curvilinear. For a limited quantity of content (e.g., a 15- to 30-minute set of lectures), more notes are better. It is feasible to capture most of the lecture content in one's notes, there is less extraneous content, and it is likely that the questions asked will cover a large proportion of the material in one's notes. In a semester-long course, a student with a larger quantity of notes will have to search through more unimportant content to study the key points. Since exams never cover anywhere near the entire content of a course, increased note quantity is less useful than increased note quality. Crucially, the central trend that verbatim notes undermined retention and performance held up in a naturalistic classroom setting.