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Improving sat writing and language scores by using metacognitive strategies

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Abstract
Standardized testing is widely used in countries around the world and is often associated with high stakes as schools use test results in their admissions and graduation/certification decisions. Because of the importance of these tests, a plethora of test preparation services has arisen, many of which teach generalized test taking strategies. Given that research suggests that these programs produce modest improvement in SAT scores, the present study investigated whether teaching metacognitive writing strategies would lead to improved scores on the Writing and Language portion of the SAT test, which is widely used in college admissions decisions. Since some of the SAT Writing and Language questions involve grammar, punctuation and usage rules that may be less conducive to using metacognitive strategies, while others involve writing style questions such as where to place sentences or how to combine them that may be more conducive to using metacognitive strategies, the present study focused on the latter types of questions. Participants were students in the United States who were studying for their SAT and PSAT exams. Half of the students were taught standard test taking strategies and the other half were taught metacognitive writing strategies. Both groups were then given an SAT Writing and Language post-test that had only writing style questions. Results showed that students using the metacognitive writing strategies scored higher than those using standard test taking strategies. Results suggest that metacognitive writing strategies can lead to higher Writing and Language scores on the SAT and further research can indicate whether this applies to other standardized tests as well.

Keywords: metacognitive, strategies, Standardized, Language

Introduction

Standardized testing is pervasive in education. Such testing is used to determine whether students have successfully mastered course material, graduate, or gain admission into schools. In the United States, for example, the SAT and ACT tests are weighed heavily as admission criteria for most colleges. As a result, test preparation services has become a substantial industry, one that offers to help students increase their test scores. Given the expense associated with test preparation classes, a major question arises as to how effective such test preparation services are. Indeed, there is some empirical evidence that most test preparation services produce very little effect. For example, Becker (1990) [2] reports that test preparation typically raises SAT scores by only nine to 20 points, a negligible amount. Such nominal improvement may be attributable to the fact that many test preparation services focus largely on test taking skills such as time management and evaluating answer choices and less on core skills such as reading comprehension and mathematical concepts. This low increase in test scores is plausible since most test preparation courses are of limited duration, while reading, writing and mathematical skills are typically developed over a period of years. The present research examines the question of whether SAT (and by extension, other standardized) test scores can be increased by teaching metacognitive strategies. Our previous research (Leddo *et al*., 2019) [4] showed that using metacognitive reading strategies led to higher SAT reading scores than using standard reading and test-taking strategies advocated by the College Board and test preparation services. Given that the SAT and many other standardized testing includes writing as one of the subjects tested, editing writing passages was chosen as the testbed for the present research as this is the skill measured in the SAT Writing and Language section (section 2) of the SAT test. Metacognitive strategies were selected because, like general test-taking strategies, they can be applied to a wide range of passages. The use of metacognitive strategies in writing has drawn considerable interest in the research community. However, research in the application of metacognitive writing strategies has primarily focused on the generation of written material as opposed to editing existing written material as is characterized in the SAT (Wischgoll, 2016; [6] Stewart, Seifert, and Rolheiser, 2015; [5] Gallo, 2002;[3] Aydin and Ayranci, 2017) [1]. The goal of the present study is to focus on using metacognitive writing editing strategies to improve writing and language section scores on standardized tests over and above what is normally found by using standard test taking strategies. However, the SAT Writing and Language section has a variety of question types and all may not be suitable for solving using metacognitive strategies. Many questions are "rule-based" in that they involve application of correct grammar, punctuation, or word usage conventions. These are less likely to benefit from metacognitive writing and language strategies in that they may very well be best learned through rote memorization of rules and exceptions such as how to conjugate verbs or when to use semicolons. Accordingly, the present paper focuses only on the writing style questions found in the SAT Writing and Language section. These are the ones that students at MyEdMaster report as the most challenging questions for them to answer. In reviewing the ten SAT tests that have been released by the College Board, the SAT test maker, we identified the following types of questions that fall into the writing style questions category:

Should the writer add or delete an underlined sentence in the passage?; What is the best way to combine two or more sentences?; The author wants to add a sentence. Where should he/she place this sentence in the paragraph?; Which choice provides the best transition from the previous paragraph to this one?; Which choice best reflects the main point of the paragraph?; Which choice best maintains the style and the tone of the passage?; To make this paragraph most logical, sentence - should be placed….; What is the best way to introduce or conclude the passage/paragraph?. The hypothesis of the present study is that students who use metacognitive writing strategies will score higher on the Writing and Language section of the SAT than those using standard writing and language strategies advocated by the College Board and test preparation services. This hypothesis was tested with students who were preparing to take the SAT or PSAT exams.

Methods

Participants in the present study were 29 high school students recruited from local high schools in Fairfax and Loudoun Counties in Virginia and Montgomery County in Maryland, USA. These students were chosen because they represent the population of students who were taking a PSAT or SAT test in the foreseeable future and therefore were motivated to learn writing and language techniques that would help boost their SAT Writing and Language scores. Materials There were two types of SAT materials that were used in the present study. The first is the practice materials that students applied the strategies they learned to. The practice materials were taken from 10 different websites of organizations that provide test preparation services. The materials were broken into sections that contained with the different types of questions described in the Introduction. Since this was practice material, one type of question was given in each practice section. Therefore, each section contained a passage followed by questions. Only the questions of the type to be covered in that section were included. Other questions were deleted from that passage. The other set of materials was used for the post-test. Like the practice materials, the post-test materials were taken from the same 10 websites, so as to maintain similarity of content and style. However, in this case, for each passage, all of the writing style questions were kept after each passage while the "rule-based" questions were deleted so as not to confound the results with potential differences in performance in answering rule-based questions, which were not the subject of the present experiment. The post-test contained a total of 29 questions. Procedure Participants were assigned to one of the two writing strategy conditions (standard test taking strategies, metacognitive writing strategies). Participants were given a written document that outlined the writing and language strategies associated with the condition they were in. Students in the standard writing and language strategies condition were given strategies that were taken from the College Board website itself and from other tutoring services. These strategies included: looking for transition words, looking for parts of the passage that do not make sense, looking for key words, or looking for matching pronouns to references to nouns in previous sentences. Students in the metacognitive writing strategies condition were given strategies that were tailored to the structure of each type of passage and to the type of question. For example, for combining sentences, the strategy enumerated potential relationships between sentences (e.g., contrast or cause and effect), instructed to the student to make the determination of which relationship the two sentences had, and then pick an answer choice that preserved the relationship. For questions that asked whether a sentence should be added to the passage, the strategy enumerated different functions a new sentence could have such as being a connector between similar or contrasting ideas or providing an example to a point being made to facilitate comprehension of the author's main point and argument. The instructions told students to determine what kind of relationship would be created if the sentence were added and if it made sense to create that connection between the sentences. Once students received the written strategies, they were told to review them. After the strategies were given, students were given the practice packet described above. They were allowed to use the strategies packets while doing the practice problems. When they were through with the practice packets, they were given the 29-question post-test.

Results

Only the responses to the questions from the post-test were scored. There were 29 questions in total. The number of questions correctly answered out of 29 questions was tabulated for each student. The mean number of correctly answered questions, by condition, is shown in Table 1. As can be seen from

Table 1: Mean Number of Questions Answered Correctly Based on Strategy

Metacognitive	Standard
23.3	16.7

Students using metacognitive strategies, on average, answered 23.3 of 29 questions correctly. Those using standard strategies, on average, answered 16.7 questions correctly. A two-tailed t-test was done to compare the two means. The results were significant, $t = 5.05$, $df. = 27$, $p = .000026$, suggesting that students who used the metacognitive writing strategies performed higher than those using the standard writing strategies.

Discussion

The results suggest that using metacognitive writing and language strategies results in higher scores in the SAT Writing and Language section than using standard writing/test-taking strategies as recommended by the College Board itself and other tutoring services. Across the board, participants averaged 23.3 correct answers out of 29 questions in the metacognitive writing strategies condition and 16.7 correct answers in the standard writing strategies condition. These results pertain just to questions about writing style and organization and do not relate to questions about grammar, punctuation and usage. We see no theoretical basis to assume that metacognitive strategies would be more effective than more rote techniques in helping students with rule-based questions such as those emphasizing grammar, punctuation and usage. Because an SAT Writing and Language test contains both the writing style and rule-based type questions, it does not seem appropriate to try to extrapolate from a difference in performance on writing-style questions only to an estimate

of performance on the entire SAT Writing and Language section. Instead, we note that using metacognitive strategies resulted in an average increase in performance of between six and seven correctly answered questions on the writing-style questions. This corresponds to a roughly 50-point increase on the writing and language score.

Conclusion

As noted in the Introduction, people all over the world take high stakes assessments. In the present study, participants were taught the organizational structures of paragraphs and different categories of sentences found in the SAT Writing and Language passages and were told to categorize them and apply the principles that were taught. Adopting these strategies led to increased test scores, suggesting that metacognitive writing strategies should be including as part of standardized test preparation. There is a secondary benefit from including the metacognitive writing strategies. Standardized testing often comes under fire for measuring test taking skills rather than the underlying content skills. When students are taught test-taking strategies in preparation for taking standardized tests, this feeds into this criticism. By showing that metacognitive writing strategies lead to higher performance than does test-taking strategies, it adds credibility that standardized testing measures writing and language skills, even if also measuring test taking skills.

In the Introduction, we cited our previous work in using metacognitive reading strategies to boost SAT reading scores. The present research suggests that such strategies can work for SAT Writing and Language questions as well. The present research should be extended to other subjects tested by standardized testing. This will extend the present findings, so that it can be determined whether metacognitive strategies can be used widely to improve test scores.

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