Strategy Use on Standardized Reading Comprehension Tests

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Strategy use and its impact on standardized reading test performance were investigated. High school students were randomly assigned to 2 groups, standardized test and main idea, with separate control and think-aloud conditions. In the standardized think-aloud group, students thought aloud while taking a portion of a reading test, consisting of passages accompanied by several questions each. In the main idea conditions, students read the same passages with the lower level questions removed and answered a single multiple-choice question about the main idea of each passage, having been told that the task was not a test. Both groups used strategies, and students in the standardized test condition made significantly greater use of strategies than students in the main idea condition. Significant between-group differences were found in use of rereading. In comparisons between the think-aloud and control conditions, thinking aloud was found to have a significant detrimental effect on students’ ability to identify passage main ideas.

Throughout their history, standardized reading tests have been criticized for a variety of different reasons. Criticisms have ranged from the suggestion that the tests only reward students for answering questions about details without allowing them to make any inferences about the overall meaning of the passage (Durkin, 1978–1979) to the opposite suggestion that such tests only test logic and reasoning ability (Thorndike, 1973). Most recently, the tests have been criticized by authors of metacognitive reading programs, on the grounds that strategy- and metacognition-based reading comprehension interventions fail to produce improved performance on standardized tests, even though performance does improve on other measures that suggest improved knowledge of strategies (Paris, Cross, & Lipson, 1984; Paris, Lipson, & Wixson, 1983). Several researchers have argued that this occurs because the conditions under which the tests are taken preclude the use of strategies known to be vital to reading (Bussis & Chittenden, 1987; Paris et al., 1984), and thus the tests are not truly testing reading comprehension.

These criticisms appear unsustainable in the face of research that has produced improvement on standardized tests as a result of strategy instruction. The literature on reciprocal teaching is especially instructive in this regard. In a review of experimental studies on reciprocal teaching, Rosenshine and Meister (1993) found a pattern similar to that reported by Paris et al. (1984): Effects associated with strategy training were usually statistically significant when the experimenters’ own instruments were used, and they were usually not statistically significant when standardized tests were used. In four of the studies reviewed, however, definite improvement in standardized test scores was produced. Reciprocal teaching involving reading comprehension strategies of the sort instructed by Paris et al. (1984) has been particularly successful in this regard (A. L. Brown, Campione, Webber, & Mcgilly, 1992; R. Brown & Pressley, 1994; Lysynchuk, Pressley, & Vye, 1990; Palincsar & Brown, 1984). Although researchers have not consistently been able to produce improvement in standardized test performance as a result of strategy training, such improvement is clearly possible, and thus the argument that such strategies cannot be implemented on standardized tests is not compelling.

Such criticisms, and the responses to them, attest to a basic obstacle standing in the way of any discussion of the use of strategies on standardized reading tests: the failure of the researchers involved to investigate the actual test-taking behavior of students faced with such a test. Many opinions have surfaced as to what students can and cannot do on these tests, but very little research exists to confirm or disconfirm such statements. In an exhaustive review of think-aloud research on reading, Pressley and Afflerbach (1995) uncovered almost no research specifically examining thought processes involved in taking standardized reading comprehension tests. Norris (1990, 1992) has examined think-aloud protocols obtained on standardized multiple-choice tests, but his research involved tests of critical thinking rather than tests of reading comprehension. Before any conclusions can be reached regarding strategy use on standardized reading tests, more research is needed that directly examines what goes on when students take these tests. Although a vast literature now exists (Pressley & Afflerbach, 1995) on the use of verbal protocols to examine thought processes during reading, this research has not examined what goes on in test situations. Carver (1990) has suggested that different kinds of reading involve different
goals and that which of five basic reading processes is used depends on the reading goal. Typical reading, where the goal is simply to understand the meaning of what is read, involves what Carver calls *rauding* (Robinson, 1992). Other types of reading, such as taking a test, may involve other processes, since different goals are driving the reader. As different goals result in implementation of different processes, it makes little sense to attempt to generalize findings on the basis of other types of reading to standardized tests.

Almost no research has directly addressed what students actually do while taking standardized reading tests. What little research has been conducted suggests that the tests may be getting an unfair hearing regarding the possibility of strategy use in the test setting. Farr, Pritchard, and Smitten (1990) administered several passage-plus-question groupings taken from a standardized reading comprehension test to 26 college students and had the students either think aloud as they took the test or retrospectively recall what they did as they took the test. Analysis of the think-aloud protocols revealed the use of a wide variety of strategies, including such things as rereading and the use of prior knowledge to eliminate answer choices. Clearly, the test format did not stop these students from implementing strategies that were appropriate to the task.

### The Present Study

The present study represents an effort to demonstrate strategy use on a standardized reading comprehension test, using a method similar to that used by Farr et al. (1990). As in the study by Farr et al., students in the present study were asked to think aloud while they took a portion of a standardized reading comprehension test. To compare the sorts of strategies implemented by students reading the passages under standardized test conditions to the strategies used by students engaged in more typical reading, we had a second group simply read the same passages with the questions removed, followed by a request to identify the main idea. This condition was expected to elicit what Carver (1990) has called *rauding*, or typical reading, in which the reader's goal is to comprehend the complete thoughts expressed in the passage. This was done to allow an examination of the effect, if any, on strategy use of the different reading goals present under test conditions and in everyday reading.

Although most research on thought processes during reading has involved think-aloud protocols, very little research has addressed the impact of thinking aloud on reading performance. Most researchers have been influenced in this by the work of Ericsson and Simon (1984, 1993), who concluded in their review that thinking aloud will often have no effect on performance. Ericsson and Simon's review included very little research involving reading tasks, however, and indeed they pointed out explicitly that the degree of impact on performance would vary according to the demands of the particular task. Norris (1990, 1992) has found no effect for thinking aloud in his research on test-taking, but as he was using tests of critical thinking, the implications of his findings for reading tests remain unclear, especially given the work of reading researchers who have found thinking aloud to have a detrimental effect (Bereiter & Bird, 1985). Short and her colleagues (Short, 1992; Short, Evans, Friebert, & Schatschneider, 1991; Short, Schatschneider, Cuddy, & Evans, 1991), meanwhile, have found that under certain circumstances, thinking aloud may actually improve performance. As the impact of thinking aloud on performance in research on reading remains unclear, the present study offered an opportunity to examine the effect of think-aloud instructions on task performance, and so the two think-aloud conditions described above were each matched with a control group that did not think aloud.

It is clear that not enough is known about what students actually do while taking standardized reading tests or about the effect on performance of thinking aloud while reading behavior is being observed. The present study seeks to improve this situation by pursuing three basic goals: First, we sought to determine, using a much larger sample than did Farr et al. (1990), whether students taking a standardized reading comprehension test make use of strategies associated with skilled reading. Second, in addition to determining whether test conditions interfered with the implementation of strategies, we also sought to go beyond the Farr et al. study by comparing strategy use under test conditions to strategy use under more ordinary reading conditions. In other words, we also sought to determine whether readers not engaged in a reading comprehension test make use of strategies associated with skilled learning, an assumption that underlies much of the literature on reading comprehension. Third, by including control groups that were not required to think aloud, we sought to examine the impact of thinking aloud on performance, a test that has important implications for the way in which such research is conducted and interpreted.

### Method

#### Participants

Participants were 128 high-school sophomores and juniors, selected from two public high schools and one Catholic high school, all in South Bend, Indiana. After agreeing to participate, students were randomly assigned to standardized test or main idea conditions. These conditions were then randomly divided into think-aloud and control conditions, for a total of four groups of 32 students each. Race and gender were represented as evenly as possible across the groups. Eighty-five students were Caucasian, 34 were African American, and the remaining 9 were Hispanic. Student ages ranged from 15 to 18 years, with a mean age of 15.85.

#### Materials

Testing materials consisted of three selections from the comprehension subtest of the Gates-MacGinitie Reading Test, Form F. This test has been widely used as a measure of reading competence at grade levels ranging from kindergarten through college and has been used in a wide variety of research. Two types of test materials were used: test passages followed by the questions that originally followed them in the test (standardized test condition) and test passages with those items removed and replaced by a single
multiple-choice question requiring selection of the best statement of the main idea of the passage (main idea condition). All passages selected for use were at the 10th grade reading level. Sample passages for both conditions appear in Appendix A.

Procedure

Students were randomly assigned to one of four conditions: standardized think aloud and main idea think aloud, and standardized control and main idea control. Each student was tested individually in a single session. The experimenter then briefly explained the task that the student would be asked to perform, emphasizing that it was (a) a standardized comprehension test or (b) simply some passages to read in order to find the main idea. In the standardized conditions, passages appeared in the same form as in the Gates-MacGinitie test, complete with attached multiple-choice questions. In the main idea conditions, passages appeared without the questions, thus losing the appearance of a standardized test. In the two standardized conditions, students were told that the task was part of a reading comprehension test and that the results would show how good a reader the student was in relation to other students. They were also told that there would be a 15-min time limit on the task. In the main idea conditions, students were told that they were to read the passage at whatever pace they found comfortable and then answer a question about the main idea. They were told that the task was not a test and that it would not provide any information at all on their skill as readers.

In both think-aloud conditions, students were then asked to think out loud as they carried out their respective tasks. Prior to presentation of the reading passages, the experimenter spent a few minutes "training" the student in thinking aloud to make sure the student understood how complete a description of his or her thoughts was expected. Training involved mathematical problems rather than reading, so that training would not influence students' use of strategies. Instructions for the "think aloud" training appear in Appendix B. Students in the two control conditions were not instructed to think aloud. All students read three passages, and students in all conditions were timed.

Pilot research involving 22 students verified that students cannot answer the test questions correctly without reading the attached passages, and so a non-reading control condition was not considered necessary.

Students in the think-aloud conditions were observed as they performed the tasks, and their behavior was examined for evidence of a subset of strategies identified in several prominent sets of metacognitively based reading lessons as important to reading comprehension (Paris et al., 1983; Paris & Jacobs, 1984; Paris & Oka, 1986). The experimenter's observations were recorded on a brief checklist, reproduced here as Appendix C.

Scoring

On the basis of the strategy-use information recorded during the session, students in the think-aloud conditions received scores for number of instances of strategy use and number of different strategies used. Reliability of the scoring procedure was determined by having 10 of the students scored by two raters. Numbers produced by each rater for each strategy across this subsample were correlated, and interrater reliabilities on the five strategies measured ranged from 0.89 to 1.0. All students were scored on their actual performance during the standardized test or main idea task. In the main idea task, answer choices varied in the degree to which they provided a complete statement of the main idea, with answer choices worth between 0 and 3 points, according to how complete a statement of the main idea of the passage they provided. An example of each type of item appears in Appendix A. On the standardized test task, each correct answer was worth 1 point. The standardized test task and the main idea task each produced the same number of points, but for display and analysis purposes, scores on the standardized test and main idea tasks were converted to percentages.

Results

Analyses that do not involve strategy use measures were carried out on the entire sample, including both think-aloud and control students. All analyses involving strategy use measures involve just the 64 students on whom such information was collected.

Strategy Use: Variety and Frequency

During the think-aloud segment of the experimental procedure, observations were collected regarding the use of particular strategies. Average frequencies for the various strategies within each group, as well as mean proportions of total strategy use represented by each strategy, are presented in Table 1. Clearly the frequencies of strategy use are quite different between the two groups, with the standardized test condition showing greater use of every strategy measured. To determine the significance of these differences, we performed a series of independent-samples t tests, comparing the two experimental conditions on frequency of occurrence of each strategy. The difference in means was statistically significant for three of the five strategies, and the larger mean is in the standardized test condition each time. For rereading, \( t(62) = 5.18, p = .001 \); for paraphrasing, \( t(62) = 2.84, p = .006 \); and for recall of prior knowledge, \( t(62) = 3.32, p = .002 \). With the Bonferroni correction applied for familywise alpha (\( \alpha = .05/5 = .01 \)), the three t tests remain
significant. Students in the standardized test condition read, paraphrased, and relied on prior knowledge more than students in the main idea condition. These results should be considered in light of the overwhelming proportion of instances of strategy use accounted for by rereading in both experimental groups. To make this clearer, a proportion score was calculated for each participant, representing the proportion of the student's total strategy use represented by each strategy. Condition means for these scores also appear in Table 1. In both conditions, students reread proportionately much more frequently than they resorted to other strategies. Also, although there were significant differences between the groups in frequency of occurrence of several of the strategies, the relative proportion of strategy use accounted for by each strategy is very similar in both groups. As shown in Table 1, the groups differed in sheer quantity of strategy use, but the same basic pattern of strategies occurred in both conditions.

Performance During the Think-Aloud Task

To examine the role of strategy use in performance while students were thinking aloud, we undertook a set of within-group multiple regression analyses. In these analyses, total strategy use and variety of strategies (the number of different strategies represented by each student's total) were regressed onto task performance within each group. Within the standardized test group, the regression equation produced significant prediction, $F(2, 29) = 6.25, p = .006, R^2 = .301$. Within that regression equation, however, the only variable with a significant beta was total strategy use, $\beta = .227, t = 2.66, p = .013$. (For variety of strategies, $\beta = .201, t = 2.54, p = .016$.) Within the main idea condition, there was no significant prediction, $F(2, 29) = .51, p = .606, R^2 = .034$.

Given the preponderance of rereading over other strategies within both groups, and the significant prediction of task performance by total strategy use within the standardized test condition, an additional regression analysis was carried out within that condition only, in which the number of instances of rereading was regressed onto task performance. The result of this analysis was significant, $F(1, 30) = 7.14, p = .012, R^2 = .19, \beta = .235$.

The influence of strategy use on performance clearly differed substantially as a function of the particular task being administered. Total strategy use made a difference in the standardized task, an effect that clearly was a result of the use of rereading, whereas neither strategy use measure influenced performance significantly on the main idea task.

Impact of Thinking Aloud

The present data afford an opportunity to examine the impact of thinking aloud on task performance, a significant issue when the standard way of collecting this sort of data is still the use of thinking aloud. Means and standard deviations for think-aloud task performance within each condition appear in Table 2. An analysis of variance was conducted in which the instructions factor (control/think aloud) was the independent variable and task performance was the dependent variable. Because the task differed across groups (i.e., main idea production and question answering), these data were analyzed for each condition separately. The instructions' main effect was significant within the main idea condition, $F(1, 62) = 8.07, p < .01$, but not within the standardized test condition, $F(1, 62) = 1.39, p = .243$. These analyses suggest that thinking aloud significantly impaired students' ability to identify the main idea of the passage they were reading, but not their ability to answer test questions, which were primarily lower level detail questions.

Discussion

Strategy Use

The results of this study extend the literature on reading comprehension testing by confirming the hypothesis that students can and do use strategies while taking standardized reading comprehension tests. Under the test conditions used in the present study, students not only used such strategies, but they displayed significantly greater use of strategies than did students who were simply asked to read a passage and determine its main idea. Of the five strategies that were observed, the standardized test condition used three of them significantly more often. This confirms and extends the conclusions reached by Farr et al. (1990), who concluded that although the students did not always read the passage directly, and although they were clearly reading with the goal of finding particular information rather than understanding the passage as a whole, the test format did not stop them from implementing appropriate reading strategies. In the present study, both experimental conditions made use of the same strategies, extending the Farr et al. results by demonstrating that the strategies seen in standardized test performance are also seen under other reading conditions. Although students in the standardized test condition used several strategies more frequently, the general pattern of strategy use was the same in both conditions, with similar relative proportions of use accounted for by each strategy.

These findings are important in that they show clearly that students taking a standardized reading comprehension test use strategies in a manner similar to students engaged in a less testlike task. Given that students were obviously just as able, if not more able, to use strategies in the test setting as
they were in the nonetest setting, perhaps the standardized reading test is not as artificial a task as some of its detractors would suggest. If the test format does not discourage strategy use, it follows that the sample of reading taken by such a test is not as divorced from “real-world” reading as has often been suggested (Durkin, 1984; Paris & Jacobs, 1984; Paris et al., 1984; Winograd & Paris, 1988). Farr et al. (1990) have suggested that, although the standardized test may be considered as a special kind of reading task, it is not an uncommon one. Especially in the academic world, a lot of reading involves searching text for particular information. Since so much of what students are asked to do resembles the kind of task represented by a standardized test, the discovery that the reading strategies considered important in comprehension are used on such tests to at least as great an extent as they are used on other reading tasks should not be terribly surprising.

The significantly greater use of strategies in the standardized test condition suggests further that, in addition to underestimating the use of strategies in test situations, the research community may be guilty of overestimating the use of strategies on other reading tasks. In the present study, the students performing the main idea task showed less strategy use while maintaining a level of performance somewhat higher than that of students in the standardized test condition. This suggests that reading for the main idea may not only involve the same strategies used in taking the standardized test, but it may not require as much strategy use as the types of questions presented in a standardized test setting.

This is also consistent with the rauding theory (Carver, 1990). Although Carver has suggested that the level of processing will depend on the reading goal, he does not agree that standardized tests require something very different from typical reading. According to Carver (Robinson, 1992), rauding ability, the ability to comprehend the complete thoughts expressed in text, can be measured quite well by traditional standardized reading tests. If this is the case, then it is not surprising that the same strategies occurred in both a standardized test situation and a condition intended to elicit typical reading.

These results must be interpreted cautiously, however, given that within both groups, rereading occurred much more frequently than any other strategy. The present data suggest that most readers, faced with the necessity of answering a question regarding the passage being read, simply reread. A possible interpretation of this, suggested by Snyder and Pressley (1998), is that readers are just not as sophisticated in their processing of text as theories of meta-cognition suggest they are. The present results are consistent with results obtained in a study by Snyder and Pressley in which college students were observed as they studied textbook material and were then asked to restudy until they believed they could correctly answer 80% of questions on a test covering the studied material. Most students simply reread the material from beginning to end, and the insertion of prompts to study more strategically did nothing to alter study behavior in ways that influenced test performance. These results are remarkably similar to what occurred in the present study, in which strategy use consisted almost entirely of rereading and as a consequence did not consistently predict performance on outcome measures.

When task performance was examined, total strategy use was not a significant predictor of performance in the main idea group, but it did significantly predict performance in the standardized test group. Clearly, strategy use was no guarantee of either comprehension or right answers. It is intriguing, however, that although students under both conditions resorted to rereading far more than to other strategies, as in the Snyder and Pressley (1988) study, this was an adaptive response in the standardized test condition, as rereading was a significant predictor of performance for those students. Although other strategies were used to a rather limited extent by participants in both groups, these did not significantly predict performance. Results from the control group suggest, however, that in the absence of thinking aloud, the main idea task was a rather easy one, making the difference in impact of strategy use somewhat difficult to interpret. It may be that selecting the best statement of the main idea has become, by the 10th grade, an easy enough task that little strategy use is required, and thus strategy use would be less closely related to performance than on the standardized test, which may have presented more of a challenge. In that many of the earlier studies on strategy use in reading have involved much younger readers (Paris et al., 1983, 1984), it is possible that older, more expert readers would need to use fewer strategies on the main idea task than younger, less experienced readers confronted with a similar challenge. Consequently, perhaps the low levels of strategy use seen in the main idea condition, and the lack of relationship between strategy use and task performance in that condition, simply indicate the relatively expert status of the present readers as compared with the younger readers who have most often been studied.

It is also possible, however, that more challenging tasks would not result in more sophisticated strategy use. In their review of research on verbal protocols of reading, Pressley and Afflerbach (1995) concluded that sophisticated cognition during reading is a result of vast knowledge in a particular subject area, and so effective use of strategies, monitoring, and evaluation (as components of sophisticated reading) will only come about after long experience with the material being read. Given these conditions, perhaps sophisticated or expert reading ought not to be expected either while answering test questions or during typical reading of unfamiliar material. This does not mean that standardized tests cannot reveal sophisticated cognition but rather that most readers, given a standardized test or any task involving unfamiliar material, may not engage in such cognition.

**Impact of Thinking Aloud**

In addition to allowing an examination of strategy use under different task conditions, the present study also allowed an examination of the impact on performance of being asked to think aloud. When group differences in performance between experimental and control students
were examined within the two task conditions, a significant negative effect of thinking aloud was found for those students who were assigned the main idea task rather than the standardized test. There was a significant difference in task performance between this think-aloud group and their control group, suggesting that thinking aloud interfered with their performance while it was occurring. Why this effect did not also occur within the standardized-test condition is not at all clear. The two tasks differed on two key dimensions: instructions and type of questions asked. It may be that students in the standardized test condition, given lower level questions to answer, simply had a less demanding task that was less susceptible to interference. It is also possible, though perhaps less plausible, that the differences in the instructions given were responsible. Whatever the root cause, clearly the main idea task was more susceptible to interference from introspection than was the standardized test.

These results are especially important given the continued perception by many researchers, due largely to the work of Ericsson and Simon (1984, 1993), that thinking aloud does not interfere with reading performance. Since the original publication of the Ericsson and Simon (1984) book, a few researchers have concluded that thinking aloud does interfere with reading performance (e.g., Bereiter & Bird, 1985). Future researchers in this area should be wary of using performance measures obtained at the same time as think-aloud protocols, unless appropriate control groups are included to allow examination of the effect of thinking aloud on task performance. Since thinking aloud affected performance, the possibility that it may also have affected strategy use must be considered carefully as well. If at all possible, future research in this area should include some measure, perhaps through retrospective interviews, of the strategy use of participants in the control conditions. Thinking aloud remains a vital part of research on thought processes, but researchers should be aware of its potential impact on performance.

**Directions for Future Research**

The results of the present study indicate that strategy use occurs in standardized test settings as well as in others. The present study does not, however, reveal the strong relationship between strategy use and performance that might be expected. One reason for this is that the data, although indicating particular instances of strategy use, do not provide any information about the effectiveness of any particular instance of strategy use. Plainly, effective performance requires not just strategy use, but effective strategy use. Using the most commonly encountered strategy as an example, a poor reader may reread a passage multiple times without becoming any better informed as to its content, whereas an expert reader may require just one rereading to ensure understanding. Given the present findings, as well as those of Snyder and Pressley (1988), any future research on this topic ought to involve some attempt to evaluate the effectiveness of each instance of strategy use rather than simply measuring strategy use itself. In both studies, students overwhelmingly tended simply to reread rather than engaging in more sophisticated strategy use, and the extent to which this was effective appears to have depended on the task. One way to assess better the extent to which readers can be expected to use strategies effectively might be to obtain, prior to testing, some measure of each student's relative knowledge of reading strategies and of how to use them, to be used as a covariate in subsequent analyses.

The kind of sophisticated cognition proposed in theories of metacognition may occur only when a reader has long experience in a subject area (Pressley & Afflerbach, 1995). If this is the case, it is unrealistic to expect that we will see highly sophisticated processing of text on unfamiliar material of the sort usually presented in standardized reading tests and in the laboratories of reading researchers. This is not to suggest that we cannot learn much about strategy use on short tasks in the laboratory but rather that we should not be surprised when the sort of performance seen in such a setting is not the expert performance found when professionals are observed reading material with which they have a great deal of experience. The discovery that students rely primarily on rereading on different kinds of tasks may not support complex models of reading, but it does tell us much about what actually goes on when experimental participants—and, by extension, students given unfamiliar material to read—set out to understand what they are reading.

**References**


Sample Passages and Questions Used in Both Experimental Conditions

The standardized test condition was as follows:

In 1583 Galileo Galilei (1564–1642), a youth of nineteen attending prayers in the baptistry of the Cathedral of Pisa, was, according to tradition, distracted by the swinging of the altar lamp. No matter how wide the swing of the lamp, it seemed that the time it took the lamp to move from one end to the other was the same. Of course Galileo had no watch, but he checked the intervals of the swing by his own pulse. This curious everyday puzzle, he said, enticed him away from the study of medicine, to which his father had committed him, to the study of mathematics and physics. In the baptistry he had discovered what physicists would call the iso chronism, or equal time of the pendulum—that the time of a pendulum’s swing varies not with the width of the swing but with the length of the pendulum.

1. What did Galileo use as a timer?
   A. A lamp.  
   B. A watch.  
   C. His heart.  
   D. Steady counting.

2. You can tell from the passage that iso means
   A. not.  
   B. study.  
   C. length.  
   D. equal.
Appendix B

"Think Aloud" Training and Directions to Students

Students were told:

I'm going to ask you to think aloud while you read something. I don't mean that I want you to describe what you're thinking—I just want to hear your thoughts as you work. As an example, I'm going to think aloud while I do this math problem.

The Problem:

\[
\begin{align*}
5467 \\
+3559
\end{align*}
\]

O.K., let's see, 7 plus 9 is 16, write 6, carry the 1, 6 and 5 is 11, plus 1 is 12, carry that 1, 4 and 5, 9, so that's 10, so I'll carry the 1 and get 9.

That's 9026. (writing numbers while calculating)

Now you do one:

\[
345 \\
\times 51
\]

(If student does not give enough information, some gentle prodding is provided: Please try to tell me everything as it goes through your mind.)

Students were then told:

O.K., now I want you to try the same thing, thinking out loud, while you do something else.

Standardized condition only: Do you remember having to take achievement tests? They always give you a reading comprehension test, where you have to answer questions about a passage. I want you to take part of one of those tests now, except that I'd like you to think out loud while you take it. Whatever goes through your mind, whether it's what you're reading or what you're doing to answer a question, I'd like you to say out loud. When I say go, open the booklet and begin. There is a time limit, so please work quickly.

Main idea condition: This time, I'd like you to think out loud while you do some reading. I'm going to give you several passages. What I want you to do is take as much time as you need, and tell me the main idea of each one. I want you to think out loud as you do this. Whatever goes through your mind, even if it's just you reading, I'd like you to say out loud.

Appendix C

Strategy Checklist for Think-Aloud Subjects

1. Rereading. ____________________________ Total __________
2. Paraphrasing. ____________________________ Total __________
3. Recall of prior knowledge. _______________ Total __________
4. Summarizing. ____________________________ Total __________
5. Use context to identify unfamiliar word. ____________________________ Total __________
6. Identify topic sentence. ____________________________ Total __________

Overall total __________

(Scorer will make a mark next to strategy each time it occurs—totals will be obtained for each strategy in this way.)

Start time: ____________________________
Finish time: ____________________________
Total time: ____________________________

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