To the Graduate Council:

I am submitting herewith a dissertation written by Elizabeth Whitener Long entitled "The Effects of Metacomprehension Cuing on College Student Achievement." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Educational Psychology.

Robert L. Williams
Robert L. Williams, Major Professor

We have read this dissertation
and recommend its acceptance:

Donald J. Dickinson

Donald J. Stewart

Luther M. Kindall

Accepted for the Council:

Lou Minkel
Vice Provost
and Dean of The Graduate School

THE EFFECTS OF METACOMPREHENSION CUING ON COLLEGE STUDENT ACHIEVEMENT

A Dissertation

Presented for the

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Degree

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Elizabeth Whitener Long

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ABSTRACT

Much of the metacomprehension research in recent years has been directed toward improving the academic performances of college students through the use of in-depth study skills training programs. To date research has not established whether extensive training programs are always necessary to activate metacomprehension processes. Nor has research established what procedures are most efficient in predicting who needs study skills training. The present study addressed these issues by assessing the effects of metacomprehension cuing on student achievement and by assessing the usefulness of two procedures (listing of study strategies versus self-reporting on a Likert scale) for identifying students who lack effective study skills.

Sixty-three advanced undergraduates enrolled in three educational psychology classes received instructional packets containing either cues about effective study strategies or placebo material about new directions in metacomprehension research. Subsequently, the cued and noncued students completed a multiple-choice exam over an expository reading assignment. Students also listed the study strategies they used to prepare for the exam and they rated their use of various study strategies on a Likert scale developed by the researcher.

Results of the study showed that cued students significantly outperformed noncued students on the exam. The cued students listed

the use of a greater number of study strategies, particularly those that reflected deeper involvement with the material they were studying. For example, the cued students were more apt than noncued students to summarize, paraphrase, and relate the material to their past experiences. The number and types of strategies listed by the students proved to be a better predictor of test performance than did self-reporting via the scaled reporting form.

Although the study showed that cuing can improve the test performances of undergraduates who are not experiencing academic difficulties, the same results might be unattainable with students who are academically "at risk." The current study, however, did suggest that students who list the use of a limited number of study strategies would be good candidates for more in-depth study skills training.

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CHAPTER I

INTRODUCTION

College instructors frequently encounter students who contend, "I really studied for your test; I thought I would do better." In reality, such students may have studied the assigned material, but failed to regulate how well the material was understood in relation to the task at hand. Simpson (1983), for example, found that only 40% of 395 college freshmen whom she surveyed could recommend a strategy to evaluate test readiness after study. A student's inability to recommend strategies might be the result of a lack of knowledge about helpful strategies, an inability to verbalize the strategies being used, or both. Indeed, the academic problems of many students may be related more to a lack of control over what they are doing than to a mere lack of motivation for study.

Brown (1980), a leading researcher in the cognitive area during the past decade, says that metacomprehension includes: (a) knowing when you know (and don't know), (b) knowing what you know, (c) knowing what you need to know, and (d) knowing useful intervention strategies to enhance comprehension when problems with understanding arise. The present study is concerned with these issues, but most especially with the intervention strategies that successful college students use and with whether less successful students can be easily prompted to use those strategies.

Important Terms

The extent to which students are aware of and exercise control over their understanding of reading assignments falls within the domain of metacomprehension. Metacomprehension, in turn, is considered an important component of metacognition. Metacognition is a superordinate term that refers to knowledge about cognition in general (Wagoner, 1983). It includes awareness of processes related to all forms of problem solving as well as to processes involved in reading comprehension. Cognition, of course, simply refers to the acquisition of knowledge. Since much student study behavior involves reading from assigned textbook materials, the term metacomprehension is used in the present research to describe students' awareness of and understanding of the strategies they are using in studying reading-related assignments. Hereafter, the term metacognition is not used although research conducted under the heading of metacognition--but dealing essentially with the comprehension of reading assignments--is presented as a part of the metacomprehension literature.

Research Trends

Although the term metacomprehension has emerged from recent research studies, the interest in cognitive processes has been ongoing among researchers since early in this century (Meir, 1984). Meir notes that what is different in the current research studies is the concern for practical ways of improving students' comprehension,

whereas much of the early attention on cognition was related simply to identifying the elements involved in cognition.

In looking for ways to help students improve comprehension skills, metacomprehension researchers seem to have taken two directions. One direction has focused on identifying what successful and less successful students do to understand and retain what they read. The second major direction has focused on teaching less successful students to use strategies that their more successful counterparts are already using.

Successful Versus Less Successful Students

Goetz and Palmer (1984) worked with 224 "at risk" college students, who were enrolled in a study skills course, to assess their cognitive strategies as well as the attributes the students ascribed to various study strategies. The students read short passages, completed a short essay exam, and rated 24 strategies as to how much intelligence, effort, industriousness, prior instruction in the strategy, and knowledge of text content would be required to effectively use each strategy. The researchers hypothesized that students' perceptions of their own attributes (e.g., intelligence, effort) and strategy attributes (e.g., ease of use) would interact to influence a judgment to use a given strategy. For example, the researchers hypothesized that if students perceived themselves as industrious, they would be more likely to use a strategy that required a great deal of effort. The findings supported the researchers' views. Use of three strategies, skimming, thinking about how you'll be tested

(anticipating the test), and rereading predicted students' test scores. Knowledge of these strategies predicted their use. Perceived amount of industry required and usefulness also predicted the use of skimming and anticipating the test. Fewer than one in five students reported formulating questions before reading, listing major words or ideas, summarizing or outlining after reading.

Students in Goetz and Palmer's (1984) research reported using an average of 8.36 strategies. The high reporting rate may have been a function of the experimenter-provided list of 24 strategies to which students could refer. In sum, the study suggests that students who know about a strategy, who perceive it as easy to use, and who perceive it as useful for their purposes are more likely to use that strategy than other strategies. The better achieving high risk students tended to use skimming, anticipating the test, and rereading.

After 36 college freshmen had completed a reading task and taken an essay test on the material, Kaufman and Randlett (1983) interviewed the students to determine their awareness of and use of various cognitive strategies. There were no differences between the good and poor readers in terms of observable behaviors that the students reported to lessen their misunderstandings while studying. For example, both good and poor comprehenders reported using observable and concrete strategies such as rereading, looking at questions before reading, and asking someone else when they didn't understand what they read. The major differences noted between the two groups was that good readers relied more on "in-head" strategies. For example, they

said they would "try to make connections," "make guesses from the context," "focus," or "visualize" more than did the poor comprehenders.

These researchers emphasized that the good comprehenders were actively involved in their task, whereas the low comprehenders seemed more inactive. That is, the good comprehenders were trying to interact with their material by such in-head activities as asking themselves questions, speculating and making inferences, and visualizing. Overall, the good comprehenders reported using one-third more strategies than did the poor comprehenders. The researchers reported that low comprehenders can skim, point to key words, reread and engage in similar surface type behaviors without activating mental operations that are essential to understanding. The researchers noted that until a reader makes mental connections and inferences that he/she may understand little of the meaning in a text.

Garner and Alexander (1982) asked 30 undergraduate students to read a 4200-word article and be prepared to answer a question about the article after reading it. Four times within the article the readers encountered a red dot which was a signal to stop and write out how they were reading and preparing to answer the question on the material. Garner and Alexander were trying to determine whether students who speculated about the possible question (as evidenced by their written statements) would perform better than students who did not use a question formulation plan. Half of the subjects used a question formulation plan: those students significantly outperformed

students who verbalized other strategies but did not speculate about what questions they might be asked.

Hare and Smith (1982) conducted two experiments with middle grade students to determine whether good and poor readers differed in their metacomprehension strategies. Both studies involved two types of reading: narrative and expository. In the first experiment, sixth graders were asked to report what they did to remember each passage. After the students had produced all the strategies they could recall on their own, they were asked what use they made of five specific comprehension strategies. The strategies were: rereading, selective reading, imaging, changing speeds, and assimilating to personal experiences. The students reported use of more strategies when given cues than they had been able to produce on their own. Overall, the good readers (based on achievement scores) expended more energy, that is, used more strategies to understand the expository article than the narrative article because they viewed the expository article as more difficult and therefore deserving of more effort. Guthrie (1982) makes a similar report indicating that effective readers increase their study time when they encounter difficult passages, whereas the less effective readers do not. He refers to this difference as reader flexibility for the task at hand. In sum, Hare and Smith found that the number of retrospections (that is, the number of strategies recalled after reading) correlated positively with students' reading achievement scores. More effective readers recalled use of a greater number of strategies.

In their second experiment (with seventh graders), Hare and Smith (1982) used protocol analysis rather than retrospection. Protocol analysis divides passages into discrete chunks and requires that subjects report their thinking strategies at the ends of those chunks as opposed to waiting until completing an entire assignment. The protocol analysis produced more strategies than did the earlier experiment using retrospection, but the number of strategies produced by students did not correlate with achievement. The researchers speculated that when students are asked to talk more (as in the protocol analysis) that they may offer strategies that they are not using. The students may merely report what they know others to be using. In general, the results of this study suggest that retrospection is a useful means of gaining access to students' insights. The studies also suggest that better students are likely to produce more comprehension strategies without cuing than are slower students. It should be noted that cuing in these two experiments related to cues as to whether students recognized having used a strategy rather than being cued to use a strategy.

Ryan (1982) surveyed 90 undergraduates to determine if students' epistemological beliefs influenced how they monitored understanding of textbooks. Ryan classified students as either dualists (perceiving knowledge as isolated facts and answers) or relativists perceiving knowledge as an organization of facts and concepts) based on their beliefs about the nature of knowledge. Students were also classified as high or low inventives (reporting few or many emotional

blocks in their problem-solving efforts, respectively) based on their ratings of attitudinal statements. Results showed that students classified as dualists were significantly more likely than those classified as relativists to have a knowledge standard for comprehending texts. A knowledge standard primarily involved one of retrieval of text propositions. The students who earned better grades, on the other hand, were those who used a comprehension/application standard. Students using that standard see comprehension as being the transformation of text propositions. Those using the knowledge standard were largely trying to recall information from the text. Those using the comprehension/application standard were trying to establish relationships among sentences and subheadings. The most popular comprehension/application method was attempts by students to paraphrase sentences into their own words and to summarize the chapters into their own words. Ryan noted that the students who were paraphrasing, integrating, and applying information in new ways were using a "deeper" process than students who were merely trying to recall text propositions. He argued that this accounted for greater understanding and recall and thus higher college grades. Ryan also noted that the students' beliefs about knowledge set the standards by which students seek to understand which, in turn, accounted for their academic performances. Also, of interest in this study, the high inventives reported using more monitoring criteria than low inventives and to combining a knowledge standard and comprehension/application standard. And the students reporting more monitoring criteria earned

significantly better grades than did those using only one. In brief, the better students tended to integrate, paraphrase, and to speculate on how to apply information.

Canney and Winograd (1979) in using interviews found that good comprehenders were far more apt to think beyond the text than were poor comprehenders. They also found that older and better comprehenders were "meaning-oriented" trying to make sense out of what they read rather than merely trying to decode words.

Gambrell and Heathington (1981) also found that adult disabled readers report a decoding process rather than a meaning construction or comprehension task. They found that the disabled reader is aware of and uses fewer cognitive strategies.

Hickman (1977) interviewed two widely read professionals to determine their metacomprehension strategies. The comments of the professionals suggested that they read with a clear purpose. They emphasized relating prior experience to whatever they read.

Two experiments conducted by Paris and Myers (1981) with young elementary students provide additional insight into differences between good and poor readers. In their first experiment, the researchers had fourth graders read only two stories containing nonsense words and phrases. The number of spontaneous hesitations, repetitions, and self-corrections were recorded. Next, the students were presented new stories and told to underline any words and phrases they did not understand. Results revealed that the poor readers did indeed hesitate, repeat, and self-correct while reading. However, the poor

readers failed more often than good readers to monitor exactly the information that most required monitoring. On the directed underlining phase, the poor readers did not underline as many of the incomprehensible phrases as the good readers. The poor readers did more underlining of words than they did of monitoring phrases. On subsequent testing over the material, the poor readers showed less comprehension and recall than did good readers. In large measure, the first experiment suggested that poor readers do attend to their work, but they are not attending to the right things. It appears that they have in mind calling words rather than making sense out of what they read.

In a second experiment, Paris and Myers (1981) assessed the study behaviors of a group of fourth graders to determine how they derived meaning for difficult vocabulary words. They found that poor readers used fewer spontaneous study behaviors. They failed to ask questions, take notes, or use a dictionary as often as the good readers. The students in this experiment were also asked to evaluate potential usefulness of 20 reading strategies on a Likert-type questionnaire. The poorer readers were less aware of the detrimental influence of negative factors than were the good readers. For example, more poor readers than good readers said that "saying every word over and over" was helpful for remembering a story. The study hints that poor readers may have a tendency to select strategies that are ineffectual.

Paris and Myers' (1981) study is one of two studies that attempted to develop an easily administered instrument for identifying

subjects who could benefit from comprehension monitoring. The other study (Hahn, 1984) also used elementary-aged students. In Hahn's study, as in Paris and Myers', students ranked on a Likert-type scale whether a given strategy would help them to understand a story. Hahn's findings replicated those of Paris and Myers', suggesting that students who rank useful strategies as not very useful are good candidates for training in the monitoring of comprehension processes.

Hare and Pulliam's (1979) research found that college students' awareness or metacomprehension behaviors could be used to predict reading achievement scores. They asked 66 undergraduates to read an article, observe what they were doing as they read, and to record their observations after completing the article. The data showed that the high-scoring readers on the Nelson Denny Reading Test were more actively involved in reading and that four behaviors--reading for meaning, rereading, selectively reading, and adjusting reading speed--discriminate between high and low reading scores. Further, the researchers found that high scorers were aware of more behaviors during reading than low scorers.

Summary of Major Differences

From what has been gleened from the literature, it can be said that successful students are more apt than less successful students to: establish a need or purpose for their reading, employ skimming strategies, seek the gist of what they read, anticipate how they will be tested, ask questions of others and themselves about their assignments, paraphrase material into their own words, visualize concepts

described in their texts, summarize what they have read, speculate on how material can be applied beyond the text, seek ways of integrating ideas into a meaningful whole, relate what they have read to prior knowledge and experiences, increase their study time when they encounter difficult material, reduce their reading speed when encountering difficult material, reread what they don't know, make notes, use a dictionary while reading, and use a greater number of strategies.

Another important difference alluded to in several studies is successful students' use of a combination of metacomprehension strategies. That is, the more successful students seek to extract knowledge from texts via such strategies as skimming and rereading (as do many less successful students), but the more successful students also seek to interact with textbook propositions by transforming knowledge. For example, the more successful students often seek to apply knowledge to personal experiences or to put textbook ideas into their own words.

Finally, reviewers of metacomprehension research (e.g., Brown & Smiley, 1978; Wagoner, 1983) suggest that the development of metacomprehension is a spontaneous, developmental process. People get better at metacomprehension as they get older. More successful students, however, tend to be better at keeping track of how well they comprehend material than do less successful students. Despite the naturally developing nature of knowing what one knows and knowing what to do about it, researchers are striving to transmit the strategies used by successful students to their less successful contemporaries.

Teaching Metacomprehension Strategies

Simpson's (in press) research provides one of the best, recent examples of efforts to teach college students to self-regulate their study strategies. She gave 161 students enrolled in general psychology the option of participating in support seminars to increase competency in reading, study skills, and reasoning. The support seminars were 15 one hour weekly sessions that served as supplements to regular classes. Anyone attending as many as three sessions was considered a participant; all others were deemed nonparticipants for purposes of Simpson's research. The sessions were conducted by a leader who attended all of the general psychology lectures, read the assignments, took tests, and generally modeled appropriate study strategies within the course.

Each of the 15 weekly support sessions consisted of three parts. The sessions opened with student questions about lectures or assigned readings. The leader initially modeled question-asking in order to prompt students to think about what they did not yet understand. The second part of each session consisted of the leader's teaching appropriate strategies. These strategies included: the use of the 1/4-3/4 lecture note system, using a two or three sentence summary at the end of lecture notes; preview procedures; textbook annotations; concept cards for key terminology; mapping; diagnosing error patterns on tests; and analyzing text and task demands. To be admitted to any session a participant had to bring a 10-point short-answer quiz covering the past week's lecture. The students were

encouraged to ask questions that were similar to those asked by their psychology professor. These student generated question and answer interchanges constituted the third part of each support seminar.

The results of Simpson's (in press) study suggested that support seminars can help college students to employ and regulate appropriate study strategies. The seminar participants reported using more relevant strategies for the tasks involved in general psychology than did the nonparticipants. Nonparticipants relied heavily upon repetition and memorization. Simpson's study also suggested that support seminars can help students in identifying and recommending appropriate study strategies. Before the support sessions, participants had difficulty telling how they knew when they were ready to take a test. Afterwards, however, the participants recommended use of self-questioning and paired interrogation more often than did nonparticipants. Both strategies would be considered part of metacomprehension. Finally, Simpson's participants reported using their newly acquired strategies in other classes and they reported a high degree of satisfaction with what was learned in the support sessions.

King, Biggs, and Lipsky (1984) compared the effects of student-generated prequestions and summaries as reading study strategies among college freshmen and sophomores enrolled in developmental reading classes. Eighty-seven experimental students either received training in phrasing and answering questions while reading or in constructing summaries of text segments. An equal number of students served as controls. Both experimental groups were also encouraged to

attend to specific textual details. Overall, the results suggested that summary generalization is an especially useful strategy in studying for essay tests, whereas interspersed prequestioning is most useful in studying for objective tests. More specifically, the students who were trained in summarizing had higher test scores than control students on an essay test, objective test, and free recall. They also outperformed the self-questioning group on an essay test. The summary group also did as well as the self-questioning group on an objective test but this may have resulted from the instruction on attention to details given to both groups. The self-questioning group, however, outperformed the controls on the objective postreading test. The researchers concluded that training students to use strategies that are relevant to the tasks at hand will improve student performances. They also recommended that students be advised as to how they will be tested over course content.

An earlier study (Andre' & Anderson, 1978-1979) conducted with high school juniors and seniors lends additional support to the usefulness of training students in self-questioning strategies. Students in this study, who received training in self-questioning, attended two 50-minute experimental sessions. They were taught to generate questions from the main ideas of paragraphs in three 450-word expository passages. Whenever possible the students were asked for new instances of ideas and/or concepts. When identification of new ideas was inappropriate for a given paragraph, students were to paraphrase a question from a concept in the paragraph. Subsequently, students studied two

new 450-word passages and were tested over the material. Students who received self-questioning training outperformed control subjects who used rereading as well as students who were advised to use questioning strategies but received no formal self-questioning training.

Wong and Jones (1982) used Andre' and Anderson's (1978-1979) study as a model for training learning disabled eighth and ninth graders and normally achieving sixth graders to self-question. The training facilitated the comprehension performances of the learning disabled students, but the performances of the normally achieving sixth graders who received training did not differ substantially from the comprehension performances of their nontrained counterparts. The researchers suggested that normal achievers habitually actively process reading materials, therefore, such untrained students suffer little from lack of training. Disabled students, on the other hand, are inactive in their approach to learning and are good candidates for training in the use of comprehension strategies that will get them actively involved with their learning materials.

Mangano, Palmer, and Goetz (1982) demonstrated that metacomprehension strategies could be used in tutorial sessions to improve the comprehension skills of an adolescent who was having difficulty in his school work. Specifically, the subject received instruction during tutorial sessions in self-questioning as well as fix-up strategies for remediating comprehension failures. For example, the subject read orally to a clinician and then was helped to develop relevant questions about what he read. Later on he read silently and was asked

about how many times he stopped to self-question and what type of questions he asked himself as he read. Fix up strategies (e.g., ignoring an unknown word and continuing reading for its meaning, suspending judgment and waiting for meaning to be clarified later, rereading, asking others) were strengthened during the last week of training by having the subject review the procedures he used to understand his reading assignments. Results of the training revealed significant improvement in reading level as measured by a standardized reading achievement test. Although the study involved a one-to-one relationship between a teacher and student, it demonstrated clearly that metacomprehension strategies can be used to improve academic performance.

Other researchers have also reported the benefits of specific forms of metacomprehension training. Day (1980), for example, found that providing college students with rules for summarizing increased the students' abilities to summarize. Summary training, in fact, helped the students attend to main ideas and delete trivial information. The students who benefited most were students with writing problems and they tended to need more explicit training with the rules of summarizing and the application of those rules. In yet another study, Bartlett (1978) trained high school students to analyze the organizational patterns in classroom texts. The findings suggested that students could be taught to identify the top-level structure of texts and that such training aided students in recall of information. Still other researchers have documented the benefits of helping

students summarize and paraphrase (Doctorow, Wittrock, & Marks, 1978; Dansereau, McDonald, Long, Atkinson, Ellis, Collins, Williams, & Evans, 1974) and gain practice in applying information (Mayer & Greeno, 1972). Indeed, the findings from research indicate clearly that students can be taught any number of strategies which will increase their comprehension skills and aid them academically.

Importance of the Present Study

Several major conclusions can be drawn from the metacomprehension literature. First, significant differences exist between successful and less successful students in terms of their use of metacomprehension skills. Secondly, any number of specific, in-depth training programs can be useful in helping less successful students develop more effective metacomprehension strategies. A number of basic questions remain to be answered within this newly emerging area of research. Are extensive training programs necessary to activate metacomprehension processes? What procedures are most appropriate in terms of ease of use and practicality for identifying students who would benefit most from metacomprehension training? The present study was designed to seek answers to these questions by assessing the effects of metacomprehension cuing on student achievement.

More specifically, the present study was designed to determine whether students who were cued to select from an array of metacomprehension strategies would outperform noncued students on an examination of an expository handout. If metacomprehension is a developmental

task, perhaps college students need only to be prompted to select appropriate strategies in order to activate the use of those strategies. Enabling students to choose the strategies they deem to be useful might prove more beneficial than training all students in a given class to use a single strategy. No other study to date has assessed the merits of cuing students to select appropriate strategies prior to their studying and being tested over an expository passage.

To off-set the possibility that cuing alone might be insufficient for enhancing student achievement, the present study sought to identify who might benefit from metacomprehension training. By having cued and noncued students list their study strategies, the present experiment sought to identify the type of strategies that are most predictive of achievement and thus most useful in determining who would benefit from metacomprehension training. The present experiment assessed whether student self-reporting via a Likert-type scale was a more effective means for predicting achievement than having cued and noncued students list the strategies they used in studying. No other studies to date have developed a self-reporting study scale for college students and assessed what might be the better approach--listing or a self-report scale. In sum, the present study sought to determine: (a) if cued students would outperform noncued students on a multiple-choice exam; (b) if cued and noncued students differed in terms of the strategies that they list in studying for an exam; and (c) if a self-report scale would be more predictive of exam scores than merely listing strategies used in studying for the exam.

CHAPTER II

METHOD

Subjects and Setting

Twenty-one male and 42 female undergraduate students enrolled in educational psychology classes at a regional university in North Carolina participated in the study. Eighteen students were sophomores; 31 juniors, and 14 seniors. The students were "typical" undergraduates in that none was academically at risk or a part of any special tutorial programs. The majority of the students were teacher education majors taking psychology classes as part of their teacher education program. Three educational psychology classes were included in the study. Each of the classes met twice weekly for 1 hour and 20 minutes.

Materials

Each student received a packet containing seven items, numbered one through seven. The first item consisted of duplicate copies of an informed consent form (see Appendix A) describing the voluntary nature of the experiment. Subsequent oral instructions further informed students that one copy was to be retained and the other copy signed and returned to the proctor.

The second piece of material in the students' packets consisted either of information labeled as Strategies for Better

Understanding or Behavioral and Cognitive Research Directions. The Strategies for Better Understanding were intended to cue students regarding strategies beneficial for enhancing understanding of another handout included in their materials packet. Each strategy contained in the list was gleened from the previously reviewed meta-comprehension literature as being useful in the study of expository materials. Figure 1 contains the list of strategies provided to the cued students along with the additional instructions they received.

The information labeled Behavioral and Cognitive Research Directions was developed by the experimenter to serve as a placebo. It required approximately the same amount of reading time as the Strategies for Better Understanding. Approximately half of the students in each class received the placebo material while the others received the Strategies for Better Understanding. Those receiving the placebo material made up the noncued group since they received no cues about how they should study other materials included in their packets. Figure 2 contains the second item of information received by the noncued students.

The third item was identical for all students. It consisted of a brief, expository handout summarizing the Approach of Rudolf Dreikurs. The summary, selected from the third edition of Making It Till Friday: A Guide to Successful Classroom Management (Long, Frye, & Long, 1985), was chosen for several reasons. The passage contained information which the researcher believed would be intrinsically interesting to educational psychology students; was unlikely to have

The strategies presented below are among those frequently associated with successful comprehension and test performance. Review these strategies very carefully before reading and studying the handout on the APPROACH OF RUDOLF DREIKURS. You can use any one or a combination of strategies to help you better understand the handout. Or, you may use any other strategy(ies) that you have found useful.

SKIM THE ENTIRE PASSAGE

Examples: Preview the assignment paying attention to the headings, topic sentences, and summary; concentrate on finding the gist of the assignment.

ANTICIPATE THE TEST

Examples: Try to guess the type of questions you will be asked; check your understanding of the material by asking yourself questions about what you have read.

PARAPHRASE THE MATERIAL

Examples: After reading any definitions, put the definitions in your own words. See if you can offer additional examples for the definitions.

ADJUST YOUR SPEED

Examples: Slow down when you come to a technical term or difficult section; spend more time on passages that you do not immediately understand.

REREAD SELECTIVELY

Examples: Look back over material whenever it is necessary to clarify details, understanding; reread important points you have underlined or marked with an asterisk; reread notes.

RELATE TO PERSONAL EXPERIENCES

Examples: Think of how each idea might apply to you or someone you know; see if you can relate the material to what you already know.

Figure 1. Strategies for better understanding.

INTEGRATE THE MATERIAL

Examples: Think about the ways in which the ideas fit together to form a meaningful whole; speculate on what it is the writer believes.

SUMMARIZE

Example: Review each section trying to put the main idea and its subordinate parts into your own words.

TAKE NOTES

Example: Make an outline of the main and subordinate ideas in your own words.

Figure 1 continued

Every year thousands of American college students participate in research contributing to the development of knowledge in a variety of fields. Much of the research in the field of psychology can be categorized as either behavioral or cognitive. In large measure, behavioral researchers are concerned with observable behaviors. They are particularly interested in explaining how reinforcement and punishment affect the learning of skills and attitudes. Because of their interest in how external--out-of-head--conditions influence people, behavioral researchers are often referred to as environmentalists. Their preoccupation with environmental conditions (or stimuli) and the impact of environmental conditions on human behavior (or responses has also lead to their being called S-R theorists). Watson, Thorndike, Guthrie, and Skinner are among the leading contributors to behavioral theory and research.

In contrast with the behavioral emphasis, a cognitive orientation emphasizes how learners use in-head strategies to organize information to bring meaningfulness to their experiences. Primarily, the cognitive researchers have sought to explain the development of meaning. Special variables of concern to the cognitivists have been perception, information processing, memory, problem solving, decision making, and the structure of knowledge. In summary, while the behaviorists have sought to discover the rules that govern the link between specific stimuli and responses, the cognitivists have tried to understand knowledge as a whole. Major cognitive researchers and theorists are Ausubel, Bruner, and Piaget.

The research project you are contributing to today is cognitively oriented and is concerned with the effects of efforts to learn. In a future meeting, you will be told more about the project as well as given information on how the results relate to other findings in a newly emerging area of study--metacomprehension.

Figure 2. Behavioral and cognitive research directions.

been studied in other classes; and was of such a length (approximately 1,200 words) that students might master the content as well as be evaluated on it within a regularly scheduled 1 hour and 20 minute period. Appendix B includes the expository handout on the Approach of Rudolf Dreikurs.

Item four was a 24-question multiple-choice exam covering the Approach of Rudolf Dreikurs. Approximately half of the students receiving the multiple-choice test were cued and approximately half were noncued. See Appendix C.

On item five, each student was asked to describe (a) any strategies he/she used to understand the handout (the Approach of Rudolf Dreikurs) and to insure successful performance on the exam and (b) any other strategies he/she regularly used when studying, but did not use for the current experiment.

The sixth item, labeled Study Strategies Reporting Scale (SSRS), asked students to report their study behaviors on a scaled basis. The SSRS was developed by the experimenter from strategies reported in the research literature (see summary in the Introductory Chapter, pp. 11-12) as differentiating between successful and less successful students. The SSRS is presented in Appendix D.

The final item included in the materials packet consisted of requests for demographic data concerning the students' sex, class rank, and cumulative grade point average.

Procedures

Seventy materials packets were prepared and placed in numerical order. The first 35 packets contained the Strategies for Better Understanding (the cued group), the multiple-choice exam, and the other materials described earlier. The next 35 packets (numbered 36 through 70) contained the Behavioral and Cognitive Research Directions (the noncued group), the multiple-choice exam, and the other materials previously described.

After the packets were arranged in numerical order, the experimenter used a table of random numbers to reorder the packets. The randomly arranged packets were later distributed in the randomly arranged order as the students entered their classroom. That is, as students in the first class entered the classroom, each student was handed a materials packet. Thus, every student had an equal chance of falling within either of the two experimental groups: cued or noncued. Beginning with the top remaining packets, the experimenter followed the same procedure in the other two classes. In all 66 packets were distributed. Two students failed to sign an informed consent form and were not counted in the final total. Another student failed to complete all the materials and was not counted. Thus, in the final categorization of students, 31 students were in the cued category and 32 in the noncued category.

Once students received their packets and were seated, they received oral instructions about proceeding through their packets. The oral instructions received by the students are presented in

Appendix E. Following the oral instructions, the experimenter asked the students to open their packets and begin work. The beginning time and ending time (when a student turned in his/her packet) was maintained via a stopwatch and the amount of time for each student was entered on his/her packet.

Categorizing Study Strategies and Rater Training

In order to establish a system for classifying student study strategies, the experimenter reviewed the study strategies reported by a class of 28 undergraduate students. From the strategies reported, 12 discrete study categories were formed. Those 12 categories, along with examples of specific strategies included within each category, are presented in Appendix F.

After the 12 categories were established, three graduate students were trained to evaluate and classify study strategies. Training began with each rater studying a handout describing the 12 categories (see Appendix F). When the raters had completed their studying, the experimenter led a review discussion. The discussion consisted of asking raters to classify the study strategies reported by eight students (from the group of 28 students whose responses were used in initially establishing the 12 study categories). Raters were advised during the review that only one category could be selected for a single strategy reported by a student. In cases where a student used different words to describe and report the same strategy twice (e.g., saying "I used memorization" and "I went over and over

the material in my mind"), the raters were told to classify the behavior only the first time it was described.

Following the review discussion, each rater was asked to classify the strategies listed by the remaining 20 students from the original group of 28 students. Classification was achieved by having each rater independently evaluate the strategies reported by each of the students. Each rater listed, in the same order given by the student, the strategy that she thought the student was describing. Raters were free at all times to refer to their handout describing the 12 categories that were to be used for classifying study strategies. The experimenter subsequently compared her list with the list of each rater. Reliability between the experimenter and each rater was calculated by dividing the agreements by the total number of agreements plus disagreements. Since a reliability of .93 or better was reached with each rater, the experimenter asked all three raters to classify the study strategies of the 63 students whose reported study strategies were the focus of the present study. Interrater reliability for those classifications are reported later.

Reliability

Multiple-Choice Exam

Questions for the multiple-choice exam as well as data regarding reliability and validity of the questions were provided by the senior author of Making It Till Friday (Long et al., 1985). Eight graduate students (enrolled in Advanced Educational Psychology)

had reviewed a pool of test items and eliminated questions that were deemed too easy, too difficult, or inappropriate for the material being evaluated. All the students agreed that the final items adequately sampled the factual content of the passage under study. A majority of the questions are also contained in the Instructor's Manual accompanying the text. Therefore, the items should be typical of test items students are likely to receive as a part of regular classroom evaluations. An odd-even division of the test yielded a split halves correlation of .60. Use of the Spearman-Brown Prophecy formula to assess reliability for the whole test (24 items) yielded a correlation coefficient of .75. Thus, the test seemed sufficiently reliable for comparison of student scores. Appendix C includes the multiple-choice exam received by the students.

Categorizing Study Strategies

Table 1 provides the interrater reliability for the three raters who classified student study strategies into the 12 study categories. Reliability was assessed by comparing strategy by strategy how each rater classified the students' descriptions of study behavior. A numerical value was obtained by dividing the agreements (for pairs of raters) by the total number of agreements plus disagreements. Overall interrater reliability was assessed by dividing the total agreements of the three raters by their total agreements plus disagreements. The interrater reliability for the three raters was .91. The raters were in 100% agreement on 163 of the 179 student reported study strategies. For each rating there was agreement

Table 1

Inter-Rater Reliability for the Categorization of Student Study Strategies

Raters	Raters		
	1	2	3
1	-	.95	.93
2		-	.91

between at least two of the three raters. That is, where raters one and two disagreed, there was either agreement by raters two and three or raters one and three. Thus, it was the strategies that were agreed upon by all three raters or by at least two raters that were finally recorded. No responses were recorded where there was less than 66 2/3% agreement.

Disagreements in ratings occurred primarily in instances where the student's use of a category heading caused confusion about what he/she was actually describing. For instance, where a student said that he/she skimmed over what he/she had underlined, one rater recorded underlining and skimming and the other two raters recorded underlining and rereading. Appendix G provides a sample of the strategies described by students and the final categorization given to those descriptions.

Study Strategies Reporting Scale

Reliability for the Study Strategies Reporting Scale (Appendix D) was assessed via the test-retest method with 21 undergraduates enrolled in an educational psychology class. Use of the product moment correlation coefficient yielded an r value of .76. As previously mentioned, the individual items were gleened from the research findings of earlier studies and each item has been shown useful in differentiating between successful and less successful students.

Statistical Analysis

For purposes of statistical analysis, all of the study strategies listed by students were eventually grouped into one of two classes: passive or interactive. The passive strategies were those which appeared to reflect an effort to absorb knowledge without any transformation of the material being studied. Skimming, adjusting speed, rereading, underlining, and memorizing were classified as passive strategies. While these strategies do demonstrate effort, they suggest that the student is merely "taking" what is given and not transposing it to serve any special purpose. Conversely, strategies that reflected an effort to do something with the material, that is, to act on it were classified as interactive. Anticipating the test (trying to guess what the questions might be, asking oneself questions), paraphrasing, notetaking, relating to personal experiences, integrating, and visualizing were treated as interactive. Frequency counts, means, and percentages of students using each strategy were calculated for each experimental group.

In addition to descriptive statistics, t tests were used to identify any statistically significant differences between the two groups (cued and noncued) regarding grade point averages, exam scores, scores on the Study Strategies Reporting Scale, use of interactive and passive study strategies, and time used in completing the experiment. A step-wise multiple regression was also performed for the cued and noncued experimental groups and for the two groups combined. The dependent variable was the multiple-choice test score.

The independent variables were: students' grade point averages, number of interactive strategies, number of passive strategies, score on the Study Strategies Reporting Scale, and time. Cuing was used as a dummy variable with the combined groups to determine the impact of cuing versus noncuing on test scores. The independent variables, of course, served to assess which variables were most predictive of student achievement.

CHAPTER III

RESULTS

Results for the present study are described below in the following sequence: (a) the results of *t* tests between the cued and noncued groups on a number of variables (e.g., grade point averages, test scores); (b) descriptive statistics to reflect how the cued and noncued students differed in their use of interactive and passive metacomprehension strategies;[1] (c) the intercorrelations and findings of stepwise multiple regression equations; and (d) a description of the differences between the more successful and less successful students.

Students' *t* Test Comparisons

Table 2 shows the means, standard deviations, and the results of *t* tests for the two experimental groups (cued and noncued) on a number of study-related variables. As can be seen in Table 2, the cued and noncued groups differed significantly ($p < .01$) in their use of interactive study strategies. As a matter of fact, the cued students used about three times as many interactive strategies as did the noncued students. The two groups also differed significantly

[1]As noted earlier, strategies classified as interactive were those that involved acting on, transposing, or personally interacting with the material under study. Conversely, the passive strategies were basically those that required less personal involvement and that involved "taking what was given."

Table 2

Statistical Differences Between Cued and Noncued Students

Variable	Cued (N=31) Mean	Cued (N=31) SD	Noncued (N=32) Mean	Noncued (N=32) SD	t
Grade Point Average	2.85	.53	2.78	.41	- .56
Test Score	17.16	3.02	15.47	2.96	-2.24*
Study Strategies Reporting Scale	32.25	4.34	30.81	5.42	-1.17
Interactive Stragegies	1.13	1.20	.38	.66	-3.10**
Passive Strategies	2.35	.88	1.94	.62	-2.19*
Time	37.06	7.78	34.75	7.66	-1.19

*$p < .05$. **$p < .01$.

($p < .05$) in their use of passive strategies. On the average, cued students used 2.35 passive strategies, whereas the noncued students averaged using slightly less than two strategies. The cued group also significantly outperformed the noncued group on another important variable: their multiple-choice test scores.

Further examination of Table 2 shows that the cued and noncued students did not differ at a statistically significant level on their grade point averages, time to complete the experiment, or their Study Strategies Reporting Scale (SSRS) scores. As reported in Table 2, grade point averages between the two groups was very similar: 2.85 for cued students and 2.78 for noncued students. Likewise, the groups were relatively close in their use of time. The cued students took 37.06 minutes, whereas the noncued students took an average of 34.75 minutes. Finally, the SSRS scores for the two groups were also very close; but, as with grade point averages and time, the cued group had the higher mean.

The similarity of the two groups on the SSRS is one of the interesting aspects of the group comparisons. An analysis of the individual items on the SSRS shows how alike the groups' responses were. For example, 19 of 31 cued students circled that they either always or almost always asked themselves questions to check their understanding (item 7) (see Appendix D for the SSRS), and 22 of 32 noncued students reported always or almost always using the strategy. Similarly, 30 of 31 cued students circled always or almost always using rereading (item 13), and 32 of 32 noncued students

made similar responses. And, 21 cued students said they always or almost always used summarizing as a study strategy and 23 noncued students gave those responses. In sum, before responding to SSRS items, the noncued students listed the use of fewer interactive and passive strategies (and scored lower on the exam) than did the cued students. But the two groups showed marked similarities on their overall SSRS scores and on the individual items.

Descriptive Data on Strategy Use

As indicated with the *t* test comparisons, the cued and noncued students differed significantly in their reported use of interactive and passive metacomprehension strategies. The descriptive data in Table 3 show further how diverse the two groups were in their use of the various interactive and passive strategies. As revealed in Table 3, the cued students as a group reported using a total of 35 interactive strategies. Eight students said they anticipated the test, that is, they asked themselves questions they thought might be on the exam. Seven of the cued students also reported paraphrasing or putting the material in their own words as they tried to comprehend it. Additionally, five students reported relating the material to their own experiences, three students grouping or integrating material into a meaningful whole, five summarizing ideas, six note-taking in their own words, and one forming mental images of the material. Conversely, few noncued students reported using interactive strategies. Only 13 interactive strategies were reported.

Table 3

Frequency and Percentages of Cued and Noncued Students Using Various Metacomprehension Strategies

Strategy	Cued Students (N=31)		Noncued Students (N=32)	
	Freq.	%age	Freq.	%age
Interactive				
Anticipating the Test	8	26	1	3
Paraphrasing	7	23	2	6
Relating to Personal Experiences	5	16	3	9
Integrating/Grouping	3	10	3	9
Summarizing	5	16	0	0
Taking Notes in Own Words	6	19	4	13
Visualizing	1	3	0	0
Total Frequency	35		13	
Passive				
Skimming	12	39	5	16
Adjusting Reading Speed	15	48	8	25
Rereading	26	84	23	72
Underlining	17	55	14	44
Memorizing	3	10	8	25
Total Frequency	73		58	

One noncued student said that he anticipated the test, two said they paraphrased, three listed relating information to personal experiences, three listed grouping or integrating passages, and four listed the use of notetaking.

As can be seen in Table 3, the cued students reported the use of 73 passive strategies. A breakdown of these strategies shows that 12 cued students reported the use of skimming (e.g., checking headings, summaries); 15 the use of adjusting reading speeds (e.g., slowing down when encountering difficult passages); 26 the use of rereading selected passages that were difficult or deemed to be important; 17 the use of underlining; and 3 the use of memorizing as a comprehension strategy. Conversely, the noncued students reported using 58 passive strategies. Five noncued students reported using skimming, 8 adjusting reading speeds, 23 rereading, 14 underlining, and 8 memorizing. In sum, both the cued and noncued students relied upon passive strategies, but the cued students relied more heavily on the "deeper" interactive strategies than did the noncued students.

Intercorrelations and Stepwise Multiple Regressions

Table 4 presents the intercorrelation matrix for the variables that were included in the stepwise regression analysis for noncued students. The multiple-choice test served as the dependent variable in the regression equation with students' grade point averages, SSRS scores, number of interactive strategies used, number of passive strategies used, and time used to complete the experiment

Table 4

Intercorrelations for the Dependent and Independent Variables Used in the Regression Analysis for Noncued Students

Variables	GPA	TEST	SSRS	I	P	TIME
GPA	-	0.456*	0.269	0.149	0.227	0.101
TEST		-	-0.035	0.650*	0.263	0.039
SSRS			-	-0.052	-0.177	-0.158
I				-	-0.099	--0.038
P					-	0.269
TIME						-

N = 32 Students. TEST = Multiple-Choice Exam. SSRS = Study Strategies Reporting Scale. I = Interactive Strategies. P = Passive Strategies. TIME = Minutes to Complete Experiment.

*p < .01. Pearson's Product Moment Correlation Coefficient.

serving as independent variables. As evidenced in the intercorrelation matrix, the greatest correlation coefficient was between the number of interactive strategies used and the multiple-choice test scores ($r = .65$, $p < .01$). A strong correlation ($r = .46$, $p < .01$) existed also between student grade point averages and test scores. Another important point to be noted among the intercorrelations was the absence of multicollinearity which suggests a valid regression equation (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975).

Table 5 presents the results of the regression equation for the noncued students. As can be seen in Table 5, the number of interactive strategies used was the greatest predictor of achievement on the multiple-choice test. Grade point averages were the next best predictor, while the number of passive strategies used was the third best predictor. The variables that emerged in the first three steps--interactive strategies, grade point averages, and passive strategies--accounted for 61.48% of the variance in test scores. Two variables--Study Strategies Reporting Scale scores and time--were statistically insignificant in predicting test scores and thus never entered any of the steps in the equation.

Perhaps the changes in R square best describe the regression equation results for the noncued students. As Table 5 reveals, the number of interactive strategies used by students accounted for 42% of the variance in multiple-choice test scores. The addition of grade point average as a predictor of achievement accounted for an additional 13% of the variance, while the number of passive strategies

Table 5

Results of Regression Analysis for Noncued Students

Steps	Variables	R Square	Changes in R Square	Beta	Overall F Value	t Value
1	I	.42227	.42227	.64982	21.93*	4.69*
2	GPA	.55385	.13158	.36685	18.00*	2.93*
3	P	.61482	.06097	.25601	14.99*	2.11**
Variables Not in the Equation						
	SSRS			-0.04484		-.347
	TIME			-0.03867		-.312

I = Interactive Strategies. GPA = Grade Point Average. P = Passive Strategies.

SSRS = Study Strategies Reporting Scale. TIME = Minutes to Complete Experiemnt.

*p < .01. **p < .05.

used accounted for another 6%. Considered together, then, those three variables--interactive strategies (42%) + grade point averages (13%) + passive strategies (6%)--accounted for about 61% of the variance.

Table 6 presents the intercorrelation matrix for the variables that were included in the stepwise multiple regression analysis for the cued students. As was the case with the noncued students, the greatest correlation was between the number of interactive strategies used and the multiple-choice exam scores ($r = .41$, $p < .05$). Passive strategies and exam scores were also comparatively strong, but did not reach statistical significance at the .01 or .05 levels.

The regression equation for the cued students yielded results very similar to that of the noncued students. As with the noncued students, the number of interactive strategies used by students was the best predictor of student achievement. It accounted for 16.5% of the variation in test scores. As can be seen in Table 7, the next best predictor of achievement was the number of passive strategies used. The passive strategies variable accounted for 11.3% of the variation in multiple-choice test scores. Thus, taken together the number of interactive and passive strategies used by students accounted for 27.8% of the variance. As with the noncued group, the Study Strategies Reporting Scale scores and time were not statistically significant predictors of achievement and therefore did not enter the regression equation. Grade point averages also failed to emerge as a significant predictor for the cued students.

Table 6

Intercorrelations for the Dependent and Independent Variables Used in the Regression Analysis for Cued Students

Variables	GPA	TEST	SSRS	I	P	TIME
GPA	-	0.076	0.206	-0.004	-0.067	0.097
TEST		-	0.075	0.406*	0.216	0.156
SSRS			-	0.172	0.115	0.193
I				-	-0.266	0.134
P					-	-0.052
TIME						-

N = 31 Students. GPA = Grade Point Average. TEST = Multiple-Choice Exam.

I = Interactive Strategies. P = Passive Strategies. TIME = Minutes to Complete Experiment.

*$p < .05$. Pearson's Product Moment Correlation Coefficient.

Table 7

Results of Regression Analysis for Cued Students

Steps	Variables	R Square	Changes in R Square	Beta	Overall F Value	*t* Value
1	I	.16500	.16500	.40621	5.73*	2.39*
2	P	.27821	.11321	.34901	5.39*	2.10*
Variables Not in the Equation						
	GPA			.10143		.623
	SSRS			-.05360		-.319
	TIME			.10873		.664

I = Interactive Strategies. P = Passive Strategies. GPA = Grade Point Average.

SSRS = Study Strategies Reporting Scale. TIME = Time to Complete Experiment.

*$p < .05$.

One of the major findings that can be noted between Table 5 and Table 7 is that the number of interactive and passive strategies used accounts for more of the variance in test scores for the noncued group than is the case with the cued group. Since the cued students as a group listed the use of more strategies than did the noncued students, the number of strategies used became less of a predictive variable for the cued group.

A question of major importance that was not addressed in the first two regression equations was: does cuing significantly predict test scores? To answer this question, a third regression was run with cuing included as a dummy variable. Other variables included in the analysis were: grade point averages, SSRS scores, number of interactive strategies, number of passive strategies, and time. Cuing did not emerge as a statistically significant predictor of student success nor did any variables other than number of interactive and passive strategies used. Interactive strategies was the best predictor, accounting for 27.6% of the variance ($p < .01$). Passive strategies accounted for an additional 11% of the variance ($p < .01$).

Successful and Less Successful Students

Although the preceding results have accounted for much of the student achievement on the multiple-choice test, a look at the

strategies used by the more and less successful[2] students should further clarify how the use of various strategies influenced examination results. Table 8 presents the frequency and percentages of use of various metacomprehension strategies by successful and less successful students. As evidenced by Table 8, the successful students used a total of 24 interactive strategies and a total of 40 passive strategies. Thirteen of the 16 students classified as successful reported using at least one interactive strategy. Conversely, the less successful students listed a total use of 41 strategies, 37 strategies being passive and only four being interactive. As a matter of fact, one could correctly classify 17 of 20 of the students as less successful by their nonuse of an interactive strategy.

As can be seen in Table 8, there were marked differences in the number and percentage of successful and less successful students using the various interactive and passive strategies. For example, four (25%) of the successful students reported anticipating what might be on the test, whereas none (0%) of the less successful students reported use of that strategy. Similarly, five (31%) of the successful students said they used paraphrasing, whereas only one (5%) of the less successful students reported the use of paraphrasing. Five (31%) of the successful students reported integrating or grouping ideas, but only two (10%) of the less successful said they

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[2]Those students who scored 80% or above (correctly answering 19 or more of 24 questions) were classified as successful, whereas those students who scored 63% or below (correctly answering 15 or less of the 24 questions) were classified as less successful.

Table 8

Frequency and Percentage of Successful and Less Successful Students Using Various Metacomprehension Strategies

Strategy	Successful (N=16)		Less Successful (N=20)	
	Freq.	%age	Freq.	%age
Interactive				
Anticipating Test	4	25	0	0
Paraphrasing	5	31	1	5
Relating to Personal Experience	3	19	0	0
Integrating/Grouping	5	31	0	0
Summarizing	2	13	1	5
Taking Notes in Own Words	4	25	2	10
Visualizing	1	6	0	0
Total Frequency	24		4	
Passive				
Skimming	8	50	3	15
Adjusting Reading Speed	8	50	8	40
Rereading	14	88	13	65
Underlining	8	50	10	50
Memorizing	2	13	3	15
Total Frequency	40		37	

integrated or grouped ideas. Taking notes was reported by four (25%) of the successful students and by only two (10%) of the less successful students. On the passive strategies, eight (50%) of the successful students said they used skimming, whereas only three (15%) of the less successful students reported skimming.

Table 9 provides t test comparisons for the successful and less successful students on a number of variables and gives further clarification of the differences between the two groups. As shown in Table 9, statistically significant ($p < .01$) differences existed between the groups on their use of interactive as well as passive study strategies. No statistically significant differences were found on grade point averages, Study Strategies Reporting Scale (SSRS) scores, or time used in completing the experiment. The mean grade point average for the successful group was 2.90, whereas it was 2.65 for the less successful group. Similarly, the mean SSRS score for the successful group was 32.06 and 31.30 for the less successful students. And the mean time taken by the successful group was 36.9 minutes, whereas it was 35 minutes for the less successful students. In sum, the major differences between successful and less successful students were in their choice of and number of strategies used.

Table 9

Statistical Differences Between Successful and Less Successful Students

Variable	Successful (N=16) Mean	SD	Less Successful (N=20) Mean	SD	t
Grade Point Average	2.90	.47	2.65	.40	-1.69
Study Strategies Reporting Scale	32.06	3.77	31.30	5.48	-0.47
Interactive Strategies	1.50	1.21	.20	.53	-4.06*
Passive Strategies	2.50	.90	1.85	.49	-2.78*
Time	36.94	5.23	35.00	9.46	-0.73

*$p < .01$

CHAPTER IV

DISCUSSION, CONCLUSIONS, AND SUGGESTIONS FOR FURTHER STUDY

Discussion

Studies have demonstrated that students can be taught to summarize (King, Biggs, & Lipsky, 1984), self-question (Andre' & Anderson, 1978-1979), remediate failures through review (Mangano, Palmer, & Goetz, 1982), analyze organizational patterns of textbooks (Bartlett, 1978), and paraphrase what they have read (Doctorow, Wittrock, & Marks, 1978). Indeed, the review of the research literature in Chapter I suggests that students can be taught to use a variety of metacomprehension strategies effectively. In-depth training, however, may be unnecessary with all students. Many students have undoubtedly already acquired useful metacomprehension skills as they have undertaken the study of academic materials. It may well be that other students could benefit from being encouraged--rather than being taught directly--to use various strategies for better comprehension. The present study focused on this issue by assessing the merits of cuing students to select from a variety of strategies what they thought would work best for themselves.

Cued students in the present study outperformed noncued students by an average of 1.69 raw points on a multiple-choice test over expository material related to their chosen field of study. As

reported earlier, the difference in test scores between the cued and noncued students was significant at the .05 level of significance. The gains of the cued students gave them an average test score of 73.3%, whereas the noncued students had an average test score of 64.4%. Many educators might not consider these gains to be educationally significant. All of the students in the study were advanced undergraduates and none was academically at risk. Whether students who are struggling academically could make gains (as a result of cuing) that would move them from a failing to a passing mark on an examination was not addressed in the present study. Students who are in academic troubles could feel bewildered by suggestions to use strategies with which they are unfamiliar or that they have used ineffectively in the past. Likewise, while the current study offers encouragement that cuing may prove helpful for already successful students on a factually based, recognition test, one should be cautious in assuming that similar gains could be made on an essay exam or any task requiring the integration of material. Obviously, it is easier for students to recognize a correct answer than it is for them to formulate their own conclusions. Still, the present study does suggest that cuing has potential for further improving the test performances of selected students.

Although cuing by itself did raise the average performance for a group of advanced undergraduates, not every cued student performed well on the examination. Nor did every noncued student do poorly. Thus, a fundamental question is: how can instructors

readily identify students who need more study skills assistance than is provided by cuing alone? Help in answering this question is provided by looking at the study strategies reported by the cued and the noncued students and especially by examining what the more succesful and less successful students reported using. Further insight is also available by comparing the results of the Study Strategies Reporting Scale with the results of merely asking students to list their study strategies.

Cued students reported using a total of 108 strategies versus a reported total of 71 for the noncued group. But the difference was not limited to numbers. The two groups also varied in their choice of strategies. The cued group reported using 35 interactive and 73 passive strategies, whereas the noncued students reported using only 13 interactive and 58 passive strategies. The point is that once students were cued to select from an array of passive as well as interactive strategies, the cued students selected from both categories. Most cued students seemed to recognize the merits of not relying primarily on passive techniques. Passive strategies really seem to be the base that students can build on. That is, passive strategies are necessary but not sufficient for effective comprehension and test readiness.

As will be recalled from the results, the number of interactive strategies reported by students was the major predictor of achievement on the examination. Any student who is cued to select from an array of passive and interactive strategies and reports using

only the passive ones would certainly be a likely candidate for some form of metacomprehension training. Similarly, noncued students who exhibit no inclination to use interactive procedures might well need to be introduced to those strategies or given instruction on their proper use. Finally, instructors need not wait until after an exam to consider who might need assistance. Instructors can ask students to report study strategies long before testing.

The importance of strategy usage in identifying who might need study skills training is very evident when contrasting the strategies reported by the successful and less successful students. The 16 successful students (those who scored 80% or better on the exam) reported using 24 interactive strategies, whereas the 20 less successful (those scoring 63% or below) reported using only four interactive strategies. In fact, only three of the less successful students reported using an interactive strategy. Thus, one could have predicted the poor performance of 17 of the unsuccessful students from their failure to report the use of interactive strategies. Not all of the unsuccessful students were noncued, however. Eight of the unsuccessful students were from the cued group. And five of the successful students were from the noncued group. The implication, then, seems to be that success or failure depends not so much on cuing or noncuing but on whether a student reports the use of interactive in addition to passive strategies. Cuing, of course, did appear to sensitize students to the need to use more than a singular approach.

How students are asked to report their study strategies can affect the validity of those reports. For example, when cued and noncued students reported their study strategies on the Study Strategies Reporting Scale (SSRS), no significant differences existed between the two groups. Nor were there any significant differences in terms of the ratings of the strategies when students were classified as successful or less successful. A number of explanations could account for the similarity in the students' reports. First, students may have responded to the social desirability of the items. That is, students may have known others who used a given strategy and may have become diverted by that knowledge rather than with reporting whether they used the strategy themselves. Secondly, the SSRS asked students to indicate the degree to which they used various strategies in their studies, not what they used in studying for specific expository material. Retrospection about what one used yesterday or last week may be far less reliable than short-term retrospection. Additionally, the ease of circling items on the SSRS might have led students to circle items that they used only superficially. In any case, the SSRS proved ineffective for discriminating between students who were successful and less successful on a specific exam.

Although asking students to list strategies appears to be a better predictor of achievement than a rating scale such as the SSRS, caution is still needed in relying on lists of reported strategies. In the present study, cued students reported the use of more strategies than did noncued students. But, as previously stated, not all

cued students performed well on the exam. If cued students list strategies which they use ineffectively, cuing could hamper the identification of students who could benefit from study skills training. The best strategy would seem to be refraining from the use of cues when asking students to report their study strategies. In sum, cuing can activate the use of metacomprehension strategies but it can also obscure the identification of those who could benefit from study skills training.

Conclusions

In the present study, cuing proved to be effective in improving the performances of a group of advanced undergraduates on a factually based multiple-choice exam. The study suggests that students who are experiencing no academic difficulties may not require extensive study skills training in order to activate metacomprehension processes. Such students may need only to be reminded to apply what they might have already tried from time to time or what they know to be useful.

Obviously, not every student will benefit from cuing alone. Some students in the present study did not. Instructors may wish to use cuing under pretest conditions to determine its usefulness. Students who show no proclivity in responding to cues could then be encouraged to attend any "help" sessions that the instructor wished to provide. The study skills program used by Simpson (in press), which was described in the introduction, offers considerable promise for

enhancing comprehension and student achievement. Undoubtedly, though, each instructor will want to assess what works best in his/her speciality and then seek to transmit those strategies to the students.

Perhaps the most useful revelation in the current study was the disclosure about the type of study strategies that the cued and successful students reported. The cued as well as the noncued students reported using passive strategies. But the cued students went beyond the primary use of passive strategies and also relied on interactive techniques. Similarly, the more successful students--irrespective of whether they were cued or noncued--reported greater use of interactive strategies than did less successful students.

Comprehending material sufficiently to perform well on an examination seems to hinge on going beyond the passive strategies of rereading, underlining, skimming, and the use of other tactics that essentially take what is given. The more in-depth strategies such as integrating material into a meaningful whole and relating to personal experiences seem to characterize the comprehension efforts of the successful student. Indeed, being truly successful implies a deep involvement with what one is undertaking. Being told by a student that he "studied" is not nearly as important as knowing <u>how</u> he studied.

Finally, the current study suggests that asking students to list their study strategies is a better means of predicting who will do well on an examination than is the use of an instrument such as

the Study Strategies Reporting Scale (SSRS). All but three of the students who did poorly on the exam could have been identified by their failure to list the use of a single interactive strategy. Conversely, the SSRS failed to discriminate between those who did well on the exam and those who did not. Circling items on the SSRS was an easy task; having to list study strategies was more difficult. Perhaps the greater effort required in listing strategies encouraged students to report only what they used as opposed to what they could recognize as being desirable. The conclusion seems to be that the straight forward approach of asking students to write out how they prepare for an exam provides significant insight about the kind of help students need in their studies.

Suggestions for Further Study

The present study indicates a need for further investigation to delineate the parameters of cuing. First, researchers ought to determine if younger students (e.g., high school students) and students at different levels of achievement (e.g., average achievers versus those in remedial classes) could benefit from cuing. Perhaps only advanced students similar to those in the present study can be helped with the use of cues. But if metacomprehension is a developmental process, students may innately explore the use of strategies they feel are suited to their needs and talents. Secondly, and closely related to the preceding point, researchers ought to assess whether any previous training is needed before students can benefit from

cuing. Different groups of students could be exposed to study skills training and then compared to nontrained students in terms of how each responds to cues. Thirdly, the value of different types of cues could be assessed. Since cued and noncued students in the present study relied on passive strategies, perhaps cuing students with interactive strategies would be appropriate. Certainly, interactive cues alone would limit students' focus to fewer strategies. In sum, the necessity for establishing the limits of a technique--cuing or otherwise--ought to be firmly established before generalizing findings to wider audiences.

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APPENDICES

APPENDIX A

INFORMED CONSENT FORM

I acknowledge that I am a willing participant in a research project designed to assess the relationship between reading and study behavior and test performance.

I understand that a possible benefit of my participation could be increased knowledge about the factors that contribute to comprehension and subsequent test performances.

I understand that my participation in the project is limited to a single class period and that I can refuse to participate or withdraw from participating at any point without prejudice or penalty. I understand that my course grade will not be affected by refusal to participate or by withdrawing from the research activity at any time.

With the clear understanding that my name will not be used or in any way linked to results in the reporting of this study, I grant permission for the use of my exam results, self-reported study strategies, and grade point average.

I understand that the person I may contact regarding the status of this study is Dr. James D. Long, Psychology Department.

Signature of Participant _____

APPENDIX B

THE APPROACH OF RUDOLF DREIKURS

Rudolf Dreikurs, a physician who expanded upon the contributions of Alfred Adler, has provided a useful means for helping teachers work with students without reliance on punishment. At a minimum, his approach necessitates that teachers understand: (1) students' orientation to life, (2) the goals of student misbehavior, and (3) the means for reorienting misbehaving students. Only a brief analysis of these points can be provided here. For a broader understanding of Dreikurs, we recommend that you read one or more of his books which are listed in the reference section of this chapter. We have found Maintaining Sanity in the Classroom: Illustrated Teaching Techniques (Dreikurs, Grunwald, and Pepper, 1971) to be especially helpful and have used it as the source for the comments that follow.

ORIENTATION TOWARD LIFE

Dreikurs, and psychiatrist Alfred Adler before him, reasoned that all human behavior is goal directed. That is, behavior is purposive: it is done for a reason. According to Dreikurs, adults and children, too, want to belong--to feel they have a place of status. Children, however, can under- and overestimate the value of others' approval. As a result they can develop an ineffective orientation toward life. For example, a child may come to believe that he/she is worthwhile only when receiving approval or only because he/she can place others in his/her service and obtain their attention in that way. The child may fail to realize that worth comes from developing and using his/her talents--not from the reactions of others. In a broad sense, the individual who cannot find a place by striving on the right side of life, will seek a place of status and belonging by striving on the wrong side.

Students, of course, often lack an understanding of what motivates them. But an understanding of one's motives and the orientation toward life that springs from those motives lies just below the level of consciousness. Teachers can help raise each student's level of consciousness, and, once consciousness is raised, change becomes a possibility.

THE GOALS OF MISBEHAVIOR

From Dreikur's (Dreikurs, Brunwald, and Pepper, 1971) perspective, student misbehavior represents an effort to achieve what is thought to be unattainable in other ways. According to Dreikurs, four goals serve as motivation for the varied forms that misbehavior

takes. The goals are: (1) attention, (2) power, (3) revenge, and (4) assumed disability.

The student who misbehaves to get attention believes that the only way to belong is to be noticed. To the attention-seeking student, being bad is preferable to being overlooked. The attention-seeker can pursue this goal actively or passively. Being the class clown, the showoff, or the tattler characterize active attention-getting efforts. Dependency and learning problems, such as difficulty with reading, may represent passive attempts for attention. The clue to the student's motive lies in determining what the student, in fact, receives for a given behavior.

While the attention-seeking student will at least temporarily stop once undesirable antics have been noticed, the power-seeking student generally will not stop when asked to do so. The student who is seeking power believes that hope for belonging lies in being able to control the situation or other people. Thus, the power-seeker uses attention to escalate or intensify efforts to gain control. Lying and temper tantrums are active forms of power-seeking. Bed-wetting, stubbornness, and dawdling exemplify the passive devices.

The third goal of misbehavior, revenge, often reveals itself through stealing and bullying or more subtly in negativism. The revenge seeker is subconsciously saying, "I can belong only by hurting others."

Finally, misbehaving students can seek the goal of assumed disability. This final goal of misbehavior is perhaps the most serious because it signals that the student has lost hope. The student is reasoning "I can avoid humiliation (and find some worth) only by giving up." Passivity and self-pity characterize those whose goal is assumed disability. But whether a student chooses this more desperate approach or another goal, the message is the same: "I want to find a place of value."

REORIENTATION FOR MISBEHAVING STUDENTS

A number of techniques exist for helping misbehaving students establish a different orientation toward life. Among these techniques are: (1) corrective feedback, (2) altered reactions to misbehavior, (3) encouragement, and (4) natural and logical consequences.

Corrective feedback is a positive means of confronting a misbehaving student. Its purpose is to heighten the student's awareness of the motives for misbehavior. A first step in corrective feedback is to ask the student the reason for the misbehavior. If the student can state the motive, the student and teacher can proceed by identifying behaviors that would be more useful for meeting the student's needs. If the student cannot give the reason for the

misbehavior, and few can, then the teacher can proceed by suggesting the motive. For example, with an attention-seeking student the teacher might say, "Could it be that you feel the only way to be noticed is to misbehave?" Or, with a power-seeking student the teacher might suggest, "Could it be that you feel no one has a right to tell you what to do?" The teacher who correctly suggests the student's motive will frequently elicit a recognition reflex. The recognition reflex may be a smile, an ah ha expression, or other behavior that indicates, "You may have something there."

Teachers can also help students by altering their reactions to misbehavior. For example, a typical response to a clowning student is to give attention to the misbehavior. An alternative reaction is to ignore the act and subsequently attend to the student's more positive behaviors. Similarly, teachers should avoid engaging in debates with the power seeker, feeling hurt by the revenge seeker, and criticizing the youngster who displays signs of inadequacy.

Encouragement is a third technique for assisting troubled youths. Dreikurs (Dreikurs, Brunwald, and Pepper, 1971), however, contends that encouragement should not be confused with praise. He sees praise as approval for attainments; whereas he notes that encouragement can be offered following failure, for risk taking, trying different behaviors, or for any act without it being associated with success. When using encouragement, teachers are cautioned against saying, "You could do better." Such a statement suggests that the student must improve in order to be accepted. Telling the student "to keep trying" or "don't give up" are consistent with the concept of encouragement.

ENCOURAGEMENT OR DISSATISFACTION?

Mrs. Webb was extremely interested in helping Billy. He seemed so capable but he was so slow in completing his assignments. Often his class work would be only partially finished when others in the class had their work completed. Recently, Mrs. Webb tried to encourage Billy with statements like, "Billy, if you would set your mind to it, you could be the best student in class." Billy performed more poorly following such encouragement. Mrs. Webb wondered if she was really encouraging Billy. What do you think she was telling him about his present state of acceptance. Could it be that Billy was afraid of making mistakes? How would you encourage Billy?

Finally, in seeking to help misbehaving students establish a different orientation, teachers can use natural and logical consequences rather that resorting to punishment. Dreikurs (Dreikurs, Brunwald, and Pepper, 1971) contends that punishment is something

that is imposed on students. Instead of imposing punishment on students he prefers to let students experience the consequences that flow from misbehavior. A natural consequence is an outcome of misbehavior that represents reality. A student who is late to class would naturally miss the explanations given at the beginning of the class just as the child who is late for dinner would receive a cold meal (assuming natural consequences are permitted to unfold). Natural consequences cannot always be used, however. A kindergarten child who runs into the street would never be allowed to continue the practice since the natural outcome could be fatal. When natural consequences are inappropriate for the situation, the teacher can use logical ones. Logical consequences are similar to natural ones in that they flow naturally from misbehavior, but they are arranged by the teacher (preferably with the assistance of the misbehaving student). The student who makes a mess, for example, may agree that a logical consequence for the student is to do the cleaning up. Although logical consequences are arranged and flow from behaviors themselves, it is unlikely that students will view them as punishment when students help establish the consequences. Incidentally, paddlings and the like are never logical consequences for misbehavior because there is no way in which a paddling is related to or flows naturally from a behavior.

SUMMARY

Dreikurs' (Dreikurs, Brunwald, and Pepper, 1971) approach maintains that each individual chooses the direction his/her life will take, but that choice is limited by the alternatives that are available. Teachers can increase the alternatives for constructive life choices by recognizing the worth of every student and by helping each student understand that he/she does not have to be like others in order to be valued. Among the techniques for helping students are corrective feedback, encouragement, and natural and logical consequences. The purpose in using any technique is more than merely halting misbehavior. The ultimate goal is to help each student become all that he/she can be. Behaviors that are best are not necessarily those that receive the praise of others, but are the ones that bring self-respect and ones which are not ineffective (as with misbehavior) when life becomes more complex.

APPENDIX C

TEST ON THE APPROACH OF RUDOLF DREIKURS

Directions: Select the response that best completes the statement. Place the letter of the chosen answer in the space provided.

_____ 1. Dreikurs believes that
   a. people choose the directions their lives take.
   b. the school is principally responsible for shaping behavior.
   c. behavior is often without purpose.
   d. genetic factors account for most behaviors.

_____ 2. Dreikurs' approach for working with students necessitates an understanding of the students'
   a. needs.
   b. intellectual development.
   c. motives.
   d. homelives.

_____ 3. Dreikurs' view of misbehavior relies on the premise that
   a. behavior is a function of rewards and punishments.
   b. individuals will do almost anything for recognition.
   c. people can decide how they will act.
   d. misbehavior is a logical step toward the development of appropriate behavior.

_____ 4. Dreikurs considers misbehaviors to be the result of
   a. environmental forces.
   b. behavior directed toward inappropriate goals.
   c. an unstable homelife.
   d. ineffective school leadership.

_____ 5. From Dreikurs' perspective, the attention-seeking child believes that
   a. you have to be noticed to be worthwhile.
   b. you can "get even" with a teacher by demanding attention.
   c. you can avoid school work by causing a commotion.
   d. you can "cover up" your true feelings by demanding attention.

_____ 6. The power-seeking student feels you are important when
   a. you can get even for perceived injustices.
   b. you are the object of adult approval.
   c. you are the center of things.
   d. you are in charge of people and situations.

_____ 7. A major difference between attention-seeking and power-seeking forms of misbehavior is that
   a. the power-seeking student generally will stop when asked to do so, whereas the attention-seeker will not.
   b. attention-seekers pursue their goals of misbehavior through active and passive means, whereas power-seekers use only active means.
   c. the attention-seeking student generally will stop misbehavior when asked to do so, whereas the power-seeking student will not.
   d. attention-seeking is a more advanced form of misbehavior.

_____ 8. Dreikurs' approach would suggest that bedwetting, stubbornness, and dawdling are passive attempts at
   a. assumed disability.
   b. attention.
   c. revenge.
   d. power.

_____ 9. Dreikurs' approach would suggest that stealing is an active attempt at
   a. attention.
   b. power.
   c. revenge.
   d. assumed disability.

_____ 10. Dreikurs' approach would suggest that negativism is a form of
   a. attention-seeking.
   b. power-weeking.
   c. assumed disability.
   d. revenge.

_____ 11. Dreikurs' approach would suggest that dependency and certain reading difficulties might be a form of
   a. power-seeking.
   b. attention-seeking.
   c. revenge.
   d. corrective feedback.

_____ 12. Dreikurs' approach would suggest that lying and temper tantrums are active attempts at
   a. attention.
   b. power.
   c. revenge.
   d. assumed disability.

_____ 13. Refraining from giving unnecessary service would be an appropriate response for
a. active attention-seeking.
b. passive attention-seeking.
c. active revenge-seeking.
d. none of the above.

_____ 14. The most serious goal of misbehavior is probably
a. attention-seeking.
b. assumed disability.
c. power.
d. revenge.

_____ 15. From Dreikurs' perspective, an appropriate response for power-seeking is
a. praise for compliant behavior.
b. punishment for power-seeking behavior.
c. letting the child know how much he/she is hurting others.
d. the development of a trusting relationship with the child.

_____ 16. If a misbehaving child cannot identify his/her goal for misbehavior, then
a. no progress will occur until the goal is identified.
b. the teacher should suggest what the reason for the misbehavior might be.
c. the teacher should try for a recognition reflex.
d. logical or natural consequences should be used to help the child.

_____ 17. The objective of corrective feedback is to
a. find the underlying cause of the behavior.
b. establish a more positive relationship.
c. identify a goal of misbehavior and establish alternative behaviors.
d. confront the student.

_____ 18. According to Dreikurs, encouragement should be
a. reserved for significant student achievements.
b. aimed at letting students know they can do better if they try.
c. offered for improvements in behavior.
d. offered for simply attempting a desired behavior.

_____ 19. According to Dreikurs, a teacher may occasionally help a misbehaving student by
a. ignoring inappropriate behavior.
b. praising alternatives to misbehavior.
c. using tangible reinforcers.
d. praising the achievement of peers.

_____ 20. An example of a logical consequence would be
a. allowing a student to do without crayons when he/she can't find his/hers.
b. refusing to replace a stolen bike that was left outside overnight.
c. temporarily confiscating toys that are left outside in violation of an agreed upon rule.
d. having to walk to school after dawdling and missing the bus.

_____ 21. Natural consequences
a. represent reality.
b. are contrived.
c. are a subtle form of punishment.
d. and logical consequences are essentially one and the same.

_____ 22. The recognition reflex is most closely associated with
a. corrective feedback.
b. goals of misbehavior.
c. logical consequences.
d. natural consequences.

_____ 23. A recognition reflex may be
a. a scowl.
b. a twinkle in the eye.
c. a temper tantrum.
d. a look of fright.

_____ 24. An example of a natural consequence would be
a. doing 10 extra problems for being careless on a previous math assignment.
b. delaying free time until an assignment is finished.
c. using allowance to replace a broken toy.
d. having a ball glove ruined by a dog when left outside overnight.

APPENDIX D

STUDY STRATEGIES REPORTING SCALE

Every student's study behavior is characterized by strategies that are aimed at giving a better understanding of reading assignments. To indicate the strategies that you use in your studies, use the following scales:

Never: Under no conditions do you engage in the behavior.

Almost Never: You use the strategy only now and then, but not as a regular part of your studies.

Almost Always: You use the strategy most of the time, but not with every assignment.

Always: You use the strategy with every assignment.

Circle the number in the column that best describes your level of use of a given strategy.

Strategy	Never	Almost Never	Almost Always	Always
When Studying I:				
1. Skim entire assignments before reading them.	0	1	2	3
2. Consider possible purposes for my assignments.	0	1	2	3
3. Search for the gist of assignments.	0	1	2	3
4. Anticipate possible test questions.	0	1	2	3
5. Ask others about things I don't understand.	0	1	2	3
6. Paraphrase portions of what I have read in my own words.	0	1	2	3

Strategy	Never	Almost Never	Almost Always	Always
7. Ask myself questions to check my understanding.	0	1	2	3
8. Speculate about ways to use new information.	0	1	2	3
9. Relate assignments to personal experiences.	0	1	2	3
10. Spend more time on difficult assignments.	0	1	2	3
11. Increase my reading speed upon encountering easy material.	0	1	2	3
12. Reread important sections.	0	1	2	3
13. Reread what I don't understand.	0	1	2	3
14. Summarize what I have read.	0	1	2	3
15. Make notes of what I have read.	0	1	2	3
16. Use a dictionary.	0	1	2	3

APPENDIX E

ORAL INSTRUCTIONS

In the packet you have just received are seven items, numbered one through seven. I want to spend a few minutes going over those items with you before you open and begin working through the packet.

First, you will find two copies of an Informed Consent Form in your packet. Both copies have the number one in the top right hand corner. The Informed Consent Form is an acknowledgment that you are a willing participant in a research project. The Informed Consent Forms are the only items requiring your signature. After reading the form carefully, if you decide to participate, you are to remove both copies from the packet. You will sign one copy and retain it for your records. You will sign the other copy and give it to the proctor at the end of the period or whenever you have completed the packet. The completed packet will be left on the desk at the front of the classroom. Your name will not be connected with results and will not be used in any reporting of the results of this study.

Item number two in your packet is entitled either Strategies for Better Understanding or Behavioral and Cognitive Research Directions. The Strategies for Better Understanding consists of suggestions for improving your comprehension and test performance. The Behavioral and Cognitive Research Directions give you additional insight into the type of research in which you are participating and should also aid your comprehension. Whichever item is in your packet should be read carefully.

The third item is entitled the Approach of Rudolf Dreikurs. It consists of four pages of expository material on which you will be tested. You may underline and make whatever notations you choose on the handout. Please be certain that you thoroughly understand the material and are prepared for the exam before you move to the next item.

The fourth item is the exam itself. The exam will consist of 24 mutliple-choice items about the Approach of Rudolf Dreikurs. If you are interested in learning your test results, please record the code that is on the tab of your packet. That code is for reporting test results. The results will be posted in this classroom within the next two weeks. Your instructor will also be advised of the general findings of the study that can be shared with you.

The fifth item requires that you list and briefly describe the study strategies you used in preparing for the exam as well as the strategies that you regularly use in your studies.

Item number six is labeled Study Strategies Reporting Scale and involves self-reporting of study behaviors on a scaled basis.

Finally, item seven asks for the reporting of your cumulative grade point average, your sex, and class level.

Please proceed through the items as they are numbered. Do not refer back to any item once you have completed it and moved forward.

If you prefer not to participate, please feel free to leave now. Also, if at any point in your work, you desire to discontinue, you may leave your folder on the desk or you may remain in the class until the end of the period. No incomplete packets will be scored.

Are there any questions?

You may open your packets and begin.

APPENDIX F

CATEGORIES FOR CLASSIFYING REPORTED STUDY STRATEGIES

Anticipating the Test

Strategies to be included in this category are those that suggest the student is trying to anticipate what might be on the exam. Examples would be comments such as "I pose questions for myself about the material," and "I try to guess what might be on the exam."

Paraphrasing

Paraphrasing involves efforts to derive an understanding of material in one's own words rather than in the words of the author. Reported student efforts to paraphrase would be statements such as "I made certain I could restate definitions in my own words," and "I tried to put information in my own words." NOTE: Any reference to writing out ideas in own words should be classified as notetaking.

Relating to Personal Experience

Included in this category are those strategies that indicate efforts to be personally involved with the material. Examples would be: comparing what is written to personal experiences; putting oneself into the examples; relating information to one's childhood, adulthood.

Integrating/Grouping

Integrating or grouping involves the uniting of ideas into a whole or in some way trying to link ideas together in order to achieve better understanding. Examples would be statements that refer to fitting ideas together, comparing different sections with one another, and seeing how ideas are logically related.

Summarizing

Summarizing involves student efforts to reduce ideas in a given section (e.g., under a single heading) or sections into a more concise statement. References to making a summary of ideas in a passage or putting ideas in more concise form would be examples. NOTE: Saying that ideas are put in one's own words would be classified as paraphrasing, whereas indicating that sections were rephrased or shortened would be summarizing.

Taking Notes

Any reference to writing out ideas would be included in note-taking. Jotting down, listing, outlining, and writing would be examples.

Visualizing

Any statements regarding the use of visual images are a part of this category. An example would be trying to form mental images from examples in the handout.

Skimming

Skimming involves quickly previewing material before reading it in more detail. Comments about examining headings, topic sentences, length of the assigned reading, summaries, looking for the gist of the material, attending to italicized words and the like before reading would be examples.

Adjusting Speed

Adjusting speed has reference to changing reading speeds in accordance with the difficult or ease of the material. Statements about reading carefully, slowing down to understand, trying to comprehend by careful reading and similar statements are part of the adjusting speed category.

Rereading

Rereading includes any selective rereading of material. Examples are rereading main ideas, underlined or highlighted material, notes, and the like.

Underlining

Highlighting important points, placing stars or asterisks by important ideas, underlining of words are included in the underlining category.

Memorizing

Any reported effort to commit material to memory are part of this category. Examples are the use of neumonics, mentally repeating ideas, and going "over and over" the material.

Questionable

Any comment that cannot be understood because it is illegible or unclearly stated is to be placed in this category.

APPENDIX G

SELECTED STRATEGIES REPORTED BY STUDENTS

Student Description	Category
Reread some important statements that were not clear to me the first time	Rereading
Tried to relate the material with real life situations	Relating to Personal Experience
Went through looking for key words, definitions, lists	Skimming
Asked questions to myself	Anticipating the Test
Tried to emphasize in my mind the key points	Memorizing
Read summaries, conclusions more carefully than the regular descriptive material	Adjusting Speed
Made an outline of different sections	Taking Notes
Underlined what I thought might be on the test	Underlining and Anticipating the Test
Skimmed back over the major sentences and phrases so they would be "fresh" in my head	Rereading
Kept referring back to the paper to check what I thought and remembered in comparison with the facts	Memorizing
Listed the goals and outlined the introduction	Taking Notes
Circled important words	Underlining
Put it in my own words	Paraphrasing

Student Description	Category
I tried to tie things together	Integrating/Grouping
Broke up large sections into smaller ones and then tried to relate them to each other	Integrating/Grouping
Made mental images of the examples given in the handout	Visualizing
Thought about applications for the things I read	Relating to Personal Experience
Compared various facts with each other as I read	Integrating/Grouping
Outlined ideas in my mind	Summarizing
Summarized all the main points by going over the major headings	Summarizing
Looked for topic sentences	Skimming

VITA

Elizabeth Whitener Long was born in Marion, North Carolina, on September 3, 1943. She was graduated from Pleasant Gardens High School in 1961. The following September she entered Western Carolina University, and in June, 1964, received a Bachelor of Science degree in Elementary Education. In June, 1968, she received a Master of Arts degree in Reading from Appalachian State University and a Specialist in Education degree from that same University in June, 1974.

She has worked as an elementary teacher in the public schools of North Carolina and Tennessee for twenty years. She entered the doctoral program at The University of Tennessee in September, 1982. During the 1982-83 school year, she was a teaching assistant in the Department of Educational and Counseling Psychology. After returning to the public schools in 1983, she was also a part-time instructor for Caldwell Community College in Lenoir, North Carolina and at Lenoir-Rhyne College in Hickory, North Carolina. She received the Doctor of Education degree in Educational Psychology in December, 1985.

She is a joint author of the third edition of Making It Till Friday: A Guide to Successful Classroom Management published by Princeton Book Company, Publishers. She is married to James Douglas Long. They have one son, Blakeley.