Humorous instruction about the dangling introductory modifier in active, passive, and possessive sentences

Patricia Briscoe Pearson

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HUMOROUS INSTRUCTION ABOUT THE DANGLING INTRODUCTORY MODIFIER IN ACTIVE, PASSIVE, AND POSSESSIVE SENTENCES

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Humorous instruction about the dangling introductory modifier in active, passive, and possessive sentences

by

Patricia Briscoe Pearson

A Dissertation Submitted to the Graduate Faculty in Partial Fulfillment of the Requirements for the Degree of DOCTOR OF PHILOSOPHY

Department: Professional Studies in Education Major: Education (Adult and Extension Education)

Approved:

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INTRODUCTION

In the American university today, among the complex problems of teaching is holding the interest and attention of students so that they may be encouraged to learn. To keep interest or break monotony or tension, humor is sometimes used; instructors use jokes, puns or cartoons to hold their audiences. Humor in the form of gentle wit or joking is widely used by Americans from politicians to toastmasters, in the belief that it is a tension breaker or capturer of wandering attention. Little study has been made of the effectiveness of humor in presenting the content of college courses.

Composition teachers must hold students' attention and encourage them to improve style, content, and grammar. Grammar instruction may be ineffective if it bores students. Some composition experts believe that students may be interested by being shown how errors function in a sentence and how to correct them. Error analysts stress the value of helping students understand strategies for solving composition problems. For holding interest and making the point memorable, another approach is exemplified in composition and grammar texts. Their authors have long used humorous examples to illustrate error, apparently assuming that humor makes the point about the grammar principle effectively. It seems logical that that assumption should be tested.

Little investigation has been made of humor as it relates to learning. Recently, researchers have held that humor can socialize, encourage curiosity, point out ambiguity in language use, and make students believe that they have learned. They have even suggested that humor can actually
assist students to learn and remember.

This investigation tested the premise that a teaching method that incorporates humor to illustrate a grammar principle can be more effective than a teaching method using serious illustrations and more effective than no instruction at all. Briefly stated, the rationale for the study is based on the assumption that humor may aid the student to develop sensitivity to ambiguity and error and to discover solutions to language problems.

Need

Research into the usefulness of humor is recent. Theorists have said, and some research has shown, that humor teaches socialization and acculturation (Fine; Foot & Chapman; La Fave; Mindess; Ullian; all 1976), and encourages curiosity, investigation, and coping (Goldstein; Shultz; Winick; all 1976). University instructors who use humor are rated highly by students (Coffman, 1954; Meier & Feldhusen, 1979; Naftulin, Ware & Donnelly, 1973), yet whether the students learn from such instruction is unclear (Gruner, 1965, 1967a, 1967b, 1970; Lull, 1940; Smith, Ascough, Ettinger & Nelson, 1971; Zillmann and Cantor, 1973; and Zillmann, Williams, Bryant, Boynton, & Wolf, 1980).

It is also unclear whether students learn from grammar instruction, a topic of much debate. Traditional grammar, the memorizing of rules about parts of speech and appropriate usage, has been taught for decades, though data to justify its teaching were difficult to acquire. From Braddock, et al. (1963), to O'Hare (1973) and Elley, et al. (1976), and
beyond, writers have found conflicting evidence about the effectiveness of teaching traditional grammar; in most studies the researchers indicated that traditional grammar instruction is ineffective. Transformational grammarians (Bateman and Zidonis, 1966; Hunt, 1977), studying the way complex sentences are formed from simpler sentences, and sentence combining experts (Mellon, 1969; O'Hare, 1971), helping students join simple sentences to form more sophisticated ones, rely on practice and the student's intuitive knowledge of sentence structure to produce correct sentences. Some writers conclude that such instruction is a help (Brause, 1977) whereas others insist that the study of grammar is useless or a detriment.

As indicated above, grammar instruction is often based on composition textbooks (Crews, 1974; Guth, 1975; Hall, 1976; Hairston, 1974; Malmstrom, 1977; Roberts, 1962; Strunk and White, 1979; and Tichy, 1966) in which grammar errors are illustrated by amusing or absurd examples. While grammar and composition researchers may disagree on the value of teaching grammar, the authors of grammar textbooks seem to agree that there is some benefit in providing ludicrous examples to illustrate deviations from grammar principles. Frequently the author makes no comment on the amusing example, relying on the reader's knowledge of reality and of the logic of the language to understand the humor of the error, and relying on the example to aid the student to edit other similar sentences. Whether the humorous example actually helps the student to learn the principle or merely provides the student with momentary entertainment has not been established.
In fact, if the use of humor in grammar instruction is effective at all, its effects may be observed with only certain types of students or certain language problems. Shultz (1976) and others believe that a sense of humor is related to the learner's intelligence and sensitivity to the language. Because the humor of grammar errors is dry, intellectual, and esoteric rather than broad, physical or slapstick, it seems logical that it should be more effective for those with high intelligence, high verbal abilities, or high scholastic achievement. It might be argued that the student who has had greater exposure to English in reading and writing courses and the student who has earned high grades in English classes should learn more readily from verbal humor than the student with less experience or lower grades. Consequently, if sensitivity to language is developed in English classes, research should show a relationship between ability to learn from humor and exposure to and success in English classes.

Whereas the effectiveness of humorous treatment may be dependent upon the intelligence of the student, the difficulty of a flawed sentence may depend on the type of structural ambiguity of the grammar error. Examination of the types of dangling introductory modifiers discussed in textbooks and found in student papers suggests that the dangling introductory modifier may vary in the structure of the main clause and in the introductory modifier. That is to say, the main clause of the sentence may be in any variation of the active or passive voice. The introductory modifier may be a word, phrase, or clause, and the verbal of the clause may be a present or past participle, gerund, absolute or the like. Even in
this narrow area of grammar, many variations are possible, and the setting of the error may determine the effectiveness of the instruction and the effectiveness of the student performance.

Statement of the Problem

The purpose of the study was, first, to ascertain whether humorous examples help students learn to identify and edit dangling modifiers more effectively; second, to identify the backgrounds of those students who received the most benefit; and, third, to determine the types of sentences which cause students the most difficulty. In the study, a grammar principle was presented in the same way to instructed groups of students, either serious or humorous examples were used to illustrate it, three types of dangling introductory sentences were used, and the learning of students was examined. Some students were asked to recognize sentences which violated the grammar principle, and some were asked to rewrite sentences correctly. In each case, the purpose was to determine the value of humor under those conditions. Control groups were employed to detect the amount of learning due to taking the test. Students completed a pretest prior to instruction, a posttest after the instruction, and the same posttest—repeated as a followup test—nearly three months later. The responses of the students were examined for relationships among type of instruction, the three types of sentences included, the backgrounds of the students, and the ability of the students to effectively identify or rewrite the sentences.

Thus, there were four independent variables in the study: type of
treatment; i.e., instruction with humorous examples, instruction with serious examples, and no instruction at all; type of sentence; i.e., sentences with active main clauses, sentences with passive main clauses or sentences with a possibly-distracting possessive modifying the subject of the main clause; background in English, as measured by units of Iowa State English, and previous English achievement, as measured by Iowa State University grade point average in English. There were two dependent variables in the study: editing ability, as measured by ability to rewrite incorrect sentences; and recognizing ability, as measured by ability to identify correct and incorrect sentences. The main effects of type of instruction, type of sentence, background in English and previous English achievement were examined. Interactions among the independent variables were also examined, with the interaction between type of instruction and type of sentence being of particular interest.

These variables were examined in two separate experiments; in each experiment there were three groups. One received instruction with serious examples, one received instruction with humorous examples and one received no instruction at all. In the editing experiment, the groups were asked to rewrite and correct thirty incorrect sentences; in the recognition experiment, the groups were asked to recognize as correct or incorrect those same thirty sentences and an additional set of thirty correct sentences. Thus, in one experiment, students were asked to indicate their opinion of a sentences' correctness or incorrectness. The purpose of this was to measure their ability to select sentences that are grammatically correct. In the other experiment, students were asked to correctly
rewrite sentences. In this way, the ability of students to make stylistic changes in a sentence without correcting the major flaw could be distinguished from the ability of students to correct the error. As indicated above the statement of the grammar principle was the same in both experiments.

Experimental Hypotheses

Following are hypotheses for both experiments. The hypotheses were expected to hold true for pretest, posttest and followup test. Listed below is one set of hypotheses with the change in dependent variable indicated in parenthesis.

1. Students will recognize (rewrite correctly) dangling introductory modifiers more effectively when taught the principle of the introductory modifier with humorous examples than when taught with serious examples or not taught.

2. Students will recognize (rewrite correctly) dangling introductory modifiers more readily when the main clause of the sentence is in the active voice than when in the passive voice or when a possibly-distracting possessive modifies the subject of the main clause.

3. Students will recognize (rewrite correctly) dangling introductory modifiers more readily when they have a greater background in English than when they have a lesser background in English.
4. Students will recognize (rewrite correctly) dangling introductory modifiers more readily when they have high previous achievement in English than when they have low previous English achievement.

5. There will be an interaction between type of instruction and type of sentence. That is, students who have received humorous instruction will recognize (rewrite correctly) sentences with dangling introductory modifiers more effectively when the main clause is in the active voice than when it is in the passive voice or when it contains a possessive. Students taught with serious examples will recognize (rewrite correctly) those sentence types less well than students taught with humorous examples. Students who are not taught will be least effective at recognizing (rewriting correctly) dangling introductory modifiers, and will have greatest difficulty when the sentence contains a possessive in the main clause. Thus, students taught with humorous examples are expected to be the most effective with active sentences whereas students not taught are expected to be the least effective of all when they are responding to sentences with a possessive in the main clause.

6. There will be an interaction between type of treatment, type of sentence, and student background characteristics. That is, students will recognize (rewrite correctly) dangling introductory modifiers best when they have high background
in English, work with active sentences, and are taught with humorous examples. Students will score least well when they have low backgrounds in English, work with possessive sentences, and have had no instruction.

Limitations

The results of this study should be interpreted in terms of certain limitations, i.e., the length of the treatment, the type of humor used for instruction, and the amount of control that was possible over time of day in which instruction and tests were given, and timing of the followup test.

First, the instruction was brief, taking about ten minutes. The grammar principle was read from a transparency projected from an overhead projector; it was then discussed in relationship to six examples and a possible correction for each. Although questions from students were answered, instruction was not as extensive as it might be in a typical classroom. Second, the humor of the six humorous examples was mild, verbal and intellectual. As a result, it may not have been funny to some students. Third, it was not possible to interact with all experimental groups at the same time of day or day of the week. In addition, it was not possible to administer the followup test during the same week of the quarter to all groups.
Assumptions

In the study, it was assumed that grammar in general and awareness of the dangling introductory modifier in particular might be taught in a better way than by rote memorization, that humorous dangling introductory modifiers would be both illuminating and memorable to students, and that the brief treatment would be effective. It was assumed that some college students, although adults or nearly so, would still have some difficulty with sentences with dangling introductory modifiers. The dangling modifier may be considered an error of developing maturity, with children not using introductory modifiers and adults using it successfully, but with maturing students practicing the structure with variable success.

It was further assumed that ungrammatical sentences containing abstract words and concepts were more difficult to recognize or edit. An attempt was made to select test sentences that were fairly concrete.

Finally, for the purposes of this study, it was not deemed possible to determine both the recognition and the editing ability of the same individual, even though it was assumed that not all students who could effectively recognize or edit flawed sentences written by another would be able to successfully recognize and correct their own.
The proposed study examined the effect of humor on ability to recognize and edit sentences with dangling introductory modifiers. Types of introductory modifier sentences and the individual differences of the students were examined for their contribution to possible differences in learning effectiveness. A study to accomplish this was justified by examining a number of areas of research. These areas included humor as a teaching tool in and out of the classroom, the historical use of humor in the teaching of grammar, the effectiveness of grammar and composition instruction in general, and the development of the ability to detect structural ambiguity and correct grammatical errors. In this chapter, the relevant literature will be summarized in each of these areas in turn, in order to consider their importance to the study.

Humor as a Teaching Tool

While popular opinion has long held that humor is able to make points clearly and directly, teachers seldom incorporate it formally into their teaching methods, but use humor only as an occasional tension breaker. Research to evaluate the popular belief in the instructional value of humor is sparse, and the method of making the instruction interesting or humorous is rarely defined. Theorists have argued that teasing brings the teased back into line, that a joke may make a tense situation easier to cope with, and that an amusing ambiguity may point out new information about reality.

Obscene joking serves to socialize, maintain group norms, and
control group members (Fine, 1976), and ethnic humor furnishes information about behavior that conforms or fails to conform to the norms of the majority culture (La Fave & Mannell, 1976). Workers joke to pretend that their remarks are unimportant, so that they can criticize a fellow worker without fear of attack and bring behavior into line, according to Ullian (1976), who adds that joking helps workers deal with new situations and keeps the social organization stable. Whether humor can be used in the classroom to maintain norms of writing, bring students into line, or help them to deal with new composition situations has yet to be established.

**Instructor ratings**

One element of the teaching value of humor that has been investigated is the student rating. University instructors who are humorous and interesting usually receive a good rating from their students (Coffman, 1954; Meier & Feldhusen, 1979; Natfulin, Ware & Donnelly, 1973). Ware and Williams (1975) found that both student ratings of instructors and achievement increased when the instruction was interesting, and Williams and Ware (1976) added that students liked a highly interesting lecture with or without much information but learned from an informative lecture whether or not it was interesting. No definition of "interesting" is given in these studies.

Instructors may use humor that is or is not relevant to the course content; type of humor also varies. Bryant, Comisky and Zillmann (1979) found that female instructors used more humor related to course content while males used more humor of self-disparagement. Stocking and Zillmann
(1976) and Zillmann (1977) warn that self-disparagement may cause students to view the teacher as lacking in self-confidence. A speaker perceived as a clown lost influence, according to Gruner (1965), and thus lost ability to teach effectively.

**Student achievement**

Whereas students like, and believe that they learn most from, interesting or humorous instruction, it is unclear whether or not they do learn more. Instructor rating research measured student attitudes toward teachers and student belief that they had learned from instruction; later researchers, attempting to assess achievement, have found mixed evidence.

To evaluate students' perception of the value of instruction, researchers have measured students' attitude toward and sometimes their perceptions of learning from, interesting but worthless instruction. Natfulin, et. al., (1973) hired an actor they called Dr. Fox to present an authoritative and humorous lecture on irrelevant, conflicting, and meaningless content. Professional educators enjoyed the lecture and felt that they had learned from it. Ware and Williams (1975) showed 212 college students six 20-minute videotapes of Dr. Fox lecturing. The six speeches differed in terms of both degree of interest (manipulated by adding or omitting enthusiasm and jokes), and depth of content (accomplished by covering 26, 14, or 4 content points). The humor was apparently unrelated to content. Students learned most from the high content lectures; interest did not affect test performance in this or
a later experiment (Williams & Ware, 1976).

To measure the relationship of pace of humor to learning, Zillmann, Williams, Bryant, Boynton, and Wolf (1980) studied 70 kindergarten and first grade students. They found that both slow- and fast-paced humor increased learning over a no-humor control, even though humor was unrelated to the message. This finding, in contrast to the ones above, suggests that humor may be more effective for children than for adults.

Humor can act as a distractor from the message rather than as an aid to learning, according to some theorists. Zillmann, et al., found that humor promoted interest rather than distracting from the message. In a study of 215 college students, however, students with high test anxiety were found to improve when humorous test items were included in a test, but students with moderate anxiety were believed to be distracted (Smith, Ascough, Ettinger, & Nelson, 1971).

The value of satire as a persuasive element in newspaper columns or speeches has been investigated. Gruner (1965) concluded that students might miss the point of satire, but when the satire's purpose was made explicit by the instructor, student attitudes were changed toward agreement with the satirist (1966, 1967b). Testing for information retention, Gruner (1967a) presented four groups of 32 college students with either a serious speech or the same speech made humorous by adding stock jokes appropriate to the topic. No difference in information retention was found. In 1970, Gruner tested 144 students with dull and interesting speeches, with and without stock humor added. The information retention was greatest for interesting speeches; humor in itself made little
difference because, Gruner observed, the humor affected the students’ views of the authority of the speaker and of the interest of the speech.

Little study apparently has been made of humor that is directly related to the concepts the instructor is teaching. In one serious lecture and three versions of humorous lectures delivered to 477 college students, Kaplan and Pascoe (1977) used humor that was related to the six main concepts presented in the lecture, humor unrelated to the lecture content, and a combination of content and non content humor. Students taught by the four lectures achieved similarly on the immediate posttest. Students taught with humorous examples did least well on test items based on serious concept presentation. However, on a follow-up test six weeks later there was significantly greater retention of concepts illustrated by humor.

Thus, humorous examples of content may be more effective than serious examples, especially for long-term retention.

Other humor research

Researchers have concluded that humor encourages investigation, curiosity, and coping. Goldstein (1976) states that humor affects attitudes, diminishes one’s inadequacies by making the weaknesses seem laughable, and helps the amused person rise above the situation, see it more objectively, and cope with it. Winick (1976) says that humor expresses ideas simply and compellingly, deals with one dimension of a situation, and brings a problem down to a manageable size. In counseling, according to Mindess (1976), humor can expose hidden information and help the amused person admit to stupidity or error.
From these informal situations, it seems logical to move to formal situations and test whether humor as an integral part of instruction might clarify what is socially acceptable language, might reinforce the in-group feelings of those who recognize funny errors, and enforce the norms of "college standard" writing. Humor may help diminish an amateur writer's feelings of inadequacies, help the student to objectify error, and help the writer to release tension and be better able to cope with error.

**Structural ambiguity**

Humor in structural ambiguity has also been studied. The structure of some sentences allows more than one interpretation. These structural ambiguities, in order of increasing complexity, are lexical, phonological, surface structural, and deep structural ambiguity. Humor based on lexical or semantic ambiguity depends on multiple meanings of words: Groucho Marx says, "'I ought to join a club, and beat you over the head with it!'" (Shultz, 1976, p. 13). Phonological ambiguity is an ambiguous sound sequence: "The dog chased the cat and he bitter end," a listener might hear either as "bit her end" or "bitter end." In "Can you tell me how long cows should be milked?" "The same as short ones," the joke depends on the potential grouping of phrases as either (how long) (cows) or (how) (long cows), an example of surface structural ambiguity. An illustration of deep structural ambiguity is "Did you know that the natives like potatoes even more than missionaries?" "Yes, but the missionaries are more nutritious" where the opening sentence might mean either "missionaries and natives like to eat potatoes" or "natives prefer eating
potatoes to eating missionaries" (Shultz, pp. 13-14).

Shultz states that students begin to recognize lexical ambiguity by age 10 and to recognize syntactic ambiguity by age 12. Of the syntactic ambiguities, the deep structural ambiguity is hardest to recognize.

Surface and deep structural ambiguities were also found to be the most difficult by Brodzinsky (1977), who investigated student characteristics that may affect learning from humor or be related to sense of humor. Asking 50 fourth grade students to rate the humor of jokes dependent on ambiguities, Brodzinsky classified the students into conceptual tempo groups by the Matching Familiar Figures test. He found that reflective and fast-accurate students comprehended best while impulsive and slow-inaccurate students were most amused. Kessel (1970) found that by age 12, students worked approximately as well with surface as with deep structural ambiguities. Shultz and Pilon (1973) found that ability to detect surface and deep structural ambiguities began at about age 21 and by age 15 students could only detect about half of the syntactic ambiguities they were shown.

Ambiguity can cause difficulty for students even at the college level. When asked to complete incomplete sentences, 40 university students took more time to complete ambiguous than unambiguous sentences, even when they were unaware of the ambiguity (MacKay, 1966); structural ambiguities took longer to complete than lexical. Told that they were to find different meanings of ambiguous sentences, 20 undergraduates (MacKay & Bever, 1967) looked longest to discover underlying structural ambiguities.
How syntactic maturity develops or how it can best be measured is not yet clearly established. Brause (1977) found a wide range of abilities in the educational levels tested. Working with 90 students, ten each at levels from second graders to college graduates, Brause asked for acceptable explanations for sentences with varied linguistic structures and found that surface structural ambiguity was understood before deep structural ambiguity. She also found that not all adults had equal ability to identify all meanings of ambiguous sentences, and that the range of ability was not determined by age or educational background. It seems clear that the ability to recognize structural ambiguity is still developing in late childhood and early adulthood.

While others have tested student recognition of ambiguity in the writing of others, Gebhard (1978) evaluated the writer's ability to control structure in essays. Selecting random sentences from papers written by 500 university freshmen and comparing those sentences to sentences by professional writers, Gebhard found that the professionals had mastered sentence structure while the freshmen had not. Professional writers and good freshman writers did not use loose modifiers, and poor freshman writers made errors in 10% of their sentences, half of which were errors of loose modification. Gebhard does not distinguish between types of modification errors, but many of those no doubt are dangling introductory modifiers. Gebhard believed that the professional writer has learned to use loose modifiers successfully, the good freshman writer has developed an ear for disharmonies and avoids loose modifiers which might cause trouble, and the poor freshman writer uses and misuses them.
Perhaps the good freshman writer is beginning to develop sensitivity to structural ambiguities and avoids potential errors by avoiding unmastered sentence types, in contrast to the poor writer who has not yet begun to recognize the potential for ambiguity and error. Writing skill cannot be taken out of context; syntactic maturity is related to context, situation, and culture. Students in sentence combining experiments, theorized Faigley (1980), apparently learned principles such as emphasis and style more effectively than did students taught conventionally. Perhaps the poor freshman writer can be sensitized to the potential for error if shown examples of amusing ambiguities. Instruction about the humorous ambiguities of the dangling introductory modifier might speed the recognition of this problem of deep structural ambiguity.

The dangling introductory modifier is a common error of deep structural ambiguity, and is often amusing. The writer who wants to combine "A touchdown was made by the team" with "The football player was running down the field," and who writes "Running down the field, a touchdown was scored by the team" has created a dangling introductory modifier that is a sample of deep structural ambiguity. The sentence structure tells the reader not only that a touchdown was scored, which readers can accept but also that a touchdown was running down the field, which readers know is logically impossible.

One of the deviations from the norm of college standard writing produced by college students is the dangling introductory modifier. Combining simple ideas into complex sentences, the writer may allow the structure to shift and create an amusing ambiguity. When deep structure
is at odds with the surface structure, the result is ambiguity and error. Perhaps instruction about the dangling introductory modifier which uses humorous examples of deep structural ambiguity might develop the student's sensitivity to deep structure and encourage recognition of deep structural ambiguity, at least in sentences written by others.

Language Development and Recognition of Error

Barritt and Kroll (1978) call for a look at the development of error as a key to what instruction is appropriate at each stage of a student's development. Mellon (1975) asserted that over time, total errors in children's writing decreased, but more complex errors occurred because students experimented with more complex structures. As they grow older, Hunt (1977) concurred, students grow more able to consolidate successively larger numbers of simple sentences into a complex sentence. Compared to professional writers, Gebhard (1978) stated, immature writers use less complex and developing writers use more complex sentence structures, with the developing writers showing difficulty controlling sentence structure. Since one of the faulty sentence combinations yields the dangling introductory modifier, it seems reasonable to ask whether developing writers can recognize or correct errors of that type in the writing of another.

Historical Use of Humor in Teaching Grammar

Students have traditionally been induced to recognize error by examples in grammar sections of composition texts. The authors of texts have long used humorous error examples to illustrate deviations from
acceptable expression. Contemporary composition text authors (Crews, 
1974; Guth, 1975; Malmstrom, 1977), as well as standard authors (Roberts, 
1962; Strunk & White, 1979; Tichy, 1966), all seem to agree that the 
amusing example, combined with the reader's knowledge of reality and the 
logic of the language, will make clear why the error is an error and 
will help students recognize similar errors. Research is needed to 
test this assumption.

Effectiveness of Grammar Instruction

Composition research has in general been inconclusive. Improve­
ment in student writing has been difficult to attribute to specific 
instruction. Grammar has long been taught with the purpose of assuring 
that students know correct language. Composition teachers tried to help 
students recognize correct sentences and improve their ability to correct 
errors. Since the early part of the century, questions have been asked 
about the effectiveness of grammar instruction. Researchers attempted 
to determine the most effective method of teaching good writing. Con­
trolling instructor bias, determining exactly what was taught and how, 
defining and evaluating "good writing," and determining what improvement 
in writing was a result of maturation rather than instruction proved im­
mensely difficult; even today, these much-probed issues are largely 
unresolved.

Researchers have reached varied conclusions from studies. Bateman 
and Zidonis (1966) and later Mellon (1969) studied groups of students 
who received a year's instruction. They concluded that transformational
grammar improved students' writing. Harris (cited in Braddock, et al., 1963) studied the writing of ten classes of high school students over a two-year period. Five of the classes studied traditional grammar; five received no formal grammar instruction. The un instructed group was judged to have made more improvement. Elley, et al., (1976) studied eight matched classes for three years as students were taught either traditional grammar, rhetoric and literature, or transformational grammar. From sample essays given before and after the three years and a variety of essays and tests given during the study, Elley concluded that neither traditional nor transformational grammar had any influence on language growth.

Many have argued that students' writing is improved by instruction in sentence combining (Bamberg, 1978; Combs, 1976; Daiker, Kerek & Morenberg, 1978; Hunt, 1970, 1977; Mellon, 1969; O'Hare, 1973; and others). However, Kinneavey (1979) has questioned the care with which variables were controlled in many sentence combining and other composition research projects. Since the writers give sketchy information about what is taught in the classes and how it is taught, and since the measurement of improvement in composition is difficult, it seems reasonable to question the cause-effect relationship often claimed for composition instruction.

Much remains to be answered about what can be done to promote student development in ability to write well and to recognize and correct error.

Since humor is considered by some to be an effective teaching tool,
and because structural ambiguity may be amusing and illuminating to students learning to recognize effective writing, it seems logical to test whether humor might be useful in helping students to recognize or to rewrite correctly the deep structural ambiguity of the dangling modifier.
MATERIALS AND METHODS

To determine the effectiveness of using humorous examples when teaching the introductory modifier, a pretest-posttest design was used in this study. Pretests were administered to determine beginning knowledge, serious or humorous treatments were implemented, and posttests and followup tests were given to determine knowledge after instruction. A control group was used for comparison with the instructed groups. In addition, two methods of assessing learning were employed. Students were tested to measure whether they learned either to recognize or to edit dangling introductory modifiers more effectively under the experimental conditions described. To measure recognition, pretests and posttests of three types of correct and incorrect sentences were used. Test sentences were varied by using an active verb, a passive verb, or a possessive in the main clause. To assess the students' background, the number of units of Iowa State English completed, and the Iowa State English grade point average were examined. To assess the students' ability to edit correctly by rewriting sentences, the same incorrect sentences were used.

Subjects

One-hundred-twenty-two Iowa State University juniors and seniors enrolled in English 302, Business Communication, were subjects for the study. The course is open to all upper-level students, but because of departmental requirements, students represent only a few major areas. The experimental groups were made up of about 40% Agriculture students, primarily Agricultural Business and Farm Operations majors; 10% Textiles
and Clothing majors from Home Economics; 20% Industrial Administration majors from Sciences and Humanities; 30% miscellaneous Sciences and Humanities majors in areas such as Psychology, Physical Education, a foreign language or Computer Science; and a small percentage of others from Home Economics and Engineering.

Materials

Two sets of materials were used. Serious and humorous instructional materials were devised, and tests to determine the students' ability to recognize or correct dangling modifiers were designed.

The instructional material for each group consisted of identical statements of the principle of the introductory modifier followed by either serious or humorous examples. Each group saw the same initial statement of the principle as well as two subsequent restatements of it.

The set of examples used was determined in the following manner. The researcher chose forty sentences representing the active, passive and possessive sentence types, half believed to be amusing, and half believed to be serious (see Appendix A). An expert judged the sentences to be sure that they contained dangling modifiers, and that they were of the three selected types. Another group of 35 English 302 students taking the course in a quarter prior to the quarter in which the experiment took place was then asked to rank the sentences on a scale of 1 to 5 from "very amusing" to "not at all amusing." Students were not asked to give reasons for their choices. After frequency counts were made, six sentences ranked most amusing and six ranked most serious were selected.

During instruction, the first example was discussed with the first
statement of the principle of the introductory modifier, the second example was discussed with a restatement of the principle, the third example was discussed with a third statement of the principle, and the remaining three examples were discussed by pointing out the performer of the action of the main clause and a possible correction (see Appendix B).

In order to test students' ability to recognize or edit dangling introductory modifiers, tests were designed which exhibited sentences with present participle introductory modifiers, and which included the subject of the introductory modifier somewhere in the main clause. The main clause of the sentences varied in one of three ways:

1. The main clause had an active verb (Rolling around in the test chamber, I found the missing ball bearings).

2. The main clause had an active verb with the "true" subject of the introductory modifier as a possessive modifying the subject of the main clause (Sitting on the back pew, Mr. Smith's eyes wandered over the congregation).

3. The main clause had a passive verb (Coming down in torrents, the road was washed away by the rain).

To test the students' ability to edit, thirty sentences, ten of each type, were presented. Students were expected to rewrite the sentences so that the subject of the introductory modifier was also the subject of the main clause.

To test the students' ability to recognize dangling modifiers, thirty correct and thirty incorrect examples of introductory modifiers were
presented. The incorrect sentences were the same incorrect sentences given the edit group. Among the correct sentences, ten of each of the three types were presented. All correct sentences contained present participle introductory modifiers, with the implied subject of the introductory modifier being the subject of the main clause. The main clause varied in the same three ways:

1. The main clause had an active verb (Running into the room, Sam announced his engagement to the girl next door).
2. The main clause had an active verb with a possessive modifying the subject of the main clause (Finding the door locked, Bill's sister rang for the night porter).
3. The main clause had a passive verb (Walking sedately down the steps, the politician was met by reporters).

The set of sentences used on these tests was developed in the following manner. From textbooks and the researcher's imagination, approximately 25 correct and 25 incorrect examples of each type of introductory modifier, or 150 in all, were selected. Content validity was established by having the sentences examined by an expert judge who deleted sentences that were not dangling modifiers, were too abstract, were amusing, or were not of the types selected. From the remaining pool of sentences, 10 of each type of incorrect sentence were selected for the pretest and 10 for the posttest. The same incorrect sentences were used for the edit and recognize groups (see Appendix C). For the recognition group, an additional 10 correct sentences of each type were selected for the pretest and posttest. Orders of sentence types and correct and incorrect sentences were
Table 1. Reliabilities for pretest, posttest and followup test by sentence type and treatment level for recognition experiment

<table>
<thead>
<tr>
<th>Test Occasion</th>
<th>Control</th>
<th>Serious</th>
<th>Humorous</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pretest</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>.65</td>
<td>.78</td>
<td>.72</td>
<td>.72</td>
</tr>
<tr>
<td>Passive</td>
<td>.75</td>
<td>.70</td>
<td>.81</td>
<td>.76</td>
</tr>
<tr>
<td>Possessive</td>
<td>.77</td>
<td>.62</td>
<td>.73</td>
<td>.72</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>.89</td>
<td>.87</td>
<td>.90</td>
<td>.89</td>
</tr>
<tr>
<td><strong>Posttest</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>.72</td>
<td>.68</td>
<td>.55</td>
<td>.86</td>
</tr>
<tr>
<td>Passive</td>
<td>.83</td>
<td>.79</td>
<td>.70</td>
<td>.85</td>
</tr>
<tr>
<td>Possessive</td>
<td>.79</td>
<td>.88</td>
<td>.81</td>
<td>.84</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>.93</td>
<td>.92</td>
<td>.82</td>
<td>.93</td>
</tr>
<tr>
<td><strong>Followup</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>.85</td>
<td>.71</td>
<td>.85</td>
<td>.84</td>
</tr>
<tr>
<td>Passive</td>
<td>.80</td>
<td>.78</td>
<td>.87</td>
<td>.78</td>
</tr>
<tr>
<td>Possessive</td>
<td>.75</td>
<td>.82</td>
<td>.66</td>
<td>.84</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>.91</td>
<td>.91</td>
<td>.89</td>
<td>.92</td>
</tr>
</tbody>
</table>

determined randomly on all tests.

Presented in Table 1 are pretest reliabilities for the recognition experimental groups combined, as well as for breakdowns by treatment groups and sentence types. Similar analyses are included for posttest and follow-up test. Reliabilities were calculated from the data of the experimental subjects in this study using the KR-20 measure of internal consistency.
Table 2. Test reliabilities for pretest, posttest and followup test by sentence type and treatment level for editing experiment

<table>
<thead>
<tr>
<th>Test occasion</th>
<th>Treatment</th>
<th>Control</th>
<th>Serious</th>
<th>Humorous</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>Control</td>
<td>.70</td>
<td>.34</td>
<td>.60</td>
<td>.64</td>
</tr>
<tr>
<td></td>
<td>Serious</td>
<td>.80</td>
<td>.83</td>
<td>.75</td>
<td>.69</td>
</tr>
<tr>
<td></td>
<td>Humorous</td>
<td>.61</td>
<td>.70</td>
<td>.22</td>
<td>.68</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>.89</td>
<td>.86</td>
<td>.80</td>
<td>.85</td>
</tr>
<tr>
<td>Posttest</td>
<td>Control</td>
<td>.75</td>
<td>.89</td>
<td>.66</td>
<td>.82</td>
</tr>
<tr>
<td></td>
<td>Serious</td>
<td>.76</td>
<td>.93</td>
<td>.67</td>
<td>.84</td>
</tr>
<tr>
<td></td>
<td>Humorous</td>
<td>.70</td>
<td>.94</td>
<td>.75</td>
<td>.80</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>.89</td>
<td>.96</td>
<td>.67</td>
<td>.92</td>
</tr>
<tr>
<td>Followup</td>
<td>Control</td>
<td>.80</td>
<td>.82</td>
<td>.84</td>
<td>na</td>
</tr>
<tr>
<td></td>
<td>Passive</td>
<td>.71</td>
<td>.70</td>
<td>.82</td>
<td>na</td>
</tr>
<tr>
<td></td>
<td>Humorous</td>
<td>.62</td>
<td>.45</td>
<td>.80</td>
<td>na</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>.87</td>
<td>.85</td>
<td>.92</td>
<td>.91</td>
</tr>
</tbody>
</table>

\(^a\)Not available.

Reliability data for the editing experimental group is presented in Table 2.
Procedure

The study used six sections of English 302, Business Communication; 122 students were tested in all. Three groups participated in the editing experiment (i.e., they were asked to rewrite incorrect sentences), and three participated in the recognition experiment (i.e., they were asked to simply detect correct or incorrect sentences). In each experiment one group was given a serious treatment, one was given a humorous treatment, and one was held as a control.

Use of intact groups (while retaining the individual as the unit of analysis) was felt to be appropriate for a number of reasons. First, all pretests and posttests were administered during the first full week of the quarter, before any collective experience could develop in individual classes.

Second, because of high demand and tight scheduling (nearly twice as many students preclassify for the course as can be enrolled), and because the university scheduling office reported that it considered assignment to the classes to be random, there was reason to believe that the groups did not differ systematically. Third, the assumption was tested that the groups were not significantly different from each other by background variable, i.e., number of units of Iowa State English completed (NIU), and Iowa State English grade point average (IGPA). It was found that the groups did not differ significantly. Group differences for the editing and recognition groups are presented in Table 3. As can be seen, the groups were not statistically significantly different from each other in terms of these background variables.
Table 3. F-ratios and probabilities by background variable on the pretest

<table>
<thead>
<tr>
<th>Background variable</th>
<th>Recognition</th>
<th></th>
<th>Editing</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Probability</td>
<td>F</td>
<td>Probability</td>
</tr>
<tr>
<td>NIU</td>
<td>.156</td>
<td>.8557</td>
<td>.645</td>
<td>.582</td>
</tr>
<tr>
<td>IGPA</td>
<td>1.343</td>
<td>.2689</td>
<td>.292</td>
<td>.7476</td>
</tr>
</tbody>
</table>

It was therefore considered that each intact group was a random sample of students enrolled in English 302.

The initial contact with the students was the first meeting of class of the first full week of the term. At that time, consent forms and the pretest were introduced (see Appendix C). At the next meeting of the class, the instruction was given to the treatment groups, immediately followed by the posttest.

Although it had been planned for the next to the last week of classes, the followup posttest was actually administered during the last week of classes and the final examination week. Rescheduling was necessary since, due to inclement weather, classes were cancelled.

First day of experiment

During the introductory session, the researcher read the following prepared statement:

To help the English department and English teachers
teach more interestingly and more effectively and to learn a bit of grammar yourself, please participate in this research project. We will test different teaching methods to determine which are more effective for students of different abilities.

The research will take part of this class period and part of the next, and will be helpful to you—perhaps even fun! Please read through the consent form and sign it. Any questions?

I will number you off for your code number. Please write the code number on the consent form, and use only the code number, not your name, on the test blanks. For confidentiality, I will keep the consent forms separate from the test blanks and destroy them as soon as possible.

The pretest was handed out. The following paragraphs describe the researcher's instructions to students who were asked to edit dangling modifier sentences:

Fill in the code at the top of the page, please. Notice that all of the sentences on these pages are dangling modifiers. Please rewrite them to make them correct. The correction does not require you to rewrite the entire sentence; you may rearrange words by drawing arrows, or insert or cross out words to make the sentence correct.
Please note: you are not being asked to edit for spelling or punctuation. If you have any questions as you work, hold up your hand. When you have finished, turn in your papers. Any questions?

The following instructions were given to students who were asked to identify correct and dangling modifier sentences:

Fill in the code number in the Identification number section of the machine-scored sheet under A, B, C, and D, please. Any questions? (Sample numbers were also written on the blackboard.) This test includes some sentences which are correct and some and some which are dangling modifiers. Fill in an A for sentences which are correct or a B for those which are incorrect. Please mark only on the machine-scored sheet. Please note: you are not being asked to look for spelling or punctuation errors. If you have questions as you work, hold up your hand. When you have finished, hold up your hand, and I will collect your papers. Any questions?

The researcher remained in the room to answer questions. As students completed their tests, the researcher checked to be sure the code number on the consent form matched that on the test blank. Students took about 45 minutes for the pretest.

Second day of experiment

On the second day of the experiment, the researcher redistributed the
consent forms so that the students had their code numbers available. The control sections took the posttests. The instructed sections were shown a visual aid which stated the principle of the introductory modifier in three ways:

THE PERFORMER OF THE ACTION OF THE INTRODUCTORY MODIFIER MUST
BE THE PERFORMER OF THE ACTION IN THE MAIN PART OF THE SENTENCE
THE INTRODUCTORY MODIFIER SIGNALS OR "SETS UP" THE SUBJECT OF
THE SENTENCE
THE MODIFIER MUST POINT CLEARLY TO THE SUBJECT IT MODIFIES

The researcher said:

"Last time, I asked you to work with dangling modifiers; some of you said you didn't know what one was. Today let's see if we can answer that.

Students were shown examples of present participle dangling introductory modifiers which had the main clause varied in the same three ways as the pretest and posttest.

Serious instruction The following paragraphs describe the researcher's treatment discussion for students who were shown the serious examples."
1. After finishing the research, the report was easy for the researcher to write.

   The performer of the action of the introductory modifier must be what? What is "finishing"? The "researcher," yes. The sentence now says the "report" was finishing the research. So a correction would be something like, "The researcher was able to write the report easily."

2. Being a stockholder in the Azuza Corporation, your 1980 dividend check will soon be in the mail.

   The introductory modifier signals or "sets up" the subject of "being" to be what? "You," yes. The sentence now says "your dividend check" is a stockholder. So a correction would be something like, "You will soon receive your 1980 dividend check in the mail."

3. Performing like other businesses, your company's success depends on satisfied customers.

   The introductory modifier clearly points to the subject of performing as what? Yes, "company." The sentence now says that "success" is performing. So a correction would be something like "Your company will have success when it has satisfied customers."

4. Entering the gate, the visitor's view is of the administration building.
The subject of "entering" is what? "Visitor," not "view," you're right. So a correction would be something like "The visitor can see the administration building."

5. By specifying standardized commercial equipment, the cost of the proposed system was substantially reduced by the engineer.

The subject of "specifying" is what? "Engineer," not "cost;" you're right. So a correction would be something like "The engineer proposed a substantially less costly system."

6. In writing up the report, some very serious errors were made by the consulting engineers.

The subject of "writing" is what? Yes, "engineers," not "errors," so a correction would be something like "The consulting engineers made some very serious errors."

**Humorous instruction**

The following paragraphs describe the researcher's instruction for students who were shown the humorous examples.

1. After soaking in the prepared mixture overnight, I set the specimen up to dry.

   The performer of the action of the introductory modifier must be what? What is "soaking"? The "specimen," yes. The sentence now says "I" was soaking in the prepared mixture overnight, which is amusing, but unlikely.
2. Alternately talking and dozing and eating bananas, the sun sank slowly below the horizon as the passengers relaxed.

The introductory modifier signals or "sets up" the subject of "talking" to be what? "Passengers," yes. Not the "sun." That's absurd. So a correction would be something like, "The passengers relaxed as the sun sank slowly below the horizon."

3. After drying all day in the summer heat, the painter's next job was applying a second coat to the porch ceiling.

The introductory modifier clearly points to the subject of "drying" to be what? Yes, "coat" of paint. The sentence now says that the "job" was drying, which is silly. So a correction would be something like "The first coat of paint on the porch ceiling was covered by a second coat by the painter."

4. Wondering perplexedly what to do, the detective's ears heard the sound of the approaching train.

The subject of "wondering" is what? "Detective," not "ears," you're right. That's ridiculous. So a correction would be something like "The detective heard
the sound of the approaching train."

5. Reading quickly through the book, the apple was eaten by the busy student.

   The subject of "reading" is what? "Student," not "apple;" you're right. That's funny. So a correction would be something like "The busy student ate the apple."

6. While reaching for a second helping, his shoulder was dislocated. The subject of "reaching" is what? Yes, "he," not his "shoulder;" that's ridiculous. So a correction would be something like, "He dislocated his shoulder."

When the researcher introduced the posttests to all sections, the following instructions were given:

   This test is like the earlier test. Please answer the questions to the best of your ability. When you have finished, please turn in your papers. Thank you.

   The posttest took about 35 minutes.

**Third day of the experiment**

At the very end of the quarter, the original posttest was readministered to each group. The researcher reintroduced the posttest with the following instructions:

   To help the English department test different teaching methods, please answer the questions. Thank you.
Design and Analysis

Statistical Analysis

The two experiments were analyzed according to the research design presented in Figure 1. It will be noted that only one background variable is presented in the design, although data were available for each subject on two background variables (number of units of Iowa State English, NIU; and Iowa State English grade point average, IGPA). Since the factorial combination of both background variables and the other independent variables resulted in cell sizes which were inappropriately small for statistical analysis, two analyses were carried out for each experiment: one which included treatment, sentence type, and NIU; the other which included treatment, sentence type, and IGPA. Although this precluded the possibility of examining interactions involving both background variables at the same time, such interactions were not of interest in this study.

Thus, since two assessments of the effects of treatment and sentence type resulted from analyzing each background variable separately (and because the results with regard to the former variables were found to be virtually identical in these separate analyses), only the statistics from the NIU analysis will be reported in the following chapter when discussing treatment and sentence type effects. The choice of the NIU analysis is arbitrary.

A final point regarding the background variables should be noted. In these analyses, each of the variables was measured dichotomously (high-low) according to the following criteria: number of units of English ≤8
Figure 1. Research design for both recognition and editing experiments (3 x 2 x 3 factorial)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Control</th>
<th>Serious</th>
<th>Humorous</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Repeated</td>
<td>ABC</td>
<td>ABC</td>
<td>ABC</td>
</tr>
<tr>
<td>measure</td>
<td>type</td>
<td>A B C</td>
<td>A B C</td>
</tr>
</tbody>
</table>

A = Active
B = Passive
C = Possessive

= low NIU, number of units > 8 = high NIU; Iowa State grade point average in English courses < 2.50 = low IGPA and Iowa State grade point average in English courses > 2.50 = high IGPA. In each case, these criteria were developed according to conceptual and empirical guidelines. Conceptually, it was felt that the cutoff points should be such that any reasonable instructor would not be uncomfortable with the high-low labels. Empirically, an attempt was made to have high and low groups of approximately equal size, within the constraint of the previous guideline.

The posttest data and followup data from each experiment were analyzed separately. In each case, the analysis consisted of a 3 x 2 x 3 (treatment x background x sentence type variable) analysis of covariance, using pretest scores as a covariate. Both the treatment variable and the background variable were between subject variables, whereas the sentence type variable was a repeated measure. Analysis of covariance was selected
since it was observed that some groups in each experiment appeared to
differ in their ability to recognize (or rewrite) dangling introductory
modifiers prior to the experiment.

**Correction of rewritten sentences**

It was originally intended that a rewritten sentence would only be
counted correct if it were rewritten to make the actor of the action of
the introductory modifier the actor of the action of the main clause
("Being irritated by his frequent absences, the manager's demand was that
the janitor resign" was to be changed to "Being irritated by his frequent
absences, the manager demanded that the janitor resign"). Students were
taught to make such a change. However, many completing the pretest and
those in the control group, not having been taught, corrected the intro-
ductory modifier to agree with the main clause ("Because the manager was
irritated by the janitor's frequent absences, the manager demanded that
the janitor resign").

After collecting the data, the researcher felt that it would be mis-
leading to count such corrections wrong. A committee of Iowa State
English department professors agreed that students were reasonable to
allow the main clause to take precedence over the subordinate clause.
There is even evidence in the literature (Rayner, 1977, and Shafto, 1973)
to indicate that subject and verb of the main clause are the dominant
clues readers use to determine the meaning of the sentence. Therefore, a
new evaluation system was devised.

To establish new criteria, several steps were followed. All pretests
and posttests were read repeatedly by the researcher, and categories of responses were formed. Three categories of responses appeared to dominate: 1) the student appeared to evade the issue in the correction ("Being irritated by his frequent absences, the manager's demand was that the janitor resign" was shortened, by dropping the entire dangling modifier, to "The manager demanded that the janitor resign"), 2) the student did not demonstrate apparent understanding of the principle involved ("Being irritated by his frequent absences, the resignation of the janitor was demanded by the manager," a correction which makes "resignation" the subject of "irritated by the absences" as a result of inappropriate shift to the passive voice, and includes an indefinite pronoun reference as well), or 3) the student demonstrated apparent understanding of the principle ("The manager, irritated by the janitor's frequent absences, demanded his resignation"). The criteria are listed in Figure 2.

After the criteria were formulated, the expert committee was consulted again. Mentioned above, the committee of Iowa State English department staff members represented linguistics, traditional and contemporary views of grammar, and creative and technical writing. These specialists were asked to evaluate the criteria and then to apply the criteria to 23 sentences selected by the researcher as representative of the kinds of corrections students had attempted. In Table 4 are presented the correlations between the researcher's marking of the 23 sentences as right or wrong, and the marking of the members of the committee.

Committee member C, in an apparent oversight, counted as correct one sentence in which the student had removed the subject of the main clause
I. SENTENCES COUNTED AS CORRECT

Sentences were counted to be correct if the student demonstrated understanding of the principle of the introductory modifier.

The student's understanding was judged to be demonstrated in these cases:

A. The introductory modifier was retained, and the main clause was given an appropriate subject.

"Being irritated by his frequent absences, the manager's demand was that the janitor resign" was changed to "Being irritated by his frequent absences, the manager demanded that the janitor resign."

B. The main clause was retained, and the verb of the introductory modifier was given an appropriate subject.

The sentence was changed to "Because the manager was irritated by the janitor's frequent absences, the janitor's resignation was demanded."

C. The verbs of both the introductory modifier and the main clause were retained by

a. parallel construction.

The sentence was changed to "The manager was irritated by the janitor's frequent absences and demanded his resignation," or "The manager, irritated by the janitor's frequent absences, demanded his resignation."

b. other appropriate sentence transformation.

The sentence was changed to "Because of the janitor's frequent absences, the irritated manager demanded his resignation."

II. SENTENCES COUNTED AS INCORRECT

Sentences were counted as incorrect if the student failed to demonstrate understanding of the principle and problem of the dangling introductory modifier.

Figure 2. Criteria for evaluating editing experiment
A. The sentence was unchanged, or the parts were simply reversed.

B. The subject (or verb) was dropped, rather than given an appropriate verb (or subject).

    The sentence was changed to "Because of his frequent absences, the manager's demand was that the janitor resign" ("Being irritated" was dropped), or "Irritated by frequent absences, the manager demanded the resignation" ("janitor" was dropped).

C. The sentence was changed to create an ambiguous or faulty pronoun reference, or passive verb construction.

    The sentence was changed to "The manager's demand was that the janitor resign, as he was irritated by his frequent absences" (ambiguous pronoun reference), or "Being irritated by his frequent absences, the resignation of the janitor was demanded by the manager" (faulty passive verb construction).

D. Miscellaneous undecipherables.

Figure 2. (continued)

and thus created a fragment (see Appendix D, Number 21; "marchers" was deleted, leaving "While protesting pollution, will wear armbands"). If that response to the sentence were changed, the corrected correlations would be as presented in Table 5.

    Committee members A and B indicated confusion about the ambiguity of dropping a verb (Figure 2, II B). Had the ambiguity been clarified so that the committee understood that the researcher required that the action in both the introductory modifier and the action of the main clause be retained in the rewritten sentences, then the correlations might have been as represented in Table 6.

    Although criterion II B would need to be further clarified if the
Table 4. Correlations between researcher's and expert committee members' scores (right-wrong) on 23 sample sentences

<table>
<thead>
<tr>
<th>Committee member</th>
<th>Researcher</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researcher</td>
<td>1.00</td>
<td>0.6908</td>
<td>0.8374</td>
<td>0.7628</td>
</tr>
<tr>
<td>A</td>
<td>0.6313</td>
<td>0.5367</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>0.5367</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5. Correlation between researcher's and expert committee members' scores on 23 sample sentences, oversight corrected

<table>
<thead>
<tr>
<th>Committee member</th>
<th>Researcher</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researcher</td>
<td>1.00</td>
<td>0.6908</td>
<td>0.9161</td>
<td>1.00</td>
</tr>
<tr>
<td>A</td>
<td>0.9142</td>
<td>0.8374</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>0.9161</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6. Correlations between researcher's and expert committee members' scores on 23 sentences, ambiguity clarified

<table>
<thead>
<tr>
<th>Committee member</th>
<th>Researcher</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researcher</td>
<td>1.00</td>
<td>0.8374</td>
<td>0.9161</td>
<td>1.00</td>
</tr>
<tr>
<td>A</td>
<td>0.9142</td>
<td>0.8374</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>0.9161</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
research were to be duplicated, the consensus among raters as shown in Tables 4 and 5 appeared to be sufficiently high to allow use of the criteria. Thus, they were applied to the editing experiment papers for final scoring.

Null Hypotheses

The statistical hypotheses tested in both the recognition and editing studies with both posttest and followup test data are as follows. In each case, the probability of a Type I error was set at .05.

In terms of student ability to identify or correctly rewrite sentences with dangling introductory modifiers

1. there will be no significant differences among groups receiving serious instruction, humorous instruction and no instruction.

2. There will be no significant differences among responses to sentences with active main clauses, sentences with passive main clauses and sentences with possessives modifying the subject of the main clause.

3. There will be no significant differences between groups that represent high and low levels of either background variable.

4. There will be no significant interaction between sentence type and instruction.

5. There will be no significant interaction among instruction, sentence type, and background variables.
RESULTS

The purpose of the study was to determine the effectiveness of humor as a teaching tool for college students, to examine the differences in student ability to edit or recognize different sentence types, and to determine whether the students' ability and background were related to the effectiveness of humor. The main hypothesis was that students would learn more effectively when taught with humorous examples than when taught with serious examples or not taught. Iowa State University upper level undergraduate students were tested to determine whether they could more effectively learn to edit incorrect sentences or learn to recognize correct and incorrect sentences as compared to a control group when they were taught the grammar principle of the introductory modifier with serious or humorous examples. Students were asked to edit or recognize sentences with three kinds of main clauses. The backgrounds of these students were examined to determine the relationship of student attribute to the instruction. The recognition and editing groups were examined by separate but identical analyses to determine the effect of treatment alone, sentence type alone, background variable alone, interaction between treatment and sentence type, and interaction between treatment, sentence type, and background variable.

Recognition Experiment

Treatment

To test the hypothesis that students who were taught the principle of the introductory modifier with humorous examples would recognize
Table 7. Pretest means and standard deviations, adjusted posttest and followup treatment means for instructional and control groups by test occasion in recognition experiment

<table>
<thead>
<tr>
<th>Test</th>
<th>Statistic</th>
<th>Control</th>
<th>Serious</th>
<th>Humorous</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covariate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>n</td>
<td>20</td>
<td>18</td>
<td>24</td>
<td>62</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>12.95</td>
<td>11.93</td>
<td>13.19</td>
<td></td>
</tr>
<tr>
<td>S. D.</td>
<td></td>
<td>(3.74)</td>
<td>(3.73)</td>
<td>(3.99)</td>
<td></td>
</tr>
<tr>
<td>Criterion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td>n</td>
<td>20</td>
<td>18</td>
<td>24</td>
<td>62</td>
</tr>
<tr>
<td>Adjusted Mean</td>
<td></td>
<td>13.83</td>
<td>17.77</td>
<td>17.72</td>
<td></td>
</tr>
<tr>
<td>Followup</td>
<td>n</td>
<td>15</td>
<td>16</td>
<td>23</td>
<td>54</td>
</tr>
<tr>
<td>Adjusted Mean</td>
<td></td>
<td>14.27</td>
<td>17.22</td>
<td>17.48</td>
<td></td>
</tr>
</tbody>
</table>

Note. Maximum Score = 20.

dangling modifiers more readily than students taught with serious examples or students who were not taught, the main effect of treatment was examined for both posttest and followup data. On the posttest, a statistically significant difference was found among the three groups, $F(2, 55) = 24.21, p < .0001$. Independent $t$-tests among the three groups were performed on the adjusted means and it was found that the control group was statistically significantly different from the humorous group $t(42) = 3.37, p < .01$ and the serious group $t(36) = 3.32, p < .01$. The instructional groups were not statistically significantly different from each other $t(40) = .04$.

The means and standard deviations for the pretest, and the adjusted means for the posttest and followup tests are presented in Table 7, as are
frequencies. As can be seen, the instructed groups received posttest scores which were about four points higher than those of the control group.

The results of the followup test were similar, with the main effect of treatment statistically significant, $F(2, 47) = 6.96, p < .002$. From independent $t$-tests it was found that the control group was significantly different from the humorous and serious groups, $t(36) = 2.58, p < .02$, and $t(29) = 2.20, p < .05$, respectively. The treatment groups were not significantly different from each other, $t(37) = .22$. As can be seen in Table 7, the instructed groups remained about three points higher than the control group. Thus, although the performance of both instructed groups was superior to that of the control groups, the inclusion of humorous examples in instruction appeared to have no additional benefit.

**Sentence type**

To determine the difference between dangling modifier sentences with active or passive main clauses or a distracting possessive, the main effect of sentence type was examined. On the posttest, it was found that student ability to recognize dangling modifiers differed statistically significantly on the basis of sentence type, $F(2, 111) = 18.06, p < .0001$. Correlated $t$-tests were performed on the adjusted posttest means, and it was found that the active and passive sentences were significantly different from the possessive sentences, $t(59) = 5.00, p < .001$ and $t(59) = 3.71, p < .0001$, respectively. The active and passive sentences, however, were not statistically significantly different from each other, $t(59) =$
Table 8. Pretest means and standard deviations and adjusted posttest and followup test adjusted means by sentence type in recognition experiment

<table>
<thead>
<tr>
<th>Test</th>
<th>Statistic</th>
<th>n</th>
<th>Active</th>
<th>Passive</th>
<th>Possessive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Covariate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>Mean</td>
<td>62</td>
<td>13.92</td>
<td>12.47</td>
<td>11.85</td>
</tr>
<tr>
<td></td>
<td>S. D.</td>
<td></td>
<td>(3.61)</td>
<td>(3.99)</td>
<td>(3.91)</td>
</tr>
<tr>
<td>Criterion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td>Adjusted Mean</td>
<td>62</td>
<td>17.32</td>
<td>16.75</td>
<td>15.36</td>
</tr>
<tr>
<td>Followup</td>
<td>Adjusted Mean</td>
<td>54</td>
<td>17.48</td>
<td>17.05</td>
<td>15.00</td>
</tr>
</tbody>
</table>

Note. Maximum Score = 20.

1.59. Thus on the posttest, students had nearly equal difficulty with active and passive sentences, and found the sentences with possessives more difficult.

Pretest means and adjusted posttest and followup test sentence type means are presented in Table 8. As can be seen, the posttest mean for active sentences was over half a point higher than the passive mean and nearly two points higher than the possessive sentence mean.

Followup test results were similar to posttest results, with a larger statistically significant effect due to sentence type, $F(2, 95) = 22.94, p < .0001$. Correlated t-tests were performed on the adjusted means and it was found that active and passive sentences were statistically
significantly different from the possessive sentences, \( t(53) = 5.78, p < .001 \) and \( t(53) = 4.97, p < .001 \) respectively. The active and passive sentences were not statistically significantly different from each other, \( t(53) = 1.14 \).

As also seen in Table 8, active and passive scores increased from posttest to followup, though possessive scores decreased from the posttest. Followup active means were less than half a point higher than followup passive means but almost two and a half points higher possessive means. Thus, the instruction that was recalled on the followup was greatest for actives, less for passives, and least for possessives.

**Background in English**

Also of interest was the effect of student background in English on posttest and followup scores. Two measures were examined. First, to measure the amount of experience of the student in reading about, working with, and writing in the English language, the number of units (credit hours) of English at Iowa State University (NIU) was examined. Second, as a measure of the quality of that experience, Iowa State University English grade point average (IGPA) was examined. High NIU was defined as over 8 credit hours; high IGPA was defined as above 2.5.

**Number of Iowa State English units (NIU)** The main effect of NIU was not significant on either the posttest or followup test, \( F(1, 55) = .00 \), and \( F(1, 47) = .47 \), respectively, indicating that the number of Iowa State English units is unrelated to student performance. Means and frequencies of high and low NIU groups are shown in Table 9. Whereas the
Table 9. Pretest means and standard deviations (SD) and posttest and followup adjusted means of high and low number of Iowa State units of English (NIU) groups in recognition experiment

<table>
<thead>
<tr>
<th>Test</th>
<th>Low NIU</th>
<th>n</th>
<th>High NIU</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covariate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>11.73</td>
<td>33</td>
<td>13.73</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>(2.95)</td>
<td></td>
<td>(4.45)</td>
<td></td>
</tr>
<tr>
<td>Criterion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td>16.17</td>
<td>33</td>
<td>16.64</td>
<td>29</td>
</tr>
<tr>
<td>Followup</td>
<td>16.27</td>
<td>28</td>
<td>16.70</td>
<td>26</td>
</tr>
</tbody>
</table>

Note. Maximum Score = 20.

test score mean for the low NIU group increased slightly from posttest to followup test, the mean for the high group remained essentially the same as the low NIU group on the followup test. Therefore, it appeared that NIU was not an indicator of student performance.

Iowa State English grade point average (IGPA) The main effect of IGPA was not statistically significant on either the posttest, $F(2, 55) = 1.62$, or followup, $F(1, 47) = 2.04$. Means and frequencies of high and low IGPA groups are presented in Table 10. As can be seen, the high IGPA posttest mean was about two points higher than the low IGPA mean. The high IGPA followup mean increased nearly half a point while the low IGPA mean
Table 10. Pretest means and standard deviations () and posttest and followup adjusted means of high and low Iowa State English grade point average (IGPA) groups in recognition experiment

<table>
<thead>
<tr>
<th>Test</th>
<th>Low IGPA</th>
<th>n</th>
<th>High IGPA</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covariate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>11.70</td>
<td>37</td>
<td>14.54</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>(3.00)</td>
<td></td>
<td>(4.20)</td>
<td></td>
</tr>
<tr>
<td>Criterion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td>15.97</td>
<td>37</td>
<td>17.39</td>
<td>25</td>
</tr>
<tr>
<td>Followup</td>
<td>15.98</td>
<td>35</td>
<td>17.84</td>
<td>19</td>
</tr>
</tbody>
</table>

Note. Maximum Score = 20.

remained stable on the followup. The apparent advantage of the high IGPA group, however, was not statistically significant.

Treatment by sentence type

To determine the relationship between instruction with humorous or serious examples and the ability of students to recognize dangling modifiers in active, passive, or possessive sentences, the interaction between treatment and sentence type was examined. On the posttest, a statistically significant interaction was found, $F(4,111) = 3.44, p < .01$. By the followup test, however, no interaction was found, $F(4, 95) = .07$, indicating that the interaction did not persist.

Pretest means and standard deviations, and adjusted posttest and
followup means for the treatment by sentence type interaction are pre­
sented in Table 11. As can be seen, the posttest control group active 
and passive means were about four points below both instructed groups' 
active and passive means. The control possessive mean was two and a half 
points below the serious and two points below the humorous mean. Thus, 
the serious instruction was equally as effective as the humorous instruc­
tion for active and passive sentences and was more effective than the 
humorous for possessive sentences. The hypothesized pattern of active 
sentences being easiest and possessive sentences being most difficult 
was in general confirmed. The control possessive was nearly the same 
as the control passive mean; however, the three possessive means were 
lower than all other group means, indicating that for all groups the 
possessive sentences were equally difficult or more difficult.

As can also be seen in Table 11, on the followup, the control group 
means remained lower than the instructional groups' means. The scores for 
the instructional groups are quite similar for each of the sentence types. 
These differences in the scores on the followup were not statistically 
significant. The hypothesized pattern of difficulty of actives, passives, 
and possessives was again confirmed.

Treatment by sentence type by background

Another consideration of interest was the relationship between type 
of instruction, sentence type, and English background. It was hypothe­
sized that students taught with humorous treatment who had had a high 
number of units of English (NIU), over eight credit hours, or high Iowa
Table 11. Pretest means and standard deviations (\(\cdot\)), and posttest and followup adjusted means by treatment level and sentence type in recognition experiment

<table>
<thead>
<tr>
<th>Sentence type</th>
<th>Treatment</th>
<th>Control</th>
<th>Serious</th>
<th>Humorous</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretest (Covariate)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n=20)</td>
<td>(n=18)</td>
<td>(n=24)</td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>14.25 ((3.18))</td>
<td>13.11 ((4.30))</td>
<td>14.25 ((3.45))</td>
<td></td>
</tr>
<tr>
<td>Passive</td>
<td>12.50 ((4.06))</td>
<td>11.83 ((3.52))</td>
<td>12.93 ((4.35))</td>
<td></td>
</tr>
<tr>
<td>Possessive</td>
<td>12.10 ((4.00))</td>
<td>10.83 ((3.40))</td>
<td>12.42 ((4.19))</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Posttest (Criterion)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n=20)</td>
<td>(n=18)</td>
<td>(n=24)</td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>14.11</td>
<td>18.73</td>
<td>18.90</td>
<td></td>
</tr>
<tr>
<td>Passive</td>
<td>13.62</td>
<td>17.93</td>
<td>18.49</td>
<td></td>
</tr>
<tr>
<td>Possessive</td>
<td>13.74</td>
<td>16.67</td>
<td>15.76</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Followup (Criterion)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n=15)</td>
<td>(n=16)</td>
<td>(n=23)</td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>15.17</td>
<td>18.16</td>
<td>18.51</td>
<td></td>
</tr>
<tr>
<td>Passive</td>
<td>15.03</td>
<td>17.66</td>
<td>17.95</td>
<td></td>
</tr>
<tr>
<td>Possessive</td>
<td>12.60</td>
<td>15.85</td>
<td>15.98</td>
<td></td>
</tr>
</tbody>
</table>

Note. Maximum score = 20.
Table 12. Pretest means and standard deviations (\(\text{SE})\) and posttest and followup adjusted means by treatment level, sentence type, and levels of background variable (NIU) in recognition experiment

<table>
<thead>
<tr>
<th>Background Treatment</th>
<th>Sentence Type</th>
<th>Pretest (Covariate)</th>
<th>Posttest (Criterion)</th>
<th>Followup (Criterion)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(n=9)</td>
<td>(n=9)</td>
<td>(n=15)</td>
</tr>
<tr>
<td>Control</td>
<td>Active</td>
<td>12.2 (2.27)</td>
<td>12.4 (3.36)</td>
<td>13.5 (2.78)</td>
</tr>
<tr>
<td></td>
<td>Passive</td>
<td>11.2 (2.59)</td>
<td>10.6 (2.40)</td>
<td>12.3 (4.04)</td>
</tr>
<tr>
<td></td>
<td>Possessive</td>
<td>11.0 (1.50)</td>
<td>10.9 (2.98)</td>
<td>11.5 (3.56)</td>
</tr>
</tbody>
</table>

Note. Maximum score = 20.

State English grade point average (IGPA), above a 2.5, would score best on active sentences, less well with passives, and least well with possessives.
It was hypothesized that students would score best when they had high background in English, worked with active sentences and were taught with humorous examples. It was further hypothesized that students would score least well when they had low backgrounds in English, worked with possessive sentences, and had no instruction.

**Treatment by sentence type by NIU.** No treatment by sentence type by NIU interaction was found on either the posttest or followup test, $F(4, 111) = .62$ and $F(4, 95) = .56$ respectively. Pretest, posttest and followup means for the treatment by sentence type by NIU interaction are presented in Table 12. As can be seen, on the posttest, control means in general are lower than treatment means, and low IGPA control means are lower than high IGPA control means. High and low treatment means are similar with possessives lower. Although the groups hypothesized to show the best and worst performance did in fact have about the best and worst average scores respectively, the interactions were not statistically significant.

On the followup, the hypothesized best and worst groups did show the best and worst average performance, but their apparent differences from the other groups did not result in significant interaction.

**Treatment by sentence type by IGPA.** No treatment by sentence type by IGPA interaction was found on the pretest or followup test, $F(4, 111) = .60$ and $F(4, 95) = .08$, respectively. However, treatment by IGPA and sentence type by IGPA interactions not hypothesized were found and will be discussed below.

Pretest means and adjusted posttest and followup test means for the
Table 13. Pretest means and standard deviations (standard errors) and adjusted posttest and followup test means by treatment level, sentence type, and levels of background variable (IGPA) in recognition experiment.

<table>
<thead>
<tr>
<th>Background Treatment</th>
<th>Low IGPA</th>
<th>High IGPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>Control</td>
<td>Control</td>
</tr>
<tr>
<td>Active</td>
<td>n=14</td>
<td>n=9</td>
</tr>
<tr>
<td></td>
<td>13.0</td>
<td>12.9</td>
</tr>
<tr>
<td>(2.00)</td>
<td>(4.08)</td>
<td>(4.74)</td>
</tr>
<tr>
<td>Passive</td>
<td>n=14</td>
<td>n=6</td>
</tr>
<tr>
<td></td>
<td>10.6</td>
<td>17.2</td>
</tr>
<tr>
<td>(2.93)</td>
<td>(3.99)</td>
<td>(4.78)</td>
</tr>
<tr>
<td>Possessive</td>
<td>n=14</td>
<td>n=9</td>
</tr>
<tr>
<td></td>
<td>10.2</td>
<td>13.3</td>
</tr>
<tr>
<td>(1.81)</td>
<td>(4.74)</td>
<td>(4.89)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sentence type</th>
<th>Pretest (Covariate)</th>
<th>Posttest (Criterion)</th>
<th>Followup (Criterion)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>m=14</td>
<td>m=9</td>
<td>m=14</td>
</tr>
<tr>
<td>Active</td>
<td>13.1</td>
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<td>19.1</td>
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<tr>
<td>Passive</td>
<td>12.5</td>
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<td>19.0</td>
</tr>
<tr>
<td>Possessive</td>
<td>12.6</td>
<td>15.6</td>
<td>15.4</td>
</tr>
</tbody>
</table>

|                      | m=13     | m=8     | m=14     | m=2     | m=8     | m=9     |
| Active               | 14.6     | 17.7    | 19.1     | 19.3    | 18.7    | 17.8    |
| Passive              | 14.5     | 17.5    | 18.8     | 18.1    | 17.8    | 16.7    |
| Possessive           | 11.6     | 14.3    | 15.9     | 18.7    | 17.4    | 16.1    |

Note. Maximum score = 20.
treatment by sentence type by IGPA interaction are presented in Table 13. As can be seen, for this background variable, the expected pattern was also found on the posttest. The high humorous means are among the highest and the low control means are the lowest. The differences among the groups did not result in an interaction.

**Treatment by IGPA.** While not hypothesized, a statistically significant interaction was found on the followup test, $F(2, 47) = 3.85, p < .0283$. Pretest means and adjusted posttest and followup test means for the IGPA by treatment interaction are presented in Table 14.

As can be seen, the followup mean for the low IGPA group was highest for humorous instruction and lowest for control, yet for the high IGPA group that pattern was reversed with the control group mean the highest and the humorous mean lowest. That unexpected finding is probably explained by the following occurrence: while the high IGPA control cell had six members on the pretest and posttest, the cell size had dropped to only two members on the followup test, due to absenteeism. Thus, this interaction is attributed to sampling error.

**Sentence type by IGPA.** Although not hypothesized, an interaction was found on the followup test between IGPA and sentence type, $F(2, 95 = 4.82, p < .0102$. Presented in Table 15 are pretest means and adjusted posttest and followup means. On the followup test, the mean of the low IGPA active group was less than a point below the mean of the high IGPA active group, and the mean of the low IGPA passive group was less than a half a point below the high IGPA passive. The low IGPA possessive mean, however, was three points lower than that of the high IGPA possessive mean. Thus,
Table 14. Pretest means and standard deviations and posttest and followup adjusted means for treatment by levels of background variable (IGPA) in recognition experiment

<table>
<thead>
<tr>
<th>Background Treatment</th>
<th>Control</th>
<th>Low IGPA</th>
<th>Humorous</th>
<th>High IGPA</th>
<th>Control</th>
<th>Serious</th>
<th>Humorous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>14</td>
<td>9</td>
<td>14</td>
<td>6</td>
<td>9</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>11.3</td>
<td>11.4</td>
<td>12.4</td>
<td>16.8</td>
<td>12.4</td>
<td>14.3</td>
<td></td>
</tr>
<tr>
<td>S. D.</td>
<td>(2.25)</td>
<td>(3.32)</td>
<td>(3.51)</td>
<td>(3.75)</td>
<td>(4.14)</td>
<td>(4.52)</td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>14</td>
<td>9</td>
<td>14</td>
<td>6</td>
<td>9</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Adj. mean</td>
<td>12.7</td>
<td>17.4</td>
<td>17.8</td>
<td>16.5</td>
<td>18.1</td>
<td>17.7</td>
<td></td>
</tr>
<tr>
<td>Followup</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>13</td>
<td>8</td>
<td>14</td>
<td>2</td>
<td>8</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Adj. mean</td>
<td>13.6</td>
<td>16.5</td>
<td>17.9</td>
<td>18.7</td>
<td>18.0</td>
<td>16.9</td>
<td></td>
</tr>
</tbody>
</table>

Note. Maximum score = 20.

the possessive sentences seemed to be more difficult for the low IGPA group.

Summary of recognition experiment

The recognition group, then, performed more effectively when instructed than when not instructed, and was most effective when recognizing active and passive sentences. Humorous and serious instructions were
Table 15. Pretest means and standard deviations (SD) and posttest and followup adjusted means for sentence type by levels of background variable (IGPA) in recognition experiment

<table>
<thead>
<tr>
<th>Background</th>
<th>Low IGPA</th>
<th>High IGPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sentence type</td>
<td>Pretest (Covariate)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>n=37</td>
<td>n=25</td>
</tr>
<tr>
<td>Active</td>
<td>13.13 (2.91)</td>
<td>15.08 (4.10)</td>
</tr>
<tr>
<td>Passive</td>
<td>11.30 (3.49)</td>
<td>14.20 (3.95)</td>
</tr>
<tr>
<td>Possessive</td>
<td>10.75 (2.59)</td>
<td>13.47 (4.54)</td>
</tr>
</tbody>
</table>

Note. Maximum score = 20.

almost equally effective for active and passive main clauses; instruction, especially humorous, was less effective for possessives. Neither background variable of number of units of Iowa State English or Iowa
State English grade point average had an effect alone. The low were nearly equal to the high grade point groups for actives and passives but were much lower for possessives. Thus, it is clear that instruction and type of sentence make a difference in the effectiveness of student recognition of dangling introductory modifiers.

Editing Experiment

Treatment

To test the hypothesis that students who are taught the principle of the introductory modifier with humorous examples will edit dangling modifiers more readily than students in the serious or control groups, the main effect of treatment was examined for both posttest and followup test data. A significant difference was found among the groups, $F(2, 53) = 12.34, p < .0001$, on the posttest.

Independent t-tests among the three groups were performed on the adjusted means and it was found that the control group was statistically different from the humorous and serious groups, $t(40) = 2.66, p < .01$, and $t(39) = 2.34, p < .05$, respectively. The instructed groups were not statistically significantly different from each other, $t(35) = .32$.

In table 16 are presented the means and standard deviations for the pretest and the adjusted means for the posttest and followup test for the groups. As can be seen, the means for the instructed groups on the posttest were about two points higher than those of the control group. Similar results were found in the followup test, with the main effect of treatment statistically significant, $F(2, 49) = 5.46, p < .0072$. From
independent t-tests it was found that the control group differed statistically significantly from the serious group, $t(36) = 2.49, p < .02$ but neither the control nor the serious group differed significantly from the humorous group, $t(36) = 1.32$, and $t(34) = 1.17$, respectively. Thus, although the serious instructional effect remained, the humorous instructional effect decreased.

As seen in Table 16, both the control and serious means were slightly higher on the followup than the posttest, whereas the humorous scores dropped nearly a point. Thus, although the performance of both instructed groups was superior to that of the control group at the time of the posttest, the humorous instruction appeared to have no lasting benefit.

**Sentence type**

To determine the difference between the difficulty of editing dangling modifiers with active, passive, or possessive main clauses, the main effect of sentence type was examined. On the posttest, it was found that student ability to edit dangling modifiers differed statistically significantly on the basis of sentence type, $F(2, 107) = 13.11, p < .001$. Correlated t-tests were performed on the adjusted posttest means, and it was found that the active and possessive sentences differed significantly from the passive, $t(59) = 4.79, p < .001$ and $t(59) = 3.90, p < .001$, respectively. The possessive and active sentences, however, were not statistically significantly different from each other, $t(59) = 1.11$.

In Table 17 are presented the pretest means and posttest and follow-up test sentence type means. As can be seen in Table 17, in contrast to the recognition experiment where the active mean was highest, the posttest
Table 16. Pretest means and standard deviations, adjusted posttest and followup test treatment means, and frequencies for instructional and control groups by test occasion in editing experiment.

<table>
<thead>
<tr>
<th>Test</th>
<th>Statistic</th>
<th>Treatment</th>
<th>Control</th>
<th>Serious</th>
<th>Humorous</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Covariate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>n</td>
<td>23</td>
<td>18</td>
<td>19</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td></td>
<td>mean</td>
<td>4.90</td>
<td>5.54</td>
<td>5.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S. D.</td>
<td>(2.51)</td>
<td>(2.35)</td>
<td>(2.11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Criterion'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td>n</td>
<td>23</td>
<td>18</td>
<td>19</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjusted</td>
<td>5.70</td>
<td>7.64</td>
<td>7.91</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Followup</td>
<td>n</td>
<td>20</td>
<td>18</td>
<td>18</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjusted</td>
<td>6.00</td>
<td>8.10</td>
<td>7.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Maximum score = 10.

passive mean in this experiment was highest. This indicates that the passive sentences on the posttest were easier to edit than the active sentences, and that the active sentences were more difficult than possessive. Comparison across the two experiments indicates that active may have been easier to recognize than to edit.

No statistically significant difference due to the main effect of sentence type was found on the followup, $F(2, 99) = 1.88$. As can be seen in Table 17, the followup active means were similar to the posttest actives, the passives dropped slightly, and the possessives rose slightly. Hence the sentence types did not differ systematically by the followup.
Table 17. Pretest means and posttest and followup test adjusted means by sentence type in editing experiment

<table>
<thead>
<tr>
<th>Test</th>
<th>Statistic</th>
<th>Sentence type</th>
<th>Active</th>
<th>Passive</th>
<th>Possessive</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covariate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>Mean</td>
<td></td>
<td>6.05</td>
<td>5.00</td>
<td>4.43</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(2.12)</td>
<td>(2.89)</td>
<td>(2.05)</td>
<td></td>
</tr>
<tr>
<td>Criterion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td>Adjusted mean</td>
<td></td>
<td>6.45</td>
<td>7.77</td>
<td>6.73</td>
<td>60</td>
</tr>
<tr>
<td>Followup</td>
<td>Adjusted mean</td>
<td></td>
<td>6.60</td>
<td>7.41</td>
<td>7.17</td>
<td>56</td>
</tr>
</tbody>
</table>

Note. Maximum score = 10.

Background in English

Also of interest was the effect of student background in English on posttest and followup scores. Two measures were examined. First, to measure the amount of experience of the student in reading about, working with, and writing in the English language, the number of units (credit hours) of English at Iowa State University (NIU) was examined. Second, as a measure of the quality of that experience, Iowa State University English grade point average (IGPA) was examined. High NIU was defined as over 8 credit hours, high IGPA as above a 2.5.

Number of Iowa State English Units (NIU) The main effect of NIU was not statistically significant on either the posttest, $F(1, 53) = .78$, or the followup test, $F(1, 49) = 2.76$.

In Table 18 can be found the means and frequencies of the low and
Table 18. Pretest means and standard deviations (SD) and posttest and followup adjusted means of high and low number of Iowa State units of English (NIU) groups in the editing experiment

<table>
<thead>
<tr>
<th>Test</th>
<th>Covariate</th>
<th>Pretest</th>
<th>High NIU</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low NIU</td>
<td>5.37</td>
<td>4.96</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.37)</td>
<td>(2.14)</td>
<td></td>
</tr>
<tr>
<td>Criterion</td>
<td>Posttest</td>
<td>7.22</td>
<td>6.74</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Followup</td>
<td>7.41</td>
<td>6.59</td>
<td>27</td>
</tr>
</tbody>
</table>

Note. Maximum score = 20.

Table 19. Pretest means and standard deviations (SD) and posttest and followup adjusted means of high and low Iowa State English grade point average (IGPA) groups in editing experiment

<table>
<thead>
<tr>
<th>Test</th>
<th>Covariate</th>
<th>Low IGPA</th>
<th>High IGPA</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretest</td>
<td>4.45</td>
<td>5.92</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.91)</td>
<td>(2.23)</td>
<td></td>
</tr>
<tr>
<td>Criterion</td>
<td>Posttest</td>
<td>6.66</td>
<td>7.32</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Followup</td>
<td>7.10</td>
<td>6.95</td>
<td>28</td>
</tr>
</tbody>
</table>

Note. Maximum score = 20.
high NIU groups. As can be seen in Table 18, the low NIU group mean was higher than the high NIU group mean on both the posttest and followup. This difference, however, was not statistically significant.

Iowa State grade point average (IGPA). The main effect of IGPA was not significant on the posttest, $F(1, 53) = .33$, or followup, $F(1, 49) = 1.21$.

Presented in Table 19 are the means of the low and high IGPA groups. As can be seen in Table 19, the posttest and followup test score means of the low IGPA group were quite similar to the high IGPA mean.

Treatment by sentence type

To determine the relationship between instruction with humorous or serious examples and the ability of students to edit dangling modifiers in active, passive or possessive sentences, the interaction between treatment and sentence type was examined. On the posttest and followup test, no statistically significant interaction was found, $F(4, 107) = .80$ and $F(4, 99) = .83$, respectively.

Pretest standard deviations and means, and posttest and followup adjusted means are presented in Table 20. As can be seen, the posttest and followup control means were lower than the instructional means and instructional means were similar, with humorous possessives lowest. However, the hypothesis that students taught with humorous instruction would be most effective with active sentences, and that students not taught would be least effective with possessives was not confirmed.
Table 20. Pretest means and standard deviations (), and posttest and followup adjusted means by treatment level and sentence type in editing experiment

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Control</th>
<th>Serious</th>
<th>Humorous</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretest (Covariate)</td>
<td>Posttest (Criterion)</td>
<td>Followup (Criterion)</td>
</tr>
<tr>
<td></td>
<td>n=23</td>
<td>n=18</td>
<td>n=19</td>
</tr>
<tr>
<td>Active</td>
<td>5.43</td>
<td>6.28</td>
<td>6.58</td>
</tr>
<tr>
<td></td>
<td>(2.48)</td>
<td>(1.60)</td>
<td>(1.98)</td>
</tr>
<tr>
<td>Passive</td>
<td>5.13</td>
<td>5.28</td>
<td>4.58</td>
</tr>
<tr>
<td></td>
<td>(2.94)</td>
<td>(3.04)</td>
<td>(1.80)</td>
</tr>
<tr>
<td>Possessive</td>
<td>4.13</td>
<td>5.06</td>
<td>4.21</td>
</tr>
<tr>
<td></td>
<td>(2.12)</td>
<td>(2.39)</td>
<td>(1.55)</td>
</tr>
</tbody>
</table>

Note. Maximum score = 10.
Treatment by sentence type by background

Another consideration of interest was the relationship between type of instruction, sentence type, and English background. It was hypothesized that students taught with humorous treatment who had had a high number of units of English (NIU), over eight credit hours, or who had a high Iowa State English grade point average (IGPA), above 2.5, would score best on active sentences, less well on passives, and least well on possessives. It was hypothesized that students would score best when they had a high background in English, worked with active sentences and were taught with humorous examples. It was further hypothesized that students would score least well when they had low backgrounds in English, worked with possessive sentences, and had no instruction.

Treatment by sentence type by NIU  No statistically significant interaction effects were found between treatment, sentence type and NIU on either the posttest or the followup test, $F(4, 107) = .49$, and $F(4, 99) = .52$, respectively. An interaction not hypothesized, NIU by sentence type, was found and will be discussed below.

Pretest means and posttest and followup adjusted means for the treatment by sentence type by NIU interaction are presented in Table 21. As can be seen, the hypotheses were not confirmed.

Sentence type by NIU  An interaction not hypothesized was found between NIU and sentence type on the posttest, $F(2, 107) = 4.13$, $p < .0188$.

In Table 22 are presented low and high NIU pretest, posttest and followup test means by sentence type. As can be seen, the posttest active mean for the low NIU group was slightly lower than the active
Table 21. Pretest means and standard deviations (SD) and posttest and followup adjusted means by treatment level and sentence type and levels of background variable (NIU) in editing experiment.

<table>
<thead>
<tr>
<th>Background</th>
<th>Low NIU</th>
<th>High NIU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>Control</td>
<td>Serious</td>
</tr>
<tr>
<td>Sentence type</td>
<td>Pretest (Covariate)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>n=11</td>
<td>n=9</td>
</tr>
<tr>
<td>Active</td>
<td>5.4</td>
<td>7.2</td>
</tr>
<tr>
<td></td>
<td>(2.08)</td>
<td>(1.64)</td>
</tr>
<tr>
<td>Passive</td>
<td>5.1</td>
<td>5.7</td>
</tr>
<tr>
<td></td>
<td>(2.80)</td>
<td>(3.50)</td>
</tr>
<tr>
<td>Possessive</td>
<td>3.8</td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td>(2.17)</td>
<td>(2.69)</td>
</tr>
<tr>
<td>Posttest (Criterion)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n=10</td>
<td>n=9</td>
</tr>
<tr>
<td>Active</td>
<td>4.5</td>
<td>7.1</td>
</tr>
<tr>
<td>Passive</td>
<td>5.9</td>
<td>9.1</td>
</tr>
<tr>
<td>Possessive</td>
<td>5.7</td>
<td>8.5</td>
</tr>
<tr>
<td>Followup (Criterion)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n=10</td>
<td>n=9</td>
</tr>
<tr>
<td>Active</td>
<td>5.1</td>
<td>8.7</td>
</tr>
<tr>
<td>Passive</td>
<td>6.4</td>
<td>9.5</td>
</tr>
<tr>
<td>Possessive</td>
<td>5.8</td>
<td>9.0</td>
</tr>
</tbody>
</table>

Note. Maximum score = 10.
Table 22. Pretest means and standard deviations () and posttest and followup adjusted means by sentence type and levels of background variable (NIU) in editing experiment

<table>
<thead>
<tr>
<th>Test occasion</th>
<th>Pretest (Covariate)</th>
<th>Posttest (Criterion)</th>
<th>Followup (Criterion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Sentence type</td>
<td>n=30</td>
<td>n=30</td>
<td>n=30</td>
</tr>
<tr>
<td>Active</td>
<td>6.33</td>
<td>5.77</td>
<td>6.34</td>
</tr>
<tr>
<td></td>
<td>(1.98)</td>
<td>(1.90)</td>
<td></td>
</tr>
<tr>
<td>Passive</td>
<td>5.03</td>
<td>4.97</td>
<td>8.04</td>
</tr>
<tr>
<td></td>
<td>(3.01)</td>
<td>(2.78)</td>
<td></td>
</tr>
<tr>
<td>Possessive</td>
<td>4.73</td>
<td>4.13</td>
<td>7.29</td>
</tr>
<tr>
<td></td>
<td>(2.07)</td>
<td>(1.75)</td>
<td></td>
</tr>
</tbody>
</table>

Note. Maximum score = 10.

...mean for the high NIU group; in contrast, the low NIU mean was half a point higher for the passive sentences, and a point higher for the possessives. Thus, while the high NIU group as expected was effective for active sentences, unexpectedly the low NIU group was more effective for passives and possessives, the sentences believed to be the most difficult.

Treatment by sentence type by IGPA No statistically significant interaction was found among treatment, sentence type and IGPA on the posttest, $F(4, 107) = 1.18$, but the interaction was statistically significant on the followup test, $F(4, 99) = 2.84$, $p < .0283$.

Pretest and adjusted posttest and followup means for low and high
IGPA for each level of the treatment and sentence type variables are presented in Table 23. As can be seen in Table 23, for the low IGPA group on the followup, the humorous instruction was more effective than the serious instruction for actives, equally as effective for passives, and superior to serious for possessives. For the low IGPA group, instruction was always more effective than no instruction. In contrast, for the high IGPA group, serious instruction was more effective. The humorous instruction was more effective than no instruction for actives and slightly better for passives, yet for possessives, no instruction was better than humorous.

So for the high IGPA group, serious instruction was best, and for the low group humorous instruction was generally better. Although the high IGPA group performed least effectively for possessives when taught with humor, the low IGPA group edited possessives most effectively when taught with humorous examples. The hypothesized pattern of best performance for high humorous actives and worst performance for low control possessives was not confirmed.

Summary and comparison

In the editing experiment, as in the recognition experiment, the instructed groups performed more effectively. The instructed groups in the recognition experiment, as hypothesized, were best able to identify as correct or incorrect, sentences with active or passive main clauses, and found the distracting possessive in the main clause more difficult. In contrast, subjects in the editing experiment performed best with
Table 23. Pretest means and standard deviations (\(SD\)) and posttest and followup adjusted means by treatment level, sentence type, and levels of background variable (IGPA) in editing experiment.

<table>
<thead>
<tr>
<th>Background Treatment</th>
<th>Low IGPA</th>
<th>High IGPA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
<td>Control</td>
</tr>
<tr>
<td></td>
<td>Serious</td>
<td>Serious</td>
</tr>
<tr>
<td></td>
<td>Humorous</td>
<td>Humorous</td>
</tr>
<tr>
<td>Sentence type</td>
<td>Pretest (Covariate)</td>
<td>Posttest (Criterion)</td>
</tr>
<tr>
<td>Active</td>
<td>(n=12)</td>
<td>(n=9)</td>
</tr>
<tr>
<td></td>
<td>4.7</td>
<td>5.6</td>
</tr>
<tr>
<td></td>
<td>(2.46)</td>
<td>(0.88)</td>
</tr>
<tr>
<td>Passive</td>
<td>(n=9)</td>
<td>(n=10)</td>
</tr>
<tr>
<td></td>
<td>4.3</td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td>(2.77)</td>
<td>(2.20)</td>
</tr>
<tr>
<td>Possessive</td>
<td>(n=10)</td>
<td>(n=9)</td>
</tr>
<tr>
<td></td>
<td>3.3</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td>(1.78)</td>
<td>(1.83)</td>
</tr>
</tbody>
</table>
| Note. Maximum score = 10.
passives and performed approximately equally well with active and posse­sive sentences. In the first experiment, subjects performed best with active and passive sentences if instructed, and performed more effectively with possessive sentences if taught with serious rather than humorous examples. In the editing experiment, there was no effect of varied in­struction on effectiveness of editing differing types of sentences. The background variables, taken alone, had no effect in either experiment. In the editing study, as expected, on the posttest the group with high numbers of units of Iowa State English performed better than the low group with active sentences, yet contrary to the hypothesis, the group with a low number of units of English was more effective than the high group at editing possessives and most effective when editing passives. The edit­ing group with low Iowa State English grade points was more effective on the followup if taught with humor, whereas the high grade point group was more effective if taught with serious examples. The high grade point group performed least effectively for possessives if taught with humorous examples, yet the low group was most effective of all with possessives when taught with humor.

In both experiments, then, instruction was more effective than no instruction, and type of sentence made a difference in the students' ability to recognize or correct dangling modifiers.
Research Findings

College students can improve their performance in recognizing and correcting dangling introductory modifiers if they receive instruction, even when that instruction is brief. This is the implication of the findings of the current study in which students were taught the principle of the introductory modifier and shown possible corrections of dangling modifiers during a ten minute instructional period. Although humorous instruction was hypothesized to be more beneficial to students than serious instruction, no differences between the two types of instruction were found. Students laughed at and enjoyed humorous examples of dangling modifiers (which may be reason enough to include such examples in the classroom), but they did not appear to learn better as a result.

On the other hand, the syntax of the sentence which included the error did seem to make a difference. In terms of recognizing errors, students were better able to recognize the sentence's dangling modifier when the verb of the main clause was active or when it was passive. When the implied subject of the introductory modifier was a possessive modifying the subject of the main clause of the sentence (even though the verb was active), students had trouble recognizing the dangling modifier. In terms of rewriting errors, students were better able to correct dangling introductory modifier sentences when the verb in the main clause was passive than when the verb was active or when the distracting possessive was present.

In contradiction of one of the hypotheses, however, information
about student background characteristics shed little light on student learning in the study. It had been predicted that students who had taken more courses in English and who had a history of successful English course performance would respond best to the dry, intellectual humor of the dangling modifier examples. However, background data about the number of college English courses and grade point average in those courses were of little value in understanding which students might profit from exposure to humorous examples.

Each of these findings deserves further consideration in the light of previous research. The literature contains much debate about the effectiveness of teaching grammar. In this study, it was found that students can improve in detecting flaws in the writing of others even after brief instruction. That finding supports the suggestions of a number of composition authors. Composition theorists have urged that students be shown the underlying structure of sentences as an aid to dealing with syntactic problems. Language instruction, with sentence combining and other exercises appropriate to the student's stage of development, was recommended by Gebhard (1978) and Kolln (1981) to improve composition skills. Instruction that helps students recognize underlying structure so they can solve deep structure problems was recommended by Brause (1977) and Shultz (1976) to develop syntactic maturity. In the present study, the dangling introductory modifier, an example of deep structural ambiguity, was shown to upper level college students believed to be near the stage of mastery of deep structure. Students were shown how to solve deep structural ambiguities by making the surface structure
of the sentence consistent with the deep structure. As expected, the performance of the instructed groups was significantly improved.

There is less in the literature about humor research. Writers, however, have argued that humor improves student performance (Gruner, 1970; Kaplan and Pascoe); the findings of this study do not confirm that thesis. If humor illuminates the structural ambiguities of dangling modifiers for some students but not for all, the measures of background used in this study were ineffective to distinguish which students could benefit from humorous instruction. If there is a difference in the response of students to humorous and to serious examples, the characteristics which account for this difference are apparently not those which are accounted for by numbers of courses in English completed or by grade point in English classes. More sophisticated instruments can perhaps be developed to measure the humor of the examples, the sense of humor of students, or the ability of students to comprehend complex syntax. The mild, subtle humor of the humorous treatment used in this study and the brevity of the instruction may have been insufficient to detect differences in the serious and humorous treatment.

Even though humorous instruction did not make a difference in student ability to detect and correct error, the syntax of the sentence did.

The performance of the students in the recognition experiment of the study was most effective with active sentences, less effective with passives and least effective for possessives, although the differences between active and passive sentences did not reach statistical significance. This finding contradicts a long-held belief of teachers that
students write more dangling introductory modifiers before sentences with main clauses in the passive voice. Though no studies of this were found, it seems logical that combining two sentences, each with active verbs, would be easier than combining one sentence with an active verb with one with a passive verb. It would seem to be even more difficult to combine sentences if the subject of one sentence were repeated in the second sentence as a possessive modifying that sentence's subject. Differences in student ability to work with these sentence types were indeed found. It had been suggested by error analysts Barritt and Kroll (1978) that the student's own errors may be a key to how the student learns; the student's ability to detect errors in the writing of another may also be a key to learning. Assessing the ability to detect errors in such sentence combinations, and to correctly recombine the sentences, should provide clues to the types of errors students make in their own writing and clues to ways to help students master their difficulty.

These findings suggest an interesting extension of sentence combining approaches to the teaching of composition. In sentence combining instruction, students who are shown simple sentences and asked to combine them into more sophisticated, complex ones seem to grow in writing ability. In the current study, students who were shown sentences which had been inappropriately combined and who were helped to understand why the combination was unsuccessful improved their recognition and editing ability. Since the instruction was successful, this suggests an appropriate variation of sentence combining research and instruction.

In the editing experiment, students found the passives easiest to
correct, with no significant difference between possessives and actives. The finding for the editing group, that sentences with passive verbs were easier than sentences with active verbs, may be a result of test design. The posttest questions, upon reexamination, appeared to be somewhat more abstract than the pretest questions, especially for the active sentences. Particularly for the more abstract active sentences, many students solved one ambiguity by creating another, for example, by shifting to an inappropriate passive or creating an ambiguous pronoun reference (i.e., Appendix D, page 117, number 19: "Resenting being passed over again, a plan for revenge grew in his mind" was rewritten "Resenting being passed over again, revenge was planned in his mind.") Assuring that all test questions are at the same level of abstraction for the student's level, though difficult, should be a consideration in further research. Further research is also needed to clarify the difficulty of these sentence types.

Although background was of interest in the study, the data provided little insight into which students would benefit most from instruction. One interaction not hypothesized that appeared meaningful (sentence type by Iowa State English grade point) was found in the recognition group. On the followup test, the low grade point group was less than a point below the high group when working with active sentences and less than a half a point below the high group for passives; however, for possessives, the low group was over three points lower. Whereas the expected pattern was found, with students scoring best with actives, less well with passives, and least well with possessives, the low group was far lowest when working with the possessive sentences. This finding may be due to greater
syntactic maturity of the high grade point group. Students with high
grade points may have been at the appropriate syntactic maturity level
to allow them to apply what they learned from the instruction to the most
difficult of the sentences, namely the possessives, while the fact that
the low group could not work effectively with possessives may indicate
that they may be at a lower level of maturity.

An unexpected finding due to background variable in the editing
experiment was that low English grade point students performed best on
the followup test if taught with humorous examples while those with high
grade points learned most effectively from serious instruction. The low
grade point may be an index of high anxiety about language, and humor is
said to reduce tension (Smith, et al., 1971). Thus, humor may have helped
low grade point students relax so that they could learn. If the grade
point is a measure of syntactic maturity, and if the amusing ambiguity
illuminates the deep structural ambiguity most effectively for students
just at the point of mastery of deep structure, it may be that low grade
point students will find the humorous instruction most illuminating while
the high grade point students will find it irrelevant.

An additional unexpected finding of the study due to background
variable was that, in the editing experiment, students presumed to have
less sophistication in language (i.e., with fewer courses in English)
were more effective with the problem sentences believed to be more diffi-
cult (i.e., those with passives and possessives). Students who have
worked with the language in several English classes should have greater
mastery of the language than those who have taken few courses, yet in the
study it was found that students with low numbers of courses in English performed most effectively with the presumably more difficult passive and possessive sentences. Perhaps that finding is explained by the fact that included in the measure of high number of English courses was the number of credits of F that a student had earned. Thus, for some students, the high number of units measure may be an index of student difficulty with the language. These findings raised the question of what was measured by the number of units of Iowa State English. The relationship between grade point average and numbers of units was tested by a product-moment correlation, and a very low negative correlation was found, -.1293, suggesting that the relationship between numbers of courses completed and grade point is low negative or nonexistent.

Further research is needed to assess elements in the student's background that are relevant to learning, effectiveness of humor, and levels of difficulty of the active, passive, and possessive sentences as models of syntactic difficulty and structural ambiguity.

Implications

Even near graduation, it is clear, college students do not all fully understand the dangling introductory modifier. Students have not yet reached the syntactic maturity that adults are assumed to have. Teachers who instruct students about the dangling introductory modifier should include sentences with several kinds of main clauses, not simply the clause with an active verb. More complex structures, such as the passive and distracting possessive, may cause more difficulty.
A further teaching implication is the difference between student ability to recognize correct and incorrect sentences and student ability to rewrite sentences correctly. Though no direct comparison across experiments was made, students appeared to be able to more effectively recognize flawed sentences than to rewrite them. Students who attempted to rewrite flawed sentences were sometimes clearly aware of the problem but unable to solve it. Told that all sentences were incorrect, some students did not attempt to correct all sentences, some made attempts that were clearly helpless floundering or evasion, some made valiant attempts while creating new grammatical flaws, and some solved the problem efficiently or even creatively. It was assumed that the ability to recognize errors would develop before the skill to correct them; that assumption should be tested.

Further research should attempt to establish which students will be most helped by which instruction. Background data which provide information about all college grade point, placement test scores, and high school should be analyzed; data on successful completion of college English courses might be studied. Such information might make it possible to define syntactic maturity more clearly and to establish the value of humorous instruction for specific cases, if any.

Experiments should be conducted with more examples of both serious and humorous dangling modifiers, with different types of humorous examples, and perhaps with more abstract and concrete examples. Further experiments might require students to retain the introductory modifier in their
rewrites, or to retain the main clause while correcting the modifier; the study might also be varied by using fewer test questions to assure student alertness, or by varying the levels of abstraction and concreteness in test sentences. Further clarification of the relationship between ability to recognize and correct could be provided by asking students to do both tasks. Such experiments would be useful in establishing the relationship between humorous and serious examples and learning, and clarifying the difficulty of the syntactic ambiguity of the three sentence types.

This study did not investigate the relationship between the student's writing and that student's ability to detect errors in the writing of others. While students write introductory modifier sentences in a very small proportion of their sentences, comparison of data about the students' own writing and their ability to effectively recognize error or rewrite sentences should be made. More information is needed to establish the relationship between those abilities and to provide clues to what errors are made and what instruction would be appropriate.

Conclusion

This, it was found in this study that students can learn to increase their effectiveness in recognizing or correcting dangling introductory modifiers even when the instruction they receive is quite brief. The resultant learning was lasting, remaining statistically significant nearly three months later. These results are important since no evidence has been found of any study with carefully defined instruction and controlled pretests, posttests and followup tests designed to assess the effectiveness of teaching one grammar element. No study has apparently
been made of the value of humorous sentences to exemplify grammatical errors; no mention was found in the literature of the difference in difficulty level of the syntactic types of sentences in producing or solving grammatical flaws. Research studies of this type for college students are rare indeed. The research on grammar and sentence combining instruction has been primarily with children, rather than college students. Composition research has been primarily a global analysis of longterm instruction; that is, students have been taught many elements of composition, including grammar tips, and their overall improvement has been rated, or students have been taught sentence combining and the resultant complexity of their sentences has been evaluated. Attempts to assess learning as a result of lengthy instruction were difficult to analyze because so much data was available and because, with many variables, it was difficult to know which of them made a difference. When assessment of instruction is made based on the student's writing, moreover, the problem of assessing writing intervenes.

While the present study can be said to be molecular rather than global in scope, it provides important findings. Composition skill is made up of minute elements, and the findings of the study can be said to suggest that at least one, perhaps more, of these elements can be taught effectively with instruction that is basically a set of helpful hints. Students would require many such helpful hints to improve their overall writing, but many other grammar elements lend themselves well to such teaching tips. Further research could assess the appropriateness of
type of instruction, specific grammar and composition elements, and student developmental level.
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APPENDIX A

HUMOR RATING
On the answer sheet, indicate how humorous the sentences seem to you. On a scale of 1 to 5, mark 1 as "very amusing" and 5 as "not at all amusing." You need not give your name.

very amusing /-----/-----/-----/-----/ not at all amusing

1. Being a stockholder in the Azuza Corporation, your 1980 dividend check will soon be in the mail.

2. Moving quickly and safely, the assembly line operation showed the efficiency of the workers.

3. Rolling around in the bottom of the test chamber, I found the missing ball bearings.

4. While hopping from one foot to the other, the crosstown bus finally came into the cold passenger's view.

5. Smelling of liquor, the officer arrested the driver.

6. Alternately talking and dozing and eating bananas, the sun sank slowly below the horizon.

7. Driving down the highway, a warehouse suddenly loomed in front of the bus driver.

8. After finishing the research, the report was easy for the researcher to write.

9. Suffering from a fatal disease, the doctor showed Jane how it could be a blessing.

10. Strolling down the main streets of Los Angeles, Ames seemed far away to Jim.

11. After soaking in the prepared mixture overnight, I set the specimen up to dry.

12. Resenting being passed over again, a plan for revenge was growing in his mind.

13. Having very little money, college was out of the question for Bill.

14. Sitting on the back pew, Mr. Smith's eyes wandered over the congregation.

15. Stepping back to view the picture, Milton's face wore a smile of satisfaction.

16. Performing like other businesses, your company's success depends on satisfied customers.

17. Studying the records of the company with care, the budget's approval came from the tax accountant.

18. After drying all day in the summer heat, the painter's next job was applying a second coat to the porch ceiling.

19. Feeling hot and thirsty, Mary's glass of iced tea tasted very good.

20. Working at cleaning up the area, the apartment manager's efforts can eliminate the spilled garbage.
21. Being bedridden, Mr. Doe's companion was his television.

22. Entering the gate, the visitor's view is of the administration building.


24. Wondering perplexedly what to do, the detective's ears heard the sound of the approaching train.

25. Learning that he had been arrested, his mother's heart was broken.

26. Peering at the congregation, the Reverend Brown's wish was that he had chosen other work.

27. Using the procedures outlined below, the accident should be described by the policy holder in the space provided.

28. While working in the factory, protective glasses should be worn by all employees.

29. By specifying standardized commercial equipment, the cost of the proposed system was substantially reduced by the engineer.

30. Coming down in torrents, the road was washed away by the rain.

31. After completing the estimated yearly budget and the income tax returns, a sigh of relief escaped the accountant.

32. Cheering wildly, the team was encouraged by the spectators.

33. After checking the gauges and safety valves, the machine may be operated for many hours without readjustment by the employee.

34. Running into Sam in town, a question popped into Sue's mind.

35. Reading quickly through the book, the apple was eaten by the busy student.

36. In writing up the report, some very serious errors were made by the consulting engineers.

37. Suddenly realizing what would be expected of us, the application was withdrawn.

38. After carefully planning, writing, and editing the report, a vacation was proposed by the leader.

39. Unwilling to move the high school, another route was chosen by the highway commission for the new freeway.

40. While reaching for a second helping, his shoulder was dislocated.
APPENDIX B

VISUALS
VISUAL FOR BOTH TREATMENTS

THE INTRODUCTORY MODIFIER SIGNALS OR "SETS UP" THE SUBJECT OF THE SENTENCE.

THE MODIFIER MUST POINT CLEARLY TO THE SUBJECT IT MODIFIES.
VISUALS FOR SERIOUS TREATMENT

After finishing the research, the report was easy for the researcher to write.
THE INTRODUCTORY MODIFIER SIGNS OR "SETS UP" THE SUBJECT OF THE SENTENCE

Being a stockholder in the Azuza Corporation, your 1980 dividend check will soon be in the mail.
Performing like other businesses, your company's success depends on satisfied customers.
Entering the gate, the visitor's view is of the administration building.

By specifying standardized commercial equipment, the cost of the proposed system was substantially reduced by the engineer.

In writing up the report, some very serious errors were made by the consulting engineers.
VISUALS FOR HUMOROUS TREATMENT

After soaking in the prepared mixture overnight, I set the specimen up to dry.
THE INTRODUCTORY MODIFIER SIGNALS OR "SETS UP" THE SUBJECT OF THE SENTENCE

Alternately talking and dozing and eating bananas, the sun sank slowly below the horizon as the passengers relaxed.
THE MODIFIER MUST POINT CLEARLY TO THE SUBJECT IT MODIFIES

After drying all day in the summer heat, the painter's next job was applying a second coat to the porch ceiling.
Wondering perplexedly what to do, the detective's ears heard the sound of the approaching train.

Reading quickly through the book, the apple was eaten by the busy student.

While reaching for a second helping, his shoulder was dislocated.
APPENDIX C

TEST MATERIALS
INFORMED CONSENT FOR EXPERIMENT: METHODS OF INSTRUCTION IN GRAMMAR

A current method of instruction in grammar is functional: students are shown examples of sentence errors, the sentence is discussed, and ways to correct the problem are considered. In this experiment, we are considering which functional grammar methods are most effective for upper level college students.

If you choose to participate, you will be asked to spend about 20 minutes today completing a pretest over a sentence problem. At the next class meeting, you will be given about 5 minutes of functional grammar instruction, and a posttest that will take about 15 minutes. We are not interested in examining the responses of individuals, but are only interested in making comparisons among groups of people. Thus, every effort will be made to keep your answers confidential. You will mark your consent form and papers with a code number for clerical purposes; the test papers will always be kept separate from the consent form so that there will be no way your responses will be identifiable as yours. Every effort will be made to keep your answers confidential at all times. You are free to withdraw from the study at any time.

To determine whether the success of the different teaching methods is related to other measures of ability, we would like to have access to your college entrance examination scores and record in English classes. You will be given a brief statement of the results by the end of the quarter.

Any questions?

Having read the description of the purpose and procedure of the experiment, I freely agree to participate. I also give permission for my records to be checked for the number of units of instruction in English, grades in English, and entrance examination scores.

code number

signature

To receive a more detailed discussion of the purpose of the study, write your address below

street  city  state  zip
Correct these dangling modifiers by inserting or crossing out words, or drawing arrows to rearrange words, or by rewriting.

1. After completing the estimated yearly budget and the income tax returns, her relief was sighed by the accountant.
2. Having very little money, college was out of the question for Sally.
3. After rereading the text several times, the book's meaning became clear to him.
4. After carefully planning, writing, and editing the report, a vacation was suggested by the leader.
5. Shaving quickly and combing his hair, the thought of golf excited him.
6. Returning to Lyon thirty years later, Joan's opinion was that the city was the same.
7. Listing badly, the sea drew the ship slowly, then quickly, under the waves.
8. Wondering about the reception it would receive, the new plan was temporarily shelved by the council.
9. Before applying a coat of varnish, the wood's surface should be sanded.
10. Drifting slowly into sleep, the thought of a quiet walk along the beach soothed her.
11. Hoping to finish work early, the report was skimmed by the engineer.
12. Watching him do the task, Jane's quick mind perceived an easier way to get the same result.
13. Carefully pressing the flowing chiffon gown, the senior prom filled Susan's daydreams.
14. Having two previous convictions, a stiff sentence was expected by the felon.
15. Working at cleaning up the area, the apartment manager's efforts can eliminate the spilled garbage.
16. Believing strongly in freedom for workers, the leader's plan was promoted by the union.

17. In evaluating the research, three criteria are important to the supervisor.

18. After completing the physical examination, the dog must be given a rabies shot by the veterinarian.

19. Telling the neighbors to turn their TV down, Frank's request made the neighbors angry.

20. Wishing to calm the public, the story was at first withheld from the newspaper by the editor.

21. Keeping busy, the afternoon passed quickly for me.

22. Flying very near the ground, the danger of crashing the transport plane was clear.

23. Smelling smoke, Betty's attention was drawn to the hallway.

24. Leaping over a fallen log, the grace of the fawn was demonstrated to the doe.

25. Being quite surprised by the enthusiasm of the class, Miss Martin's lower lip trembled slightly.

26. Unwilling to move the high school, another route for the new freeway was chosen by the highway commission.

27. Creating a new design, the preparation of a watercolor sketch was the artist's first step.

28. Peering at the congregation, the Reverend Brown's wish was that he had chosen other work.

29. Staying too long in the huddle, the referee penalized our team 5 yards.

30. After checking the gauges and safety valves, the machine may be operated for many hours without readjustment by the employee.
Please put your code number on the machine-scored sheet. Do NOT give your name. On the machine-scored sheet, blacken an A for sentences which are correct and a B for those which have dangling modifiers.

1. Having been shipped in a flimsy carton, the vase was broken when it arrived.

2. After completing the estimated yearly budget and the income tax returns, her relief was sighed by the accountant.

3. Upon entering the hospital for surgery, I received a long list of post-surgical exercises to learn.

4. Having very little money, college was out of the question for Sally.

5. After rereading the text several times, the book's meaning became clear to him.

6. Hearing a noise, the company's guard dog was instantly alert.

7. After carefully planning, writing, and editing the report, a vacation was suggested by the leader.

8. While appearing to be sluggish and listless, the actions of the office worker were found to be efficient and motion saving.

9. After getting a few drops of oil, the hinge stopped squeaking.

10. Shaving quickly and combing his hair, the thought of golf excited him.

11. Costing vast sums of money, the commander's battles are stripping the country of its resources.

12. Returning to Lyon thirty years later, Joan's opinion was that the city was the same.

13. Listing badly, the sea drew the ship slowly, then quickly, under the waves.

14. Working late at the office last night, Mr. Jones heard a burglar in the drugstore next door.

15. Describing a four-year period, the proposal was considered by the board of directors.

16. Wondering about the reception it would receive, the new plan was temporarily shelved by the council.

17. Flying high in the clouds, Charlie's kite was a joy for Snoopy to see.

18. Before applying a coat of varnish, the wood's surface should be sanded.
19. Finding the number in the telephone directory, the employee called the customer for more information.

20. Drifting slowly into sleep, the thought of a quiet walk along the beach soothed her.

21. Hoping to finish work early, the report was skimmed by the engineer.

22. Once again getting the work done ahead of schedule, the supervisor was praised by his superiors.

23. Watching him do the task, Jane's quick mind perceived an easier way to get the same result.

24. Eliminating 95% of the pollutants, the industry's new filters are recovering valuable minerals as well.

25. Discovering coal in the south farm, the farmer was both happy and troubled.

26. Carefully pressing the flowing chiffon gown, the senior prom filled Susan's daydreams.

27. Having two previous convictions, a stiff sentence was expected by the felon.

28. Riding lower and lower in the water, the new tanker would be swamped if the waves grew much higher.

29. Working at cleaning up the area, the apartment manager's efforts can eliminate the spilled garbage.

30. Glancing hurriedly through the books, the firm's accountant suddenly stopped to look at an unusual entry.

31. Jumping joyfully over and in the puddles, Beth's puppy gloried in the warm spring rain.

32. Believing strongly in freedom for workers, the leader's plan was promoted by the union.

33. Being accustomed to making mistakes, John calmly set about correcting his latest.

34. In evaluating the research, three criteria are important to the supervisor.

35. Although carrying almost the full load of the corporation's responsibility, the president was still not properly appreciated by the investors.

36. After completing the physical examination, the dog must be given a rabies shot by the veterinarian.

37. Climbing cautiously onto the high, steep roof, the firm's workers began to replace the slate on the historic building.
38. Telling the neighbors to turn their TV down, Frank's request made the neighbors angry.

39. Wishing to calm the public, the story was at first withheld from the newspaper by the editor.

40. Requiring great care, the test is performed only by the most experienced technicians.

41. Keeping busy, the afternoon passed quickly for me.

42. Debating the merits of the plan with his assistants, the company president had doubts about the committee's proposal.

43. Jotting down the excuse in his notebook, the officer then asked the driver how fast he had been driving.

44. Flying very near the ground, the danger of crashing the transport plane was clear.

45. Carrying out the garbage, the janitor's assistant stumbled over the last step.

46. Smelling smoke, Betty's attention was drawn to the hallway.

47. Leaping over a fallen log, the grace of the fawn was demonstrated to the doe.

48. Fighting hard against the blaze, the city fire department was cheered by the newly homeless apartment dwellers.

49. After plowing doggedly through mountains of law books, John's lawyer found out that state law made the case hopeless.

50. Being quite surprised by the enthusiasm of the class, Miss Martin's lower lip trembled slightly.

51. Unwilling to move the high school, another route for the new freeway was chosen by the highway commission.

52. While working late into the night, the commercial artist was pressured by the advertiser's time requirements.

53. Creating a new design, the preparation of a watercolor sketch was the artist's first step.

54. Reaching the top job in the corporation, the employee looked around for a higher goal.

55. Skimming gracefully over the water, Bill's girlfriend showed us how well she could water ski.

56. Peering at the congregation, the Reverend Brown's wish was that he had chosen other work.
57. Staying too long in the huddle, the referee penalized our team 5 yards.

58. Considering all aspects of the situation, the treasurer proposed an increase in the council's budget.

59. Finding the lectures especially interesting, the worker was fascinated by the psychology course.

60. After checking the gauges and safety valves, the machine may be operated for many hours without readjustment by the employee.
Correct these dangling modifiers by inserting or crossing out words, or drawing arrows to rearrange words, or by rewriting.

1. Extending his investigation further, Newton's next discovery was the law of gravity.

2. Falling from the sky, the ground was soon covered with snowflakes.

3. Seeming drab and dirty by day, the night makes the city seem beautiful.

4. Being bedridden, Mr. Doe's companion was his television set.

5. Packing tobacco carefully into his pipe, his eye searched the room for a match.

6. Suddenly realizing what would be expected from us, the application was withdrawn.

7. By loosening his tie and unbuttoning his collar, Joe's relief was immediate.

8. After leaving us, his office was Joe's next stop.

9. Hunting through the tool chest, the pliers were found under the socket set by the assistant.

10. Feeling a little sick, a visit to the doctor was considered by John.

11. Skimming the cookbook, a recipe for ham with cherry sauce interested Jim.

12. Not caring who might hear, Joe's voice was raised in anger.

13. Running down the steps to greet us, Clifford's hearty welcome warmed our hearts.

14. After reading the day's correspondence and dictating letters, the rest of the day can be spent on your plan for the new addition to the building.

15. Having driven three years without an accident, the insurance company gave the policyholder a discount.

16. After raking the leaves into a big pile, the wind swirled them all over the lawn while the exhausted young man watched in dismay.
17. Using the procedures outlined below, the accident should be described by the policy holder in the space provided.

18. Being irritated by his frequent absences, the manager's demand was that the janitor resign.

19. Resenting being passed over again, a plan for revenge grew in his mind.

20. Racing through the town at high speed, many lives were endangered by the driver.

21. Pecking at the cedar siding of the house, the woodpecker's actions were annoying to the homeowner.

22. Having a good educational background, John's farm experience qualifies him for the job.

23. Fearing that she would lose her husband and daughter, the power of prayer took on a new meaning to her.

24. While working in the factory, protective glasses should be worn by employees.

25. While protesting pollution, armbands will be worn by the marchers.

26. Looking up through the glass bottom of the canoe, the fish's surprise was great as it saw the tourist.

27. Already trembling with fear from the darkness and the violent storm, panic seized the campers when a bear appeared.

28. Writing about federal government, limitations on its powers occupied James Madison's mind.

29. Moving the chair nearer the sofa, the living room was made more comfortable by the hostess.

30. Sewing the arms and legs to the body, the stuffed toy took on shape at the hands of the seamstress.
Please put your code number on the machine-scored sheet. Do NOT give your name. On the machine-scored sheet, blacken an A for sentences which are correct and a B for those which have dangling modifiers.

1. Extending his investigation further, Newton's next discovery was the law of gravity.

2. After discovering a flaw in the aluminum, the plant's inspector called for more strict production procedures.

3. Draping the fabric awkwardly over the model, the young designer was embarrassed by the attention of the fashion leader.

4. Falling from the sky, the ground was soon covered with snowflakes.

5. Seeming drab and dirty by day, the night makes the city seem beautiful.

6. Spreading throughout the body tissues and fluids, the common drug can damage almost every vital organ.

7. Clinging fiercely to the original procedures, the company's president wanted to avoid change at all cost.

8. Being bedridden, Mr. Doe's companion was his television set.

9. Waiting patiently for the doctor to appear, Jane studied the photographs and diplomas that decorated the walls.

10. Packing tobacco carefully into his pipe, his eye searched the room for a match.

11. Struggling with Mr. Green's poor bookkeeping, the tax accountant was annoyed by the slow progress being made.

12. Suddenly realizing what would be expected from us, the application was withdrawn.

13. By loosening his tie and unbuttoning his collar, Joe's relief was immediate.

14. Looking wistfully out the window at the snow, Joe's bedridden father waited anxiously for spring.

15. Struggling silently for self control, the new mechanical engineer slowly responded to the supervisor's attack.

16. After leaving us, his office was Joe's next stop.

17. Changing with the seasons, the beach is shaped by waves and currents.

18. Hunting through the tool chest, the pliers were found under the socket set by the assistant.
19. Reviewing the applicants' files, the personnel director was disturbed by the quality of the application letters.

20. Feeling a little sick, a visit to the doctor was considered by John.

21. Skimming the cookbook, a recipe for ham with cherry sauce interested Jim.

22. Riding over the hills, the jeep's driver enjoyed the tree leaves' fall color.

23. Not caring who might hear, Joe's voice was raised in anger.

24. Falling down the stairs, John broke his wrist and leg.

25. Carrying the argument to ridiculous extremes, Joan's office partner succeeded in offending all of the other employees.

26. Running down the steps to greet us, Clifford's hearty welcome warmed our hearts.

27. After reading the day's correspondence and dictating letters, the rest of the day can be spent on your plan for the new addition to the building.

28. After being unpacked, numbered, and catalogued, the bits of pottery are then examined by the expert archaeologists.

29. Having driven three years without an accident, the insurance company gave the policyholder a discount.

30. Returning from a ski trip, the weary travelers began to unpack their soggy clothing and equipment.

31. Rushing into the room, my cousin Bill announced his engagement to the girl next door.

32. After raking the leaves into a big pile, the wind swirled them all over the lawn while the exhausted young man watched in dismay.

33. Arguing that economy measures were necessary, Ms. Greene was supported by her supervisor.

34. Using the procedures outlined below, the accident should be described by the policy holder in the space provided.

35. Being tired from the day's visitors, the nurse's patient went easily to sleep.

36. Being irritated by his frequent absences, the manager's demand was that the janitor resign.

37. While the laboratory technician was testing the samples, she was being evaluated by the veterinarian in charge.
38. Resenting being passed over again, a plan for revenge grew in his mind.

39. Racing through the town at high speed, many lives were endangered by the driver.

40. Considering the entire matter carefully, the committee's consultant advised the committee to drop the proposal.

41. Pecking at the cedar siding of the house, the woodpecker's actions were annoying to the homeowner.

42. Peering out of the window, Barry saw swirling and drifting snow.

43. Swimming near the lake shore, Sally's dog spotted a muskrat.

44. Having a good educational background, John's farm experience qualifies him for the job.

45. While completing a design for the local manufacturing plant, the consulting architects discovered a flaw in the budget.

46. Fearing that she would lose her husband and daughter, the power of prayer took on new meaning to her.

47. Combining great knowledge with genuine humility, the researcher is admired by colleagues and the public alike.

48. While working in the factory, protective glasses should be worn by employees.

49. Initiating one of the most sweeping land reforms in the nation's history, the revolutionaries were hated by the ousted farmers.

50. While protesting pollution, armbands will be worn by the marchers.

51. Looking up through the glass bottom of the boat, the fish's surprise was great as it saw the tourist.

52. Turning on the light, the dentist's assistant found it much easier to look for cavities.

53. Already trembling with fear from the darkness and the violent storm, panic seized the campers when a bear appeared.

54. Taking turns throughout the night, the girls kept watch over their injured father and sister.

55. Hearing the telephone ring late at night, the emergency-services officer feared that another plane had crashed.

56. Writing about the federal government, limitations on its power occupied James Madison's mind.
57. Moving the chair nearer the sofa, the living room was made more comfortable by the hostess.

58. While lying on the president's desk over the weekend, the plans for the company's new factory were filmed by the industrial spy.

59. Swinging merrily through the trees, the monkey's baby was learning how to play.

60. Sewing the arms and legs to the body, the stuffed toy took on shape at the hands of the seamstress.
APPENDIX D

SAMPLE SENTENCES FOR CRITERIA VALIDATION
1. Using the procedures outlined below, the accident should be described by the policy holder in the space provided.

2. Sewing the arms and legs to the body, the stuffed toy took on shape at the hands of the seamstress.

3. While working in the factory, protective glasses should be worn by employees, especially if they are going to work in the factory.

4. While working in the factory, protective glasses should be worn by employees, especially and good luck.

5. Having a good educational background, John's farm experience qualifies him for the job.

6. Being irritated by his frequent absences, the manager's demand was that the janitor resign because of that.

7. While protesting pollution, armbands will be worn by the marchers.

8. Fearing that she would lose her husband and daughter, the power of prayer took on a new meaning to her.

9. Sewing the arms and legs to the body, the stuffed toy took on shape at the hands of the seamstress.

10. Having a good educational background, John's farm experience qualifies him for the job.

11. Being irritated by his frequent absences, the manager's demand was that the janitor resign because of that.

12. Fearing that she would lose her husband and daughter, the power of prayer took on a new meaning to her.
3. Using the procedures outlined below, the accident should be described in the space provided.

14. Seeming drab and dirty by day, the night makes the city seem beautiful.

15. Pecking at the cedar siding of the house, the woodpecker's actions were annoying to the homeowner.

16. Moving the chair nearer the sofa, the living room was made more comfortable.

17. While protesting pollution, armbands will be worn by the marchers.

19. While protesting pollution, armbands will be worn by the marchers.

20. Having driven three years without an accident, the insurance company gave the policyholder a discount.

22. Receiving being passed over again, a plan for revenge grew in his mind. Since he resented

23. Already trembling with fear from the darkness and the violent storm, the campers, who were seized by panic, seized the campers when a bear appeared.