A Systems Analysis of Laboratory Report Editing

Suanne A. Williams

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A SYSTEMS ANALYSIS OF LABORATORY REPORT EDITING

by

Suanne A. Williams

A Thesis
Submitted to the
Faculty of The Graduate College
in partial fulfillment
of the
Degree of Master of Arts

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Suanne A. Williams
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PRELIMINARY ANALYSIS

This systems analysis was an effort to improve the editing of laboratory reports by teaching apprentices so that their students could acquire desirable technical writing skills.

Teaching apprentices (TA's) functioned as credit staff in the junior-level applied behavior analysis course (Bacon, 1974). Graduate and undergraduate course assistants (referred to as the course "staff") selected them on the basis of their past performance in the course, their interpersonal skills, and their laboratory report writing skills. These teaching apprentices helped students acquire technical writing skills and served as resource people at the applied laboratory setting.

Throughout the semester the TA's edited a total of four laboratory reports for each student with each report divided into four sections: 1) Method, 2) Introduction and References, 3) Results and Figures, 4) Discussion and Abstract. In addition, they edited three reference summaries for the students' first two experiments. The reference summaries provided the students with an opportunity to summarize an article's important information (subject, setting, procedure, results, and discussion).

The staff gave the students and TA's a writing guide for laboratory reports that outlined the particulars of each section. The writing guide specified the purpose of each section, typing format, and relevant content. It also included checklists and a
description of the point contingencies (number of points possible per major writing response) in effect for each section of the laboratory report.

Students could earn 15 points for each written laboratory report section with all points earned going toward their final course grade. When the student completed the rough draft of each section, the TA's edited the reports citing errors, as well as providing suggestions for change. They delivered written positive comments for writing the report according to the writing guide. Students rewrote the sections if they lost three or more of the available points. The TA's then edited the reports again and assigned final points.

The point contingency sections of the writing guide provided the TA's with specifications on how to consequate inappropriate writing. These sections cited potential errors along with the assigned numerical loss (i.e. failure to double space, -1). Other than this, the staff of Psychology 350 had made few formal attempts in instructing the TA's how to edit.

The writing guide did not provide its reader with model sentences that showed the requested style and/or content. The guide did not include situational examples of incorrect content and style with suggestions as to how the TA should prompt revision. Additionally, training in feedback delivery (when to reinforce, prompt revision, and so on) did not occur. Supervisors infrequently observed the TA's editing: approximately three times throughout
the 15 week semester the course assistants unsystematically examined the TA's work and provided suggestions for change. They penalized the TA's editing behaviors only by providing corrective feedback (that is, indicating where errors were and providing prompts as to how to correct them), and/or positive comments for accurate editing. The staff subjectively determined the TA's final course grade on the basis of their course activities (assisting in applied labs, interpersonal skills, promptness in attending labs, returning laboratory reports, etc.) rather than assigning the grade partly or solely contingent upon their editing performance.

This course structure may not have helped the TA's learn how to edit and thus may not have contributed to improving the writing skills of the students enrolled in the course. A preliminary examination of over 50 laboratory reported from past semesters supported these assumptions. I noted from the reports sampled that the TA's missed many of the major content and style items required in the laboratory reports. Occasionally, the TA's penalized students for including items that the writing guide requested, and praised them for incorrect material. Corrective feedback appeared infrequently; when they did provide such feedback their comments were often stated in an extreme manner (e.g. "Stupid, this doesn't go here."). The TA's rarely delivered praise for good writing. When they gave positive comments, their feedback failed to indicate what writing behaviors were "good" or "fine." As one
might suspect, the quality of the student's laboratory writing left much to be desired.

As a result of this Preliminary Analysis I designed a system to facilitate the acquisition and maintenance of TA editing skills.

GOAL SPECIFICATION

The primary goals of this experiment were to improve the TA's editing accuracy and feedback delivery.

Given any laboratory report section, each TA should be able to:

1) Cite style and content errors, as well as omissions, with 90% accuracy.

2) Provide corrective feedback on each incorrect or omitted item by specifically indicating what is incorrect and/or omitted from the report and by directing students as to how they are to revise their writing.

3a) Write a minimum of three positive statements per laboratory report section edited. These may address the accurate inclusion of content items and/or good style usage.

3b) Provide specific positive feedback in 50% of the positive comments by specifically indicating what is "good" about the students technical writing rather than merely providing comments such as "OK", "fine", "nice", etc.
L. Keith Miller and his colleagues have researched the use of instructional packages in teaching a variety of behaviors. Through the use of instructional packages, the authors have been able to successfully train people to write instructional packages (Fawcett and Fletcher, 1975), to function as proctors in a PSI Class (Weaver and Miller, 1975), and to speak publically (Fawcett and Miller, 1975). Additionally, the packages have facilitated the learning of helping skills in low income paraprofessionals as well as training community based behaviors (how to provide transportation sources, greet clients, answer phone, provide referrals, etc) to other populations (Fawcett and Fletcher, 1975).

Instructional packages are behavior oriented training programs that contain concise written descriptions of observable, desired behaviors. Typically, they consist of more than one component. This study's instructional packages included the components Fawcett and Fletcher (1975) recommend: written instructions, study guides, situational examples, behavior rehearsals, and performance-based evaluation sessions.

Given the recent employment of instructional packages in the training of a wide range of complex behaviors, instructional packages may prove to be an effective means of training TA's how to edit laboratory reports.
Instructional Package Design

I designed seven instructional packages to teach the editing of technical writing (see Appendix 1). The instructional packages were:

1. Feedback: this package explains the function of feedback, and gives suggestions on how to improve feedback delivery—particularly when and how to give written praise and corrective feedback.

2. Writing Style and Grammar: this package presents the major typing format, spelling, word usage, and punctuation rules selected from the 1972 Publication Manual of the American Psychological association. Also included are examples of correct and incorrect writing exemplifying the above.

Instructional packages three through seven contain correct and incorrect writings exemplifying the various content topic areas.


4. Introduction and References.

5. Results and figures.

6. Discussion.

7. Abstract.

Each of the seven packages contained behavioral objectives (Vargas, 1972; Mager, 1962), instructional material, applied exercises, checklists, and forms for evaluation of the package. The checklists outlined the content and, if relevant, style
specifications particular to the package. Evaluations provided the reader with the opportunity to deliver feedback on the package's contents.

I used the TA's performance on the quizzes and rehearsals to sample their acquisition of the material. The quizzes used short answer and multiple choice questions.

Sample laboratory reports, selected from the students of a previous semester comprised the behavior rehearsals. The TA's edited these, like they would their students', using the instructional packages. I required them to remediate (Bostow and O'Conner, 1973) if they did not pass the quiz and behavior rehearsal with a score of 90% or better. Remedial quizzes consisted of new questions while the remedial rehearsals consisted of new laboratory report.

Experimental Design

A multiple baseline design across subjects (Baer, Wolf, and Risley, 1968) permitted me to analyze experimentally the effects of instructional materials on the acquisition of the student's editing accuracy. I assigned the nine TA's to three groups according to the hours they worked at the applied laboratory.

The TA on duty at 9:20 a.m., along with the two TA's working the next hour formed Group 1. Group 2 was comprised of the TA's scheduled at 11:20 a.m. and one of the 1:20 p.m. TA's. The last group included the two 12:20 p.m. TA's and the remaining 1:20
p.m. TA. I did this to reduce the probability of TA's "sharing" their instructional packages with those that had yet to receive them. This also simplified my delivery of materials to the students.

Mini-Course Design

I designed the mini-course as a means by which the TA's could systematically progress through the instructional package. At the first meeting of each group, I discussed the rationale of the course and established four, consecutive, weekly, one hour meetings. During these times I discussed the assigned instructional packages, and collected the evaluations and the applied exercises. Additionally, I distributed take home quizzes, behavior rehearsals, and the next set of instructional packages. I placed graded take home quizzes and rehearsals on my office door for the TA's to pick up 72 hours after they turned them in.

A course manual outlined the various activities the TA's were to engage in while in the course (see Appendix 2). Points earned for the activities went toward their final course grade (see Table 1).

I told the TA's not to discuss or "share" the instructional packages with members outside of their group. I also informed them that I would provide them with feedback on their editing accuracy. Such feedback would consist of citing the TA's editing strengths, weaknesses, and corrective feedback for each weakness.
<table>
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<th>Frequency</th>
<th>Points Possible</th>
<th>Contingencies &amp; Consequences</th>
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<td>Attending the discussion meetings.</td>
<td>4 meetings</td>
<td>5 each</td>
<td>Must notify the experimenter 24 hours in advance if the meeting must be missed so that rescheduling may occur. Failure to do so results in loss of meeting attendance pts. (5) plus a -15 pt. loss.</td>
</tr>
<tr>
<td>Turning in evaluations at the discussion meetings.</td>
<td>7 evaluations</td>
<td>5 each</td>
<td>Points are given only if these are submitted at the discussion meetings. Failure to do so results in loss of the 5 points possible.</td>
</tr>
<tr>
<td>Turning in applied exercise at the discussion meeting.</td>
<td>7 exercises</td>
<td>5 each</td>
<td>Points are given only if these are submitted at the discussion meeting. Failure to do so results in loss of the 5 points possible.</td>
</tr>
<tr>
<td>Dropping off the quiz and behavior rehearsal within 48 hours of their distribution.</td>
<td>7 quizzes</td>
<td>5 each</td>
<td>For each day beyond the 48 hr. deadline that the TA fails to return his/her completed rehearsals and/or quiz, a minus 4 points results.</td>
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Table 1 (Cont.)
The Editing Mini-Course Activities, Contingencies and Consequences

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<th>Frequency</th>
<th>Points Possible</th>
<th>Contingencies &amp; Consequences</th>
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<td>Obtaining 90% on the quiz and behavior rehearsal.</td>
<td>7 quizzes</td>
<td>10 pts. each (70 total)</td>
<td>If the TA earns less than 90% on either the quiz and/or rehearsal they have one opportunity to remediate the quiz. They must reschedule and take the new forms within 48 hours of the first quiz or rehearsal results. Should they fail to arrange this they forfeit the opportunity to remediate and must accept the first quiz or rehearsal results.</td>
</tr>
<tr>
<td></td>
<td>7 beh. reh.</td>
<td>10 pts. each (70 total)</td>
<td></td>
</tr>
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Total Points Possible - 300
IMPLEMENTATION

The first group of TA's progressed through the instructional packages at the same time their students began writing the second set of laboratory report sections. Groups 2 and 3 were to obtain their packages in an identical sequence as Group 1 but with the onset of their students' third and fourth laboratory report sections, respectively (see Figure 1).

Each TA group discussed the assigned instructional package, completed quizzes, and behavior rehearsals approximately one week before they edited a corresponding laboratory report section. For instance, the TA's in Group 2 completed the Feedback and Method instructional package activities one week to three days before they edited their students' third Method section.

Each TA edited reports for nine students, examining a total of 144 laboratory report sections apiece (36 Methods, Introductions, Discussion and Abstracts, and Results and Figures).

I originally planned for Group 2 and 3 to obtain their instructional packages in the same sequence as Group 1 but at staggered intervals throughout the semester. Unexpectedly, the course staff eliminated the Results and Figures, Discussion, and Abstract sections from the students' third and fourth set of laboratory report writings. With this change the total number of laboratory report sections the TA's edited decreased from 144 to 108 (36 Methods and Introductions, as well as 18 Discussion and Abstracts, and Results and Figures).
FIGURE CAPTION

Figure 1. The order in which each group of TA's received the instructional packages. The sequence in which the students wrote their laboratory report sections (and the TA's subsequent editing of them) appears on the bottom line.

Key: FDBK = Feedback; METH = Method, INTRO = Introduction and Reference, DISC = Discussion and Abstract; RES = Results and Figures; REF SUM = Reference Summary.
LABORATORY REPORT SECTIONS
As shown in Figure 2 I altered the instructional package implementation schedule by giving Groups 1 and 2 the Results and Figures, Discussion, and Abstract instructional packages at the same time. Group 3 never received these materials. All other aspects of the implementation design remained the same.

**OBSERVATION AND RECORDING**

Each TA rank ordered their three best and three worst student writers after the TA's edited each separate section of the laboratory report (see Appendix 3). They ordered students on the basis of how well the student's writing met the writing guide's specifications. From each TA's list I selected one of the best and worst student's laboratory reports to analyze. Given two edited reports per TA per section I examined a total of 216 laboratory report sections (72 Methods, 72 Introductions, 36 Discussion and Abstracts, and 36 Results and Figures).

I assigned code numbers to each laboratory report section in place of the student's cover sheet (front page of their report) because these sheets provided the reader with information (e.g. student's name, TA's name, the date and laboratory report section) that could bias a knowledgeable observer toward the expected results.

**Behavioral Definitions and Response Recording Procedure**

I divided the student's technical writing responses into two major categories, content and style. Content refers to the specific
Figure 2. The revised instructional package implementation sequence.

Key: FDBK = Feedback; METH = Method, INTRO = Introduction and References; DISC = Discussion and Abstract; RES = Results and Figures; REF SUM = Reference Summary.
information the staff requires students to include in each labora-
tory section. For instance, in the Method section operationally
defining a correct response and presenting the reliability calcula-
tion are two of the many required content responses. I
subcategorized style, dividing it into general and specific style.
General style refers to the various writing responses that are
typically required in each laboratory section. Examples of this
include writing the reports in past tense and spelling each word
correctly. Specific style refers to writing responses that are
appropriate in one laboratory section and not the others. For
instance, in the Method section, the student types the report
such that the "Subject" subheading appears three spaces down
from the title, begins at the left margin, the first word is
capitalized, a colon follows it, and so on. These rules are
specific only to the Method section and not to the Results or
Abstract sections.

I analyzed the TA's editing of each report's content and style
in terms of the following dependent variables:

a. "Correct"/correct (c/c): An instance where the TA tells
the student something in their laboratory report is
correct when it is correct.

b. "Error"/correct (e/e): An instance in which the TA tells
the student they errored when they did not.

c. "Nothing"/correct (n/c): An instance in which the TA
fails to tell the student their response is correct when
it is correct.
d. "Error"/error (e/e): An instance in which the TA tells the student something in their laboratory report is incorrect when it actually is incorrect.

e. "Correct"/error (c/e): An instance in which the TA tells the student something is correct when it isn't.

f. "Nothing"/error (n/e): An instance in which the TA fails to tell the student something they wrote in their laboratory report was wrong when it was wrong.

The words in quotes provide information of what the TA's said to the students whereby the words following the slash marks specify the accuracy of the student's responses.

For instance, the part of the formula "correct"/correct is read as: the times when the TA said "correct" given a correct student writing response.

If the student's response met the requirements specified in the writing guide I recorded the TA's editing responses as a "correct"/correct, "error"/correct or "nothing"/correct. However, if the student's response failed to meet the requirements then we recorded the TA's response as an "error"/error, "correct"/error, or "nothing"/error (see Figure 3 and Appendix 4).

In addition I recorded the frequency and type of feedback delivered. I analyzed the TA's feedback in terms of the following dependent variables:

Positive General Feedback: Positive remarks that do not indicate why the writing behaviors are on target.
FIGURE CAPTION

Figure 3. Flowchart of the response coding procedure.
Is the student's response correct?

START

Yes

Did TA say correct?

NO

Did TA say incorrect?

NO

Did TA ignore the response?

YES

Did TA cite and/or correct the error?

NO

Did TA say nothing?

YES

Record: "correct"/correct (c/c)

Record: "error"/correct (e/c)

Record: "nothing"/correct (n/c)

Record: "error"/error (e/e)

Record: "correct"/error (e/c)

Record: "nothing"/error (n/e)

Have you taken data on every item?

NO

YES

END
Positive Specific Feedback: Positive remarks that explicitly tell the student what writing behaviors are correct and perhaps why they are.

Negative General Feedback: Comments that indicate a change must be made but do not specify why the writing does not meet the requirements and/or provide suggestions for revision.

Negative Specific Feedback: Comments that tell the student their performance is incorrect and suggest how to correct the errors.

RELIABILITY

Two independent observers, both working for course credit, collected data on 25 Introduction section reports. I made the reliability observations. Reliability for the two observers was as follows: Content 51%, 60%; Style, 73.5%, 56.7%; and Feedback, 89% and 72%. These percentages clearly indicated that the reliability training system and/or observation codes and definitions required more work. I revised the training system by conducting several practice sessions prior to actual data collection. Once more, reliability measures obtained here indicated a need for future revision. Throughout the rest of the semester I redesigned various aspects of the existing data collections system. The credit students terminated their involvement at the end of the semester. At that time, I obtained the assistance of the observer described below and implemented the final reliability training system.
In this revised system I was the primary observer, examining 216 laboratory report sections. An undergraduate student who was previously a TA in the experimental section of Psychology 350 served as the independent reliability observer. Prior to the training sessions she knew nothing about the study. I held six, two-hour training sessions for the independent observer. During the first two sessions the observer read through the response definitions and examined the behavior checklists. Additionally, she had the opportunity to look over examples of completed data sheets and their corresponding lab reports. At the third session I asked her to practice recording feedback data from two Method lab report sections that were not used in the study. While practicing she could request my help and/or refer to the data sheet examples. She completed data collection on the third sample report without assistance. At this time we compared our results --citing agreements and disagreements. If our agreements resulted in 90% or better we clarified the disagreements and she proceeded to collect feedback data from the remaining sections. If her recording performance fell below the 90% agreement criterion we also discussed disagreements and then had her try again with a new Method section. I used the same procedure to teach her how to collect the style and content data.

The independent observer examined a total of 12 randomly selected lab reports (4 Methods, 4 Introductions, 2 Results and Figures, and 2 Discussions and Abstracts) after she demonstrated

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mastery of the response definition and the data sheets.

We calculated percent reliability using the standard formula:

\[
\left( \frac{\text{agreements}}{\text{disagreements} + \text{agreements}} \right) \times 100.
\]

At the end of her participation in the study the observer received $1.50 per hour.

**GOAL 1: EVALUATION**

Goal 1 specifies that the TA will edit style and content with 90% accuracy. Figure 4 shows the percentage of correct editing responses for style and content. Each data point in this figure, and all subsequent ones, is based on six laboratory reports (three TA's per group, two laboratory reports each).

I computed correct editing using this formula:

\[
\text{correct editing} = \frac{\text{"correct"}/\text{correct} + \text{"error"}/\text{error}}{\text{correct + incorrect}} = \frac{\text{"correct"}/\text{correct} + \text{"error"}/\text{error} + \text{"nothing"}/\text{error} + \text{"error"}/\text{correct} + \text{"correct"}/\text{error}}.
\]

During the baseline and treatment, mean content scores for all groups were 84% and 78% (see Appendix 5 and 6). Great variability in accuracy occurred in both conditions. The range of percentages for baseline and treatment are 45% to 94% and 54% to 96%.

The editing accuracy for general style shows a group mean for baseline and intervention of 31% and 26%. Baseline and treatment scores ranged from 1% to 63% and 7% to 50%. The TA's edited specific style with 43% accuracy during baseline and 41% in treatment. Specific style ranged from 0% to 86% in baseline and 0% to 80% in treatment.
FIGURE CAPTION

Figure 4. Percentage of appropriate content (c) and general (gs) and specific style (ss) editing as function of laboratory report sections.
The baseline data supports the contention that the TA's were not editing style and/or content with 90% accuracy. The variable responding in the treatment condition indicates the instructional packages did not increase editing accuracy.

Figure 5 shows the percentage of correct detection. I computed error detection using this formula:

\[
\text{Detected errors} = \frac{\text{"error"}/\text{error}}{\text{All instances of student} = \text{"nothing"}/\text{error} + \text{"correct"}/\text{error} + \text{"error"}/\text{error}}
\]

Baseline group mean scores for content indicate that the TA's detected 25% of the student errors. After the instructional packages they detected 32% of the errors. Scores ranged from 0% to 73% in baseline to 0% to 58% in treatment. The TA's cited student errors in the general and specific style categories 27% and 19% of the time during baseline and treatment. Errors detected varied considerably in each condition. For instance, errors in the baseline general style ranged from 2%-62% while we observed 7% to 55% of the errors cited after the instructional packages. Specific style ranged from 0-44% in baseline to 0-42% in treatment.

Although the baseline results indicate a need for intervention, the instructional packages did not facilitate a systematic increase in the percent of content and/or style errors detected.

I also examined the percentage of times the TA's reported content and style features as correct when they were incorrect.
Figure 5. Percentage of content (c) and general (gs) and specific style (ss) errors detected as a function of laboratory report sections.
I computed this response using the following formula:

\[
\text{incorrect editing} = \frac{\text{"correct"}/\text{error}}{\text{All instances of student errors}} = \frac{\text{"correct"}/\text{error} + \text{"nothing"}/\text{error} + \text{"error"}/\text{error}}{}
\]

As can be seen in Figure 6 the TA's rarely told their students they presented information correctly when they did not. If the TA errored, he/she typically did so in the Introduction section while editing its contents.

The TA's cited errors as correct responses in 18 of the 216 laboratory reports, an error rate of 8%.

In conclusion, the data indicate that the TA's rarely said information was correct when it was not or that it was incorrect when it was correct. Contrary to the preliminary analysis, this was not a problem.

**GOAL 1: SUGGESTIONS FOR IMPROVEMENT**

When the TA said a content and/or style feature was correct, it was typically correct. The TA's rarely cited a student error as a correct response or a correct response as an error. The most frequent TA editing error involved their failure to cite a mistake when one occurred. In the future, TA errors of this sort may be reduced by requiring the TA to use the independent observers' content and style checklists. I designed these originally to determine reliability and received interobserver agreements in the upper 80's and lower 90's. I believe the checklists provide concise, understandable editing guidelines. If these are used,
FIGURE CAPTION

Figure 6. Percentage of content (c) and general (gs) and specific style (ss) features reported correct when they were incorrect as a function of laboratory sections.
the staff may need to give the TA's more editing time. When the primary observer and myself used these response guidelines, our mean editing time was 35 minutes per laboratory report section. According to self-reports, the TA's typically spent a mean of 20 minutes editing each section.

It's possible that ongoing analysis and feedback to the TA regarding his/her editing, during the treatment condition, may facilitate an increase in editing accuracy. Unfortunately, two major variables prevented us from carrying out this aspect of our intervention plan. First, I was unable to obtain edited reports from the students after the TA's edited them. A clause in the students' manual specifically stated that laboratory reports were not to be returned until the end of the semester. Perhaps because of this, my attempts to obtain the reports from the students using verbal reminders, memos, and bonus points proved ineffective. I received less than half of the reports needed. I used these to test the then existing recording system. Secondly, the data recording system proved to be incomplete (see the Reliability section, page 21).

GOAL 2: EVALUATION

The second goal stated that the TA's were to provide correct feedback on each incorrect and/or omitted item by specifically indicating where the student errored and indicating how they should revise their writing. Such specific corrective feedback statements
are referred to as specific negatives. General negatives are comments that simply state something is wrong. Table 2 shows the frequency of feedback type delivered per laboratory report section.

Groups 1 and 3 decreased their use of general negative statements slightly during the intervention phase, 5% and 8%. The data for Group 2 showed a 7% increase in editing from baseline to training.

GOAL 3: EVALUATION

A third goal involved positive feedback statements. Table 2 shows that specific positive feedback remained fairly constant throughout the experiment. General positive remarks increased from 2-12% across groups following instructional package delivery.

Sub-goal A specified that the TA's should write a minimum of three positive statements per laboratory report. Sub-goal B stated that half of these statements should directly specify what was "good" about the student's writing. Table 3 shows the number of laboratory reports (out of six reports per group) meeting the positive feedback goals. Twenty-six (21%) of the 120 baseline laboratory reports contained a minimum of three positive statements (Sub-goal A). After instructional package delivery, 36 of the 96 reports (37%) met criterion, a 16% increase. Twelve percent of the treatment laboratory reports contained specific positive feedback statements (Sub-goal B). This was a 4% increase from the baseline condition.
Table 2
Frequency of Feedback Type Delivered Per Laboratory Report Section

<table>
<thead>
<tr>
<th>Group</th>
<th>Laboratory Report Section</th>
<th>Specific Negatives</th>
<th>General Negatives</th>
<th>Specific Positives</th>
<th>General Positives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Method (1)</td>
<td>(111)</td>
<td>(8)</td>
<td>(2)</td>
<td>(5)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>48</td>
<td>8</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>85</td>
<td>0</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>36</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>(1) (162)</td>
<td>(8)</td>
<td>(1)</td>
<td>(14)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2) (65)</td>
<td>(4)</td>
<td>(2)</td>
<td>(8)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>47</td>
<td>1</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>14</td>
<td>0</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>(1) (118)</td>
<td>(15)</td>
<td>(4)</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2) (86)</td>
<td>(2)</td>
<td>(0)</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3) (120)</td>
<td>(1)</td>
<td>(8)</td>
<td>(2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>125</td>
<td>1</td>
<td>16</td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>Introduction (1)</td>
<td>(44)</td>
<td>(8)</td>
<td>(5)</td>
<td>(3)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>143</td>
<td>11</td>
<td>2</td>
<td>30</td>
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<td></td>
<td>4</td>
<td>67</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>(1) (159)</td>
<td>(15)</td>
<td>(0)</td>
<td>(20)</td>
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</tr>
<tr>
<td></td>
<td>(2) (37)</td>
<td>(6)</td>
<td>(2)</td>
<td>(16)</td>
<td></td>
</tr>
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<td>3</td>
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<td>30</td>
<td>3</td>
<td>4</td>
<td>19</td>
</tr>
</tbody>
</table>

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Table 2 (Cont.)

Frequency of Feedback Type Delivered Per Laboratory Report Section

<table>
<thead>
<tr>
<th>Group</th>
<th>Laboratory Report Section</th>
<th>Specific Negatives</th>
<th>General Negatives</th>
<th>Specific Positives</th>
<th>General Positives</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>(1)</td>
<td>(85)</td>
<td>(9)</td>
<td>(2)</td>
<td>(15)</td>
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<tr>
<td></td>
<td>(2)</td>
<td>(74)</td>
<td>(34)</td>
<td>(2)</td>
<td>(8)</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>(47)</td>
<td>(2)</td>
<td>(0)</td>
<td>(8)</td>
</tr>
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</tr>
<tr>
<td>1</td>
<td>Results</td>
<td>(1)</td>
<td>(63)</td>
<td>(6)</td>
<td>(0)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>96</td>
<td>3</td>
<td>0</td>
<td>14</td>
</tr>
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</tr>
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<td>(2)</td>
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</tr>
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</tr>
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<td>8</td>
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<tr>
<td>3</td>
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<td>(1)</td>
<td>(71)</td>
<td>(13)</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td>(2)</td>
<td>(40)</td>
<td>(0)</td>
<td>(3)</td>
<td>(7)</td>
</tr>
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</table>

NOTE: Numbers in parentheses indicate scores obtained in the baseline condition.
Table 3

Number of Laboratory Reports Meeting the Positive Feedback Goals Out of Six Reports Per Group

<table>
<thead>
<tr>
<th>Sub Goal</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>Method</td>
<td>1</td>
<td>(0)</td>
<td>(0)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
<td>(1)</td>
<td>(1)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
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<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Results &amp; Figures</td>
<td>1</td>
<td>(0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Discussion &amp; Abstract</td>
<td>2</td>
<td>(1)</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Sub Goal A. Minimum of three positive feedback statements per laboratory report.

Sub Goal B. One-half of the positive feedback statements per laboratory report are specific positives.

NOTE: Numbers in parentheses indicate scores obtained in the baseline condition.
The frequency of general positive feedback increased after instructional package delivery. Specific feedback though remained the same throughout the experiment. The percent of report sections containing three positive statements per laboratory report section increased in the treatment condition. In addition, the percent of report sections containing positive feedback statements of which at least half were specific increased slightly.

GOAL 2 AND 3: SUGGESTIONS FOR IMPROVEMENT

The quality and quantity of the TA's feedback was not greatly affected by the feedback instructional package. In the future it may be advantageous to establish more and better rules regarding feedback quality, and perhaps quantity. For instance, a rule addressing negative remarks might state that only specific corrective comments may appear on the laboratory reports. Another rule might state that one-half of the positive comments must be specific. The TA's in this study did not receive these corrective feedback rules. The implementation of such rules may enable the TA to better self edit his/her comments prior to returning the edited sections to the students. By doing so, the TA could obtain immediate feedback on the quantity of the various remarks and adjust the statements accordingly. This system would also provide the staff with a more standardized means of measuring TA editing.
The rules alone may not be enough. The TA's were provided with written instructions to deliver a minimum of three positive comments per laboratory report yet this did not occur. Perhaps the staff could design a point system in which the TA's would earn and/or lose points towards a final grade based on minimum editing performance.

STUDENT'S WRITING PERFORMANCE: EVALUATION

I assessed the changes in students' technical writing performance throughout the semester by observing the frequency of errors in the Method report section. Tables 4 and 5 show the means of the content and past tense usage errors for the three best (fewest errors) and three worst (most errors) reports. The "worst" writers content and past tense errors decreased a mean of 2.0 and 3.0 throughout the semester. Their major writing improvement occurred in the area of tense usage. There was not a notable change in the mean content errors of the "best" writers. This group showed no past tense errors.

STUDENT'S WRITING PERFORMANCE: SUGGESTIONS FOR IMPROVEMENT

These data are representative of just two of the numerous aspects of laboratory writing. The staff of Psychology 350 may wish to observe additional content and/or style features (i.e., margin widths, spelling, correct graph drawing, reference pages, etc.) to get a clearer view of whether or not the students'
Table 4
Mean of Student Content Errors for the Three Best and Three Worst Laboratory Reports

<table>
<thead>
<tr>
<th></th>
<th>Group 1</th>
<th></th>
<th>Group 2</th>
<th></th>
<th>Group 3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Best</td>
<td>Worst</td>
<td>Best</td>
<td>Worst</td>
<td>Best</td>
<td>Worst</td>
</tr>
<tr>
<td>M1</td>
<td>(1.2)</td>
<td>(6.3)</td>
<td>(1.5)</td>
<td>(5.7)</td>
<td>(2.2)</td>
<td>(9.7)</td>
</tr>
<tr>
<td>2</td>
<td>2.6</td>
<td>6.0</td>
<td>(1.3)</td>
<td>(3.8)</td>
<td>(1.5)</td>
<td>(3.2)</td>
</tr>
<tr>
<td>3</td>
<td>1.6</td>
<td>5.7</td>
<td>.7</td>
<td>6.0</td>
<td>(1.5)</td>
<td>(6.0)</td>
</tr>
<tr>
<td>4</td>
<td>1.5</td>
<td>4.1</td>
<td>1.7</td>
<td>3.4</td>
<td>.8</td>
<td>4.5</td>
</tr>
</tbody>
</table>

NOTE: Numbers in parenthesis indicate scores obtained in the baseline condition.

Table 5
Mean of Student Past Tense Errors for the Three Best and Three Worst Laboratory Reports

<table>
<thead>
<tr>
<th></th>
<th>Group 1</th>
<th></th>
<th>Group 2</th>
<th></th>
<th>Group 3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Best</td>
<td>Worst</td>
<td>Best</td>
<td>Worst</td>
<td>Best</td>
<td>Worst</td>
</tr>
<tr>
<td>M1</td>
<td>(0)</td>
<td>(3.3)</td>
<td>(.2)</td>
<td>(5.6)</td>
<td>(0)</td>
<td>(6.5)</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>-0</td>
<td>(0)</td>
<td>(.2)</td>
<td>(0)</td>
<td>(.2)</td>
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<tr>
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<td>.3</td>
<td>0</td>
<td>.4</td>
<td>(0)</td>
<td>(.2)</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>.1</td>
<td>0</td>
<td>.1</td>
<td>0</td>
<td>.2</td>
</tr>
</tbody>
</table>

NOTE: Numbers in parenthesis indicate scores obtained in the baseline condition.
writing is improving. They could assess this by using the data sheets already compiled from this study and by conducting an error analysis on the designated feature(s). Such information may be beneficial in developing materials for writing strengths and weaknesses.

RELIABILITY

The overall percentage agreement was 90% for the editing of specific content and specific style items. General style items yielded a score of 96.8% reliability. Checks made on the type of feedback delivered resulted in 87% when combinations of positives, negatives, specifics and generals were observed; we obtained 94% agreement when reliability was calculated on just the positive and negative feedback statements.

INSTRUCTIONAL PACKAGES AND THE MINI CLASS: EVALUATION

Each TA evaluated the instructional packages for quality. I asked them to assess each package for its organization, content, the relevance of the information to editing; and whether or not they thought the package would increase editing accuracy. Additionally I requested they cite the best and worst features as well as indicating errors of omission.

Their evaluations indicate that the high points of each package include the thorough examples and the logical presentation of the contents. One TA said she felt she had a "secret weapon"
that should be revised so that the students could also take advantage of the packages. The other TA's agreed with her statement. All of them felt that the instructional packages would greatly enhance their editing. In addition to the above, the TA's cited the behavioral objectives and rehearsals as among the best features. They also liked the idea of meeting in groups to discuss laboratory report editing.

The worst feature involved the feedback package. The TA's stated: "Positive feedback is artificial and difficult to generate when the student's writing fails to meet the requirements." Shortly after this response we discussed various positive comments the TA could supply given a substandard report (i.e., it looks like you're getting better with your spelling, etc.).

All of the TA's said the amount of time required to carry out the mini-class activities exceeded their expectations. They mentioned that their academic and work schedules were finalized long before they were made aware of the additional work.

None of the TA's pointed out any errors of omission nor did they provide any suggestions for change.

I asked members of Groups 2 and 3 how much information they received about the instructional packages and/or mini class. Both groups said that the TA's who had received the packages prior to them did not share any of the materials with them. One member in Group 3 mentioned that other TA's in Group 1 said they hadn't any
intention of using the instructional package materials for editing purposes but they would read the instructional packages, take the quizzes and so on. Group 1's editing did not vary noticeably from that of the other two groups.

Group 1's quiz and behavior rehearsal performance varied markedly from that of the other groups (see Table 6). I required five quiz and four behavior rehearsal remedials from this group. None of the TA's in Group 3 remediated and only one person in Group 2 retook a quiz.

INSTRUCTIONAL PACKAGES AND THE MINI-CLASS: SUGGESTIONS FOR IMPROVEMENT

We did not have enough time for the TA's to master the instructional packages prior to the time they edited the corresponding laboratory report section. This was largely due to having to arrange our meetings around the TA's and my own heavy schedules. To avoid this situation in the future, I recommend informing each potential TA about the editing mini-class, prior to their enrollment as credit staff. It may also be helpful to tell the TA's how much course work and time is involved. This would help them to design their academic, work, and social schedules accordingly.

The points the TA's earned as a function of their mini-class work did not have any bearing on their final course grade. This may have been due to the fact that this was the only TA activity evaluated using the point contingency system. Their performance at the applied laboratory was assessed subjectively by the staff.
Table 6

Number of TA's, Out of 3 TA's Per Group, Receiving 90% or Better (no-remediation required)
On the Instructional Package Quizzes and Behavior Rehearsals

<table>
<thead>
<tr>
<th>Instructional Package</th>
<th>Group 1 Quiz</th>
<th>Group 1 Behavior Rehearsal</th>
<th>Group 2 Quiz</th>
<th>Group 2 Behavior Rehearsal</th>
<th>Group 3 Quiz</th>
<th>Group 3 Behavior Rehearsal</th>
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</thead>
<tbody>
<tr>
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<td>3</td>
<td>3</td>
<td>3</td>
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<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Introduction</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Results &amp; Figures</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Discussion and Abstract</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>
If this study is conducted again, perhaps the staff of Psychology 350 could design a way in which editing and applied work are evaluated in the same fashion. A more reasonable option would be to provide a one or two credit hour course in editing separate from the applied TA laboratory training. The latter seems the most desirable considering the vast differences between the two major TA responsibilities. The class could meet two or three times a week throughout the semester. We only met once a week and often found ourselves having to cover too much material in a very short period of time. The weekly sessions would provide the TA's more time to review correct and incorrectly written reports, consult with the trainer, work on applied exercises, quizzes, behavior rehearsals, and remedials, if any. After the TA's master the instructional packages, the meeting time could be used to provide feedback on the TA's editing. Even if the staff chooses to reject a separate credit course, it may be desirable for them to design and implement contingencies that would facilitate quality control editing throughout the entire semester (see Appendix 7). The staff could establish point contingencies for the quality and quantity of the feedback presented by the TA's as well as for the number of correctly edited content and style features.

The multiple baseline design could be implemented with the TA's progressing through the various packages in the same order as did the TA's in this study. I did not encounter any problems with this sequencing.
The instructional package applied exercises and quizzes should be revised to focus more on actual editing (see Appendix 8). A few of the exercises and quizzes I used requested non-editing behaviors such as listing the topic sentences required in the report and rewriting portions of the report. The behavior rehearsals were not qualitatively the same across laboratory report sections—they tended to range from very poorly written reports to ones that required minimal editing. In the future it may be helpful to have the TA's edit sample reports that are equally as difficult, containing a specified number of content and style errors. Better yet, perhaps the TA's could edit two behavior rehearsals per laboratory section with each report being representative of a very good and a very bad writer. This would provide the TA's with opportunities to edit both extremes and receive immediate feedback on their accuracy.

The feedback instructional package included a brief explanation of the various feedback types (positive, negative, general, and specific) and how to discriminate one from another. During the mini-class several of the TA's requested further clarification and examples. Since I have prepared this in written form for the independent observers, I suggest including this information in that portion of the instructional package.

I was unable to observe the reports and provide the TA's with feedback on their editing accuracy. This was largely due to student's retaining the reports until the end of the semester. In
the future the staff may wish to specify that the students must return each laboratory report section immediately after the TA assigns final points for the section. Better yet, the staff could arrange the laboratory report writing schedule such that an independent observer could monitor the TA's editing prior to returning the original report to the student. This would enable the TA's to alter their comments prior to having the students act on potential erroneous suggestions. For instance, the student would turn his/her report in to the TA on Monday. The TA is given four days to edit the report. Friday morning the TA delivers all of the edited reports to the quality control editing center. The quality control staff assesses the TA's editing accuracy using the appropriate data sheets. They summarize the data, whether or not the various contingencies were met, and assign points. It isn't necessary that they examine each report, a random sampling from each TA will suffice. On Tuesday afternoon the staff meets with the TA's and delivers feedback. The TA's are allowed one day to remediate any undesirable comments prior to returning the reports to the students for rewriting.

Hopefully, the feedback portion of the instructional package will facilitate response maintenance.

CONCLUSIONS AND RECOMMENDATIONS

Several variables prevented me from demonstrating a clear-cut
effect in this descriptive study. There didn't seem to be enough
time for the TA's to master the instructional packages prior to
the time they edited the laboratory report sections. And, due to
the students retaining their reports until the end of the semester,
I was unable to observe the reports immediately after the TA's
edited them. Consequently, I could not provide them with
feedback on their editing accuracy.

In addition a sensitive data system is needed. I designed
the recording system such that if the TA wrote one general, all
encompassing positive comment on the laboratory report, I
recorded it as the TA saying "correct" given that the student's
response was correct (c/c), several times rather than as one
"c/c". If the TA wrote a general comment such as "nice Intro­
duction" on the report, I recorded this as "c/c" 17 times (in
the Introduction section there are 17 correct content responses).
It's quite possible that after I implemented the feedback package
the TA's began to generate more specific feedback. For instance,
they may have written: "Your justification for the rationale of
this study is very concise", "I like the way you presented your
results in quantitative form - you followed the writing guides
recommendation to a "t", etc.). If their writing behaviors did
change, the current data system was not sensitive enough to
detect it.

It may also be the case that some of the instructional
package components focused more on knowledge, comprehension, and
synthesis instructional objectives than on application objectives. For instance, in the Method applied exercises I asked the TA's to summarize the purpose of that section. In the Style exercises I required specification of the general typing guidelines, when abbreviations are permissible, etc. rather than having them practice editing Method or Style items directly. As studies indicate knowledge of the material does not insure its correct application.

Additionally, the TA's edited only one behavior rehearsal per instructional package. The number of errors occurring in each of these varied quite a bit.

Five recommendations follow from the above considerations.

The TA's could meet two times a week, two hours per session, to discuss the packages, work on exercises, quizzes, and other related activities. Additionally, the staff could use this time for feedback delivery.

The staff could schedule laboratory report assignments so that the data collectors had ample time to observe the reports prior to the students receiving them and immediately after the TA's edited them. This procedure would enable the staff to stay abreast of the TA's editing behaviors and deliver feedback at the weekly meetings.

The data collection system should be revised so that any written comment on the report is recorded only once (see Appendix 9).

The instructional packages, applied exercises, and quizzes
should be revised to emphasize editing (an application objective).

The TA's should edit two behavior rehearsals per instructional package.

One final suggestion - it may be the case that teaching a group of TA's how to edit laboratory reports is not an efficient or effective method. Perhaps it would be more advantageous to hire a course assistant to edit all incoming laboratory report sections. Cost-benefit analysis is one way to investigate which alternative is the most desirable.

The staff could compare the outcomes of an intensive training program with one laboratory report editor with that of several editors. This could be done by noting the time and monetary costs to recipients. For instance the experimenter could record time the editors in training spent as well as the money obtained from TA's who are paying for the credit. Progress measures should also be examined. It is important to know how long it takes the editor(s) to read and correct each report section, the number of reports edited, and how punctual they are in obtaining and returning the reports.

The staff will also need to evaluate their time and monetary costs. They should include contact time, hours spent preparing the training materials, printing costs, and the expenses involved with hiring an assistant to edit the reports. At this time, a 12 hour a week assistant, hired for two semesters, will cost the staff $883.20 ($2.30 an hour).
Outcome measures might include: the length of time it takes the editor(s) to master the instructional materials, the number of remedials, the percentage of accurate laboratory report editing and errors detected. Also, it would be wise to include quantitative measures on the students' writing behavior throughout the semester.

I also suggest accumulating data on consumer satisfaction. I recommend questioning the laboratory report editor(s) and the students. The students might be asked - Were you able to contact your editor for clarification when you needed it? How many contacts did you make throughout the semester? Were your reports thoroughly edited? And so on. The laboratory report editor(s) might be asked - Were you able to contact the students you grade for as often as you liked? How often did you initiate contact with a student regarding his/her editing? Were you able to edit the reports thoroughly?

A cost-benefit analysis will suggest several implications for the administration and delivery of an effective and efficient laboratory report editing system.
REFERENCES


APPENDIX 1

I have included the instructional packages in this section. They are presented in their original form. Their order of appearance is as follows:

Feedback Delivery—Instructional Package
Feedback Applied Exercise
Feedback Checklist
Feedback Quiz
Method—Instructional Package
Method Applied Exercise
Method Checklist
Method Quiz
Method and Feedback Behavior Rehearsal
Writing Style—Instructional Package
Writing Style Applied Exercises
Writing Style Checklist
Writing Style Quiz
Introduction—Instructional Package
Introduction Applied Exercises
Introduction Checklist
Introduction Quiz
Style and Introduction Behavior Rehearsal
Results—Instructional Package
Results Applied Exercises
Results Checklist
Results Quiz
Results Behavior Rehearsal
Abstract - Instructional Package
Abstract Applied Exercises
Discussion - Instructional Package
Discussion Applied Exercises
Discussion and Abstract Checklist
Discussion and Abstract Quiz
Discussion and Abstract Behavior Rehearsal
Evaluations (these were completed after each instructional package)
OBJECTIVES:
1. Be able to state the function of feedback.
2. Be able to cite the differences between positive and negative feedback and their effects of performance.
3. Be able to distinguish between specific and general feedback.
4. Be able to provide examples of each of the above.

WHAT IS FEEDBACK?

Feedback is a response, provided by you that produces stimulus control over your student's writing. It functions as a discriminative stimulus in that through feedback, information is relayed to others. The comments you write on your students lab reports lets them know whether or not they're on target, and if not, what course of action they can take next.

People often think the meaning of the term feedback is the same as that of "reinforcer." Feedback may be reinforcing but not always. A type of feedback that does function as a reinforcer is called positive feedback. Positive feedback increases the probability that appropriate writing will occur and/or keeps the current performance "on course." In lab report writing, positive feedback tells the student, "yes!" you are writing according to the format specified in the writing guide, your grammar, style, analysis (whatever), is on target, keep it up!

But often positive feedback should not be used (i.e., when a written response is incorrect). That's when you should employ negative or "corrective" feedback. This type of feedback functions in a manner opposite that of positive feedback. It causes performance to decrease and/or change its course. If the student's lab report contain grammatical or stylistic errors, the feedback you provide lets them know that they've responded in an unacceptable manner and must correct their mistakes. IMPORTANT - deliver negative feedback with extreme caution! Be careful not to give it in an aversive manner lest the following results occur: Counter aggression, suppressing the student's writing performance totally, and/or hurting their feelings. Seem tricky? Well, it is, but don't despair. You will soon learn to skillfully deliver feedback of this sort after a bit of exercise and assistance.

Suggestions for feedback (consequence delivery)

Positive and negative feedback may be delivered in two ways - generally and specifically. General feedback may be defined as information that really doesn't indicate to what extent the specific behaviors are on or off target. Examples of general positive feedback include: "good", "yes", "OK", "excellent", "nice job", and so on. Although these comments are rather vague, they will function as reinforcers for most of
your students. General negative feedback examples include comments such as: "no", "bad", "inappropriate", "poor", "weak", and so on. Note the minimal amount of information provided in these statements. To increase the likelihood that more appropriate writing occurs next time, use specific negative feedback. "What is that?" you ask, well, allow me to define specific feedback first. Specific feedback explicitly tells the student what writing behaviors are correct or incorrect. It's accompanied with a more indepth explanation as to why they are. If a response was incorrect, it tells the student what corrective measures to take.

Your students will be able to deal with your negative feedback a lot easier if you specifically state what they did wrong and how to correct their errors. For instance: "Many major items were omitted from this lab report (list them), let's try again. Review pages 1-4 of the writing guide. I'll gladly assist you if difficulty persists." or, "Your description of how the data is calculated belongs in the results section rather than the method." The key to specific negative feedback is to produce it in a constructive way that lets the student know you really don't view them as idiots and that you are willing to help.

Delivering specific positive feedback is a bit easier. If the abstract section of a lab report was prepared in a thorough manner, you should write on the lab report: "great abstract, very thorough and concise coverage of the required sections." If their data analysis was appropriate: "your analysis of the variables controlling the color discrimination was well presented." If the graph was easy to read: "Figure 1 was clearly constructed. Data interpretation is easy to carry out."

It's critical that you deliver feedback promptly - be it positive or negative, specific or general. It's a good idea to write your comments or suggestions as close to the item as possible. Never assume your students will intuitively know when they are performing correctly or incorrectly. It's up to you to let them know how they are doing. If your student's writing skills are picking up, don't hesitate to tell them. In a similar respect, if they are slow to acquire the skills, look again at the quality and quantity of your feedback. Your feedback may not be frequent or specific enough. It may also be the case that too many negatives and not enough positives are delivered. Hunt! Surely you can find something correct in the lab report (even if it's only the quality of the typing!). Continue to work on your feedback until your students writing performance is where it should be. Once they've reached this point you certainly deserve a congratulations! You've achieved quite a feat! You've shaped up one of the most ambiguously defined skills around! However, don't stop now. Continue your feedback delivery, maintain that lab report writing, and most of all, have a great semester.
FEEDBACK APPLIED EXERCISES

1. Define feedback.

2. What purpose does feedback serve in lab report editing?

3. Does feedback have the same function as a reinforcer?

4. Can you think of instances when feedback is reinforcing? When feedback is punishing?

5. Given the following situations, generate your own general negative and positive feedback and specific negative-positive feedback.

   a. misspelled words are detected.
   b. the abstract is written according to the writing guide specifications
   c. the graph is omitted.
   d. the behaviors are defined operationally.
   e. reliability calculations are thorough.
   f. they forgot to specify the criterion for phase advancement.
   g. the whole lab report appears to have been written blindfolded.

6. What unintentional results might aversive negative feedback produce?

7. What should you do if your students are slow in acquiring the appropriate writing skills?
FEEDBACK CHECKLIST

Use this to check the quality and quantity of the feedback you provide on your students lab reports.

- My feedback is frequent _____
- I wrote my feedback close to the item I was dealing with _____
- I found at least three positive specific things to say about the lab report _____
- If I delivered negative feedback, it was constructed cautiously and pleasantly _____
- My comments, suggestions, etc. are self-explanatory _____
- I provided:
  (#)
  _____ general positive statements
  _____ specific positive statements
  _____ general negative statements
  _____ specific negative statements
FEEDBACK INSTRUCTIONAL PACKAGE QUIZ I

1. Feedback may be defined as: (1 pt)
   a) reflexive responses produced by you to maintain behavior
   b) a reinforcer
   c) discriminative stimuli providing others with information
   d) a & c
   e) none of the above

2. Positive feedback: (1 pt)
   a) reinforces performance
   b) increase the likelihood of the performance and/or hold it "on course"
   c) decreases performance
   d) is a nice gesture but is unnecessary
   e) a & b

3. Aversively delivered negative feedback (i.e. "Listen you idiot, if you'd take time out to read the writing guide you just might find out that you must include a description of your experimental procedure") may affect the student you are editing for in three ways. (2 pts)
   a) List these

4. How do specific and general feedback differ? (2 pts)

5. What should you do if your students are slow to acquire the appropriate writing skills? (2 pts)

6. You no longer need to provide the student with feedback once they've mastered good technical writing skills.
   A) TRUE       B) FALSE (1 pt)

7. Briefly explain why you responded as you did in question 6. (1 pt.)
METHOD CONTENT INSTRUCTIONAL PACKAGE

Objectives:

Be able to explain the function of the method section.
Be able to list the subsections included in the method section.
Be able to list the topics covered in each section.
Be able to recognize the correct and incorrect inclusions of information in each subsection.
Be able to prompt correct and incorrect responding in case:
(a) the material is in the wrong subsection;
(b) the material is omitted from a subsection;
(c) too much, or not enough information is included in the subsection.

The Function of the Method Section

The method gives your students' an opportunity to tell you, the reader, how they conducted the study. The details supplied must be precise enough that one may replicate the study, analyze the experimental procedure, and/or evaluate the results.

What Goes Where

Let's look now at what belongs in the subject, setting, and procedure sub-sections of the method.

Subject(s): The subjects' important characteristics are described here. The first sentence should specify the exact number of subjects used, a general description of the, and where the subjects come from. An example of this is "Eighteen students enrolled in the junior level psychology course at Western Michigan University served." Now your students should tell how the subjects were obtained (did they have particular behavior problems; were they randomly selected; and so on). If subjects were "lost" along the way, the reason must be provided. Are there any other critical facts? If so, include these. Age, sex, IQ, weight, and/or the subject's education may be important depending on the nature of the study.

Setting: In this subsection the student describes the environment in which the study took place. They should start it off by stating the name and a general description of their setting. For instance, "The study was conducted in the Youth Component classroom at the Child Development Center." The type of equipment used in the study must be cited. This may include the physical dimensions of the rooms, the use of one-way mirrors, video-equipment, wrist counters, learning cards, and tangible reinforcers. Information such as where
the data collectors sat, where target behaviors, reinforcement and/or punishment delivery took place are added only if these events occur in separate rooms.

Procedure: Presented in this subsection are summaries of each experimental condition in effect. Along with this your students should include operational definitions of the behaviors, as well as how they collected the data and carried out reliability.

Look over this section carefully. Did the writer include the length, number and frequency of the sessions? What responses are measured? Thorough operational definitions of the behaviors at hand are required. Make sure there is no room for doubt! Did they describe how the behaviors were observed and the responses recorded? Here's an example of both of these items, "Gestures: defined, as a movement of one or both hands for a distance of at least 3 inches (7.5 cm). An observer recorded on a checklist the occurrences or nonoccurrence of gestures for each of the presented slides." Any additional measures (pretests, posttests, contingency management programs for data collectors, etc.) should also be mentioned.

Each experimental condition must be described in the order in which they appear. Baseline and each additional phase should include the items listed below. Make sure your students sequence their information in this order:

(a) The stimulus conditions, and within phase criterion. What began and terminated a trial? Include temporal parameters, for instance: "During Phase I, four object cards were presented to the child. The trial began when the therapist asked: "Johnny, what is this?" The trial ended when a response was made, or within 6 seconds if no response occurred."

(b) Did they indicate how the responses were recorded? "Correct and/or incorrect responses were recorded by the therapist on sheets of paper attached to a clipboard."

(c) How were correct and incorrect responses consequated? "Points were given for each correct response. At the end of the hour points could be exchanged for playtime or store items."

"Headbanging was consequated with a squirt of lemon juice in the mouth."

"After bed wetting was detected the child had to immedia-tely strip the bed sheets, remaking the bed with clean ones, and wash the soiled items.

(d) Did the students include the criterion for termination of the phase (phase advancement)?
Criterion for advancing to the next phase was 90% correct responding for three consecutive sessions."

Last of all the students' should mention how they obtained reliability:

(a) Who made the reliability check? Was it another therapist, the unit supervisor?
(b) Special training required? If so explain.
(c) How frequently were reliability checks made? Once a week? Twice a month?
(d) How were reliability checks calculated? An example of a common reliability calculation is:

\[
\text{Agreements} \quad \frac{\text{agreements}}{\text{agreements} + \text{disagreements}} \times 100 = \% \text{ of reliability}
\]

Go through each section carefully. If the students neglected to include the proper information or included too much or too little, prompt revision.

The Method section should be concise enough that you could replicate their study with ease.
METHOD APPLIED EXERCISES

1. Briefly summarize the purpose of the Method section.

2. Identify each of the three subsections included in the Method section. Outline below the points you and your students should deal with while editing or writing each Method subsection.

Subsection 1 __________ Subsection 2 __________ Subsection 3 __________
1. What is the Purpose of the Method section?

2. Match the following subsections with the type of information appropriate for placement in that section. The first one is done for you.

a) Subject(s)
   b) Setting
   c) Procedure

   ___c description of the consequence
   ___ summary of experimental conditions
   ___ how subjects were obtained
   ___ characteristics of subjects
   ___ description of equipment used
   ___ length, number of sessions, and frequency of sessions
   ___ how the behaviors were observed
   ___ reliability formula
   ___ name and description of where the study took place
   ___ within phase criterion
   ___ how responses were recorded
   ___ description of experimental treatments
   ___ criterion for phase advancement
   ___ number of subjects
   ___ physical dimensions of the rooms
   ___ description of what behaviors were reinforced and when
   ___ stimulus conditions
METHOD CHECKLIST

Use this as you edit your lab reports. Be sure all of the following items are included in the students writing.

METHOD is capitalized and centered on the paper ______
-Subject(s): (info begins on this line) ______
-# of subjects used ______
-description of them ______
-where they came from ______
-how they were obtained ______
-if any were lost along the way (this probably won't apply in most cases) ______
-other critical factors (age, weight, education, etc.) ______

-Setting: (info starts on this line) ______
-name of setting ______
-brief description of where the study took place ______
-equipment used ______
-info as to where data collectors sat, target behaviors, reinforcers, and punishment delivery ______

-Procedure: (info begins here) ______
-length, #, and frequency of sessions ______
-how the responses were measured ______
-operational definitions of behaviors ______
-observation of the behaviors ______
-how the responses were recorded ______
-additional measures ______
-description of the experimental conditions in the order they were conducted _____

Baseline and additional phases:
- within phase criterion stated _____
- temporal parameters _____
- how the responses were recorded _____
- correct and incorrect response consecuation _____
- criterion for terminating the phase (phase advancement) _____

-Reliability:
-who conducted (not names, but rather title, or position) _____
-description of special training (if any was needed) _____
-frequency of checks _____
-calculation formula _____
Feedback and Method Behavior Rehearsal

TA: Please edit this like you would a lab report from one of your students.

METHOD

Subject:

The subject is a six year old boy, he lives at home with his natural parents. He has been diagnosed as having psychomotor retardation. He has had a series of strokes, each being concurrent with a seizure. He entered the pre-school component in January, 1975.

He can crawl quite well, has good vision and hearing. He knows: the alphabet, can spell some words, says a few short sentences, knows how to count and can approximate almost all words. Stress needs to be put on his fine and gross motor skills, weight bearing (discrimination) capabilities and decreasing self-stimulation, and also teaching him academic readiness skills, increasing his receptive and expressive language. Emphasis should also be put towards reduce eye-rolls and staring behaviors, plus decrease response latency.

Setting:

The study was conducted in the pre-school room at The Kalamazoo Valley Multihandicap Center. The tilt table is approximately four feet long, three feet wide and three feet high. The child is layed on the table, his feet are strapped in and straps above and below the
knee are strapped, with a board used as the table is placed preferably to where his elbows meet to his side and then it is fastened to the table. Then the top of the table is released and tilted into a vertical position, so that the child is practically in a standing position. This is good therapy for his muscular movements. When the tilt table is not available, the floor is used with cardboard partitions are put on both sides of the therapy area. The partitions are six feet long and six feet high. The materials used will consist of short and long objects some light and some heavy. For instance: a stone, a brick, a piece of paper, a feather. There will also be a set of four objects cut from paper and varying in color, one object will be different from the other three. And the Person-Occupation Puzzle. Reinforces used will be the scooter-board and writing on the blackboard.

Procedures:

In baseline, The subject will be asked to point to any of the concepts that are listed, V-correct, O-incorrect, O-prompted.

During Phase one, A light and heavy object will be placed in front of him, then he will be asked to point to the light object. And after every response have him feel the light object. The arrangement of the objects should vary from time to time. These sessions will last up to twenty minutes each. Criterion for completion of each phase is one hundred percent correct for three consecutive days.

Phase two. Same as phase one except that he will point to a heavy object.
Phase three, He will have placed in front of him two heavy or light objects and he will point to the lighter or the heavier.

Phase four, Same as phase three except that three objects wether heavy or light will be used. For each of the procedures that are correct, he should be hugged and given joyful appraisal.

Baseline of procedure two, in visual discrimination, have him select a different object from a set of four objects giving him five seconds for each response. Responses are recorded as either correct or incorrect.

Phase one he will point to the object that is different from the rest, while the therapist is also pointing to it. All correct responses should be followed immediately with a hug and some sort of enthusiastic praise. The criiterion to move on to the next stage is to get ninety percent correct for two consecutive days.

Phase two is the same as phase one except that the finger will be one inch above the block.

Phase three is the same as phase two except prompt will be four inches away.

Phase four is the same as phase three except that the prompt will be eight inches away.

Phase five, Child should be able by this time to point to different objects correctly ninety percent of the time.

Phase six is the same as phase five except that the therapist will not prompt other than looking at the object. However by this time this child should be able to point out each different object without any prompt ninety percent of the time.
WRITING STYLE INSTRUCTIONAL PACKAGE

OBJECTIVES

Be able to recognize correct and incorrect usages in the areas indicated below. Be able to prompt correction when incorrect response occurs.

I. Writing style
   APA suggestions

II. Typing format
   A. margins
   B. double spacing
   C. indenting
   D. pages, and numbering

III. Spelling and word usage
   A. redundancy
   B. common errors
   C. numbers

IV. Punctuation
   A. capitalization
   B. abbreviations
   C. quotations
   D. quotation marks
   E. parentheses
   F. hyphenation
   G. colons and semicolons
   H. commas

We ask students to write lab reports for various reasons: 1) They may acquire a working knowledge of the APA writing style through continuous practice and editing. 2) They can provide a written record of their investigation for others. Bear in mind that scientific writing need not lack luster or style. Writing should capture the interest of the readers regardless of the audience to which we direct it.

The following criteria should prevail when editing your students lab reports. Your students' ideas should flow logically and
sequentially. Their writing should be free of ambiguity. Each word they select must be precise. Their lab reports are to be composed in a concise, yet interesting and considerate manner. What does considerate mean? In relating other studies to others, the goal is to capture the readers attention, not to fatigue them. Here are some tips to assist you:

A. have them use various sentence and paragraph lengths
B. prompt them to use short rather than clumsy, length terms
C. use complete sentences
D. stick to active voice

If you prompt your students' to stick to this guide their readers (i.e. you) interest will be held much longer. The guide provides a means of written and visual relief. Additionally, the tendency to get "hung up" on terminology is greatly reduced.

The remaining portion of this package deals with various writing style suggestions and particularly rules specific to the 1974 APA writing requirements. Many of the passages may be quite familiar. But, do not skip these!

You'll note that the major difference is in reference to the use of past tense and personal pronouns. The following passages (and many of those to come) are quoted from the 1974 APA Publication Manual:

"Sudden shifts in tense should be avoided. Do not move capriciously between past and present tense within the same paragraph or successive paragraphs. Past tense is usually appropriate for a literature review (Smith reported) or the experimental design or procedure (the judges were told), inasmuch as it is a historical account. Use present tense to describe and discuss the results that are literally there before the reader (shows auditory stimuli are more effective). The present tense suggests a dialogue between author and reader, appropriate at that point of the paper. Future tense is rarely needed."

"Authors should not always use verbs in the third person, passive voice. When a verb concerns the interaction of inanimate objects ("the membrane is acted upon by the drug"), the active voice is usually preferable ("the drug acts on the membrane") because it is more direct and concise. When a verb concerns action by the author, he should use the first person, especially in matters of experimental design ("to eliminate this possibility, I did the following experiment"). Constant use of the first person is not advisable, however, since it may distract the reader from the subject of the paper."
"An experienced writer can use the first person and the active voice without dominating the communication and without sacrificing the objectivity of the research. If any discipline should appreciate the value of personal communication, it should be psychology."

"Finally, as a matter of consideration to readers, writers should be aware of the current move to avoid generic use of male nouns and pronouns when content refers to both sexes, and may wish to use alternatives to words such as "chairman" and to avoid the overuse of the pronoun "he" when "she" or "they" is equally appropriate."

**General Typing Instructions**

**Margins**

Each page must have 1 - 1 1/2" margins at the top, bottom and sides.

**Double-Spacing**

Every line in the lab report must be double-spaced. The only exception is in the reference section. Single space the information of each reference but double space between references. Other than this, set your typewriter for double space and keep it there!

**Indenting**

Each new paragraph is indented five spaces. Exceptions include:
(a) Abstract - zero indentations.
(b) References - do not indent first line. Do indent the second and each succeeding line of a reference entry three spaces.

**Pages**

Separate pages - begin each of the following parts of the manuscript on a new page:

Cover page with title and author's name and affiliation and Abstract.

Method

Results
Spelling and Word Usage

Repetitious words a problem? Use synonyms! The thesaurus is a handy tool. It enables your students to find terms that express the same idea as the word they wish to avoid. A word of caution though! Don't let them sacrifice the meaning of the word in the transition!

The words provided below are repeatedly spelled wrong and/or used incorrectly.

<table>
<thead>
<tr>
<th>Correct</th>
<th>Incorrect</th>
</tr>
</thead>
<tbody>
<tr>
<td>occurring</td>
<td>occurring</td>
</tr>
<tr>
<td>receiving</td>
<td>receiving</td>
</tr>
<tr>
<td>effect</td>
<td>affect</td>
</tr>
<tr>
<td>affect</td>
<td>effect</td>
</tr>
</tbody>
</table>

Note: effect (noun) refers to something that is brought about by an agent of cause: RESULT. An example of its usage is: What effect did this variable have?

affect (verb) means to produce an effect upon or to influence or alter something. An example of this is: How does this affect you? Think a before e, cause before effect.

Throughout the course of your editing I'm sure many other questionable terms will appear. When in doubt, check your dictionary for accurate spelling and word use.

Numbers

Some numbers are expressed in words according to general usage and the need for typographic solidity.

Use words to express:                    Examples:
The numbers zero through nine.            Speech was divided into six categories.
Any number, above or below 10, that begin a sentence. Fifty-six percent of the residents.

(Note: If possible, rewrite a sentence to avoid starting with a large, awkward number.)
Numbers of two or more digits and numbers in technical, scientific, or statistical matter are easier to comprehend when they are expressed as arabic numerals. Use the following guidelines to determine appropriate forms for numbers.

Use arabic numerals (figures) to express:

- numbers of 10 or greater
- any numbers, above or below 10 that are:
  - units of measurement or time (abbreviated or not)
  - ages
- times and dates
- percentages
- arithmetical manipulation
- ratios
- fractional or decimal quantities
- exact sums of money
- scores and points on a scale
- actual numerals
- series of four or more
- numbers grouped for comparison within a sentence or a series of related sentences if any one of the numbers if 10 or more.
  (Let clarity be the guide in applying this rule).

If figures and words appear together, try recasting the sentence:

"Forty-eight men and 38 women were in the group." May be restated somewhat cleared in this manner: "The group had 48 men and 38 women."

Treat ordinal numbers as you would ordinal numbers:

"the fifth list for the first-grade students"
"the 75th trial (or Trial 75)"

Exception: Percentiles and quartiles are always figures.
"5th percentile", "1st quartile"
Punctuation

When to capitalize:

nouns followed by numerals or letters that denote a specific place in a numbered series. "on Day 2 of Experiment 4", "during Trial 5, Group B", exceptions: "page 1, row 3, chapter 4, column 5"

trade and brand names of drugs, equipment, and foods: Plexiglas, M & M's

exact, complete test titles as published. "Minnesota Multiphasic Personality Inventory, Stroop Color-Word Interference Test."

first word after a colon or dash when the word begins a subtitle or a complete sentence

major words in article headings

Subjects, Procedure when they appear as headings

When not to capitalize:

names of conditions or groups in an experiment - "experimental and control groups, subjects were divided into information and no-information conditions."

nouns that precede a number (variable) - "trial 5, item 4".

shortened or inexact titles of tests of unpublished tests - "a vocabulary test, a color test"

Abbreviations

The use of too many abbreviations hinders a lab report readability. If the abbreviation you wish to use is a conventional one, much space and repetition may be saved, particularly if it is more familiar than the written form. Check your dictionary when in doubt. Terms to abbreviate must be spelled out completely first. Then immediately follow this with the abbreviation in parenthesis.

for instance: inter-response time (IRT)
commonly abbreviated are: FR, VR, VI, CRF, FI, DRL
Periods

Periods belong after the initials of a name (J. R. MacAvoy), and at the end of sentences. Do not use periods with capital letter abbreviations (see examples in the above abbreviations section) and/or acronyms (EI; PPBS; LD) (10.5 yr; 2-min; 45 sec).

When to use percent symbols - use the symbol for percent (%) only when you have a number preceding it. Otherwise spell out the word when a number is not given.

"Over 89% of the students...; A certain percentage of students..."

Quotations

If the quote is shorter than four typewritten lines run it in the text and enclose it with double quotation marks ("."). If your quote is longer than that, set it off from the main body of the text. How? By spacing for a new paragraph, indenting, then typing it. If there's a quote within a lengthy offset quote, use double quotation marks to enclose the material. If you have a quote within a quote of the running text, use single quotation marks to enclose the material.

Use double quotes to (1) introduce a word or phrase used in a special way (ironic usage, slang, or an invented or coined word or phrase); (2) to reproduce material from a test item or verbatim instructions to subjects. "Look at me."

Quotation marks and parenthesis:

When a period or comma occurs with a closing quotation mark, place the period or comma before, rather than after the quotation mark. Put other punctuation inside quotation marks when it is part of the quoted material. "At the beginning of each trial, the experimenter said, "This is a new trial." "Did the experimenter forget to say, "This is a new trial."

Parenthesis. If the context requires a comma (such as this), the comma follows a parenthesis. (If a complete sentence, like this one, is enclosed in parenthesis, the period is placed inside the final parenthesis.) The period follows a parenthesis that falls at the end of a sentence (like this).

Use parentheses to:

  explain abbreviation reaction time (RT)
  to set off letters in a series "the groups examined were
  (a) ..., (b) ..., (c) ..."
to set off references within a text "Malott and Malott (1968) reported..." to enclose the citation of a direct quote.

**Hyphenation**

Many spelling questions are concerned with compound words, words that may be written as (a) one unbroken word, (b) a hyphenated word, or (c) two separate words. Should it be "agemate, age-mate, or age mate?" The dictionary answers many such questions (it is age-mate in this case), especially for nonscientific words. But, because the language is constantly expanding, dictionaries may not include an authoritative spelling for the new compounds to science. If a compound is not in the dictionary, the APA journals follow the general principles of hyphenation given here and in the table.

If the meaning of a compound adjective is clear, a hyphen is not necessary. This is especially true of words used frequently in psychology.

"least squares solution"

Most adjective rules are appropriate only when the compound adjective precedes the noun. If a compound adjective follows the noun, relationships are sufficiently clear without the hyphen.

"client-centered counseling, but the counseling was client centered"
"t-test results, but results from t tests"

Words formed with prefixes are usually written as one word. If in doubt, check your dictionary.

"posttest, aftereffect, pretest"

When two or more modifiers have a common base, this base is best omitted in all except the last modifier, but the hyphens are retained.

"long- and short-term memory"
"2-, 3-, and 10-minute trials"

**Semicolons**

Separate two independent clauses that are not joined by a conjunction.
"The subjects in the first study were unpaid volunteers; those in the second study were paid for their participation."

To separate items that already contain commas

"(Adams & Baker, 1964; Jones, 1963)"

**Colons**

Before a final phrase or clause that illustrates, extends, or amplifies preceding material (if the final clause is a complete sentence, it begins with a capital letter).

"The digits were shown in the following order: 3, 2, 4, 1."

In ratios and proportions

"The proportions (salt:water) were 1:8, 1:4, and 1:2"

In references between place of publication and publisher


**Commas**

Before and/or in a series of three or more.

"in a study by Thomas, Beck, and Gilbert (1964)"

To set off a nonessential or nonrestrictive clause, that is, a clause that the sentence can do without

"the switch, which was on a panel, controlled..."

To separate two independent clauses joined by a conjunction, especially if the clauses are lengthy

"The floor was covered with cedar shavings, and paper was available for shredding and nest building."

**DO NOT USE A COMMA:**

Before an essential or restrictive clause, that is, a clause that identifies, limits, or defines the word it modifies.

"The switch that stops the recording device also controlled..."

Between the two parts of a compound predicate

"The results did not agree with Smith's hypothesis and indicated that the effect of intervening problems was not significant."
1. Describe what appropriate writing style consists of.

2. What techniques may be used to provide visual and writing relief?

3. How might one avoid the use of:
   a. redundant words
   b. incorrect spelling and/or meaning

4. Demonstrate how you'd provide for a quote (a) less than four typewritten lines and (b) greater than four typewritten lines in your lab report.

5. Briefly describe how you'd deal with a quote within a quote in both of the situations given above.

6. What are the general typing guidelines?

7. Give an example of the correct use of the percent word or symbol when:
   a. a number precedes it
   b. when it stands alone
   c. when it is used as a symbol

8. When may you abbreviate?

9. How should an abbreviation be presented in the lab report?

10. How would you set off the following reference within the text of the lab report? Whaley and Malott 1969.
11. Are the following examples of number usage used correctly? If not, correct.
   a. Table I
   b. One student enrolled
   c. baseline one
   d. experiment 3
   e. only six rats
   f. a 5-yr-old child
Examine the following passage. Questions 1 - 3 refer to it.

Data are reported on the question of "How well would you rate the speaker's overall performance?" (Where seven is "very good" and 1 is "very bad"). For Elroy, introduction of the instructional package for the 3 categories of public-speaking behavior increased ratings from a mean of 4.1 to a mean of 5.4.

1. Does the passage presented above reflect the APA accepted use of style?

2. Examine how the various numbers and numerals are used here. Next to each one provided below indicate a "yes" or "no" for correct usage. If incorrect, correct it.
   a. seven
   b. 1
   c. 3
   d. 4.1
   e. 5.4

3. Look once more at the very first passage on this quiz. Are the quotes used here marked appropriately? If no, correct them directly (and clearly) in the passage.

4. Circle the appropriate spelling of the compound words given below.
   A. (a) post test (b) post-test (c) posttest
   B. (a) low income (b) low-income (c) lowincome

5. Demonstrate in a sentence how you'd present the following schedule of reinforcement and its abbreviation: differential-reinforcement-of-low-rates.

6. List the general typing guidelines students should follow while preparing their lab reports.

7. What stylistic techniques might you relate to a student guilty of lengthy and cumbersome lab report writing?

8. In the passage below correct any instances of punctuation misuse.

WRITING STYLE CHECKLIST

Use this as you edit your lab reports. Be sure all of the style and grammar items are appropriately presented in your students' writing.

Style
- sentences are complete
- no words are missing
- subject verb agreement
- tense usage is consistent (past)

Typing
- pages have 1-1 1/2 in. margins (on top, bottom and sides)
- each line is double spaced (except references that are single spaced)

Indenting
- each paragraph is indented five spaces (except abstract which has zero indentations and references. The first line of the ref. isn't indented but each remaining line is indented three spaces.)

Separate Pages
- Abstract
- METHOD
- Results
- Figure Captions
- Figures
- References
- Discussion

Punctuation
- capitalization
- abbreviations
- periods
- quotations

Hyphens
- parentheses
- semicolons
- colons
- commas

Correct Spelling
- Correct word usage
- Numbers are expressed correctly
- There isn't any redundancy
INTRODUCTION INSTRUCTIONAL PACKAGE

OBJECTIVES

Be able to explain the primary purpose and various functions of an introductory sentence.

Be able to cite:

a) What information is provided in the topic areas listed below
b) The appropriate length of the descriptions
   Generalization sentence
   Purpose sentence
   Procedure sentence
   Results sentences
   Comparison sentences
   Important aspects paragraph
   Summary paragraph
c) Number of references required
d) The reference list purposes

Be able to prompt:

a) Correct ordering of the information provided in the Introduction section
b) Concise topic coverage
c) Sentence length
d) Paragraph format for the presentation of reference summaries

Be able to identify and prompt citations of the reference in the following situations:

a) If it begins the sentence
b) If it is within the text
c) If the reference has been previously mentioned and/or has more than one author and meets situation a or b.

In what order must reference information be presented?

How are references punctuated and presented in the REFERENCE Section?

The introduction section is the starting point of lab report writing. Its primary purpose is so that your students may announce the topic of their research to you. Presented in this section are the specific problems under investigation as well as an idea as to how the current study is conducted. The introduction section also serves additional functions: related studies are contrasted with the present one, a historical background is provided, and from a thorough
literature review the students may be able to deduce possible experimental outcomes and provide a rationale for their present study.

The introduction section begins with a generalization sentence that provides experimental justification or a concise description of the area being investigated. In it, the previous range of applications that have been reported in the literature are stated. If, for instance, the study is dealing with contingency contracting for weight loss, the first sentence should describe what has been done in the past with such a behavioral technique. A sentence of this sort will serve to justify the rationale for utilizing the procedure. The sentence might read: "Contingency contracting has been utilized to initiate and maintain appropriate eating behaviors in a variety of settings." They may simply describe the purpose of the study (writing guide, page 23), "The Current Study was designed to develop fine motor skills in a severely retarded child as a function of social reinforcement." However, this doesn't adequately include the range of applications for that area. So, prompt them to additionally state something like "Social reinforcement has been used extensively in the acquisition of such skills."

Now go on to see if they have cited evidence from the literature that will support their generalization sentence. We require the use of three references.

A paragraph summarizing the essentials described below, must be prepared for each article. Topic areas that should be included in the literature summary include: a synthesis of the authors purpose, procedure, results, and how the particular study related to the students' research.

Look at the reference. Was the purpose of the experiment indicated? Perhaps the author(s) looked at the acquisition of tooth brushing behaviors in a certain population. The purpose sentence might read: "Horner and Keilitz (1975) evaluated a task analysis and training procedure for studying toothbrushing with mentally retarded adolescents." If the student wrote "Spear (1970) experimented with children," we have no idea as to what the actual purpose is. Require them to include this information for instance, they might say, "Spear (1970) experimented with first and fifth grade boys to determine the motivational effects of praise on children's learning.

What experimental procedures were used? In one to three sentences they should state in a concise manner the experimental design (multiple-baseline, reversal, etc.), behaviors, and behavioral consequences employed. An example of a procedural sentence is "A multiple baseline procedure across eight subjects was used. One group received tokens plus social reinforcement while the second group received social reinforcement only for correct responses."
procedural sentence must be thorough enough that the reader (you) can understand what the authors' experimental conditions were. If the student wrote: "They had the children do mazes and connect dots. First with noncompetitive instructions, this acted as social stimulation, and then with competitive instructions", questions as to what competitive and noncompetitive instruction consisted of are left unanswered. Such a description may be easily altered to clarify the questions. For instance, you should prompt them to write: "Children were instructed to work in pairs completing mazes and connect-the-dot pictures. All completed projects were displayed. Next they were asked to engage in the same activity however this time a panel of judges selected and displayed the best work." No crucial information is lost. In fact, we've effectively dealt with the procedural aspects of the study.

Now examine the results of the study. In one to two sentences they might present data trends in quantitative form. Their results sentence(s) might read like this: "Compared to baseline conditions all eight subjects showed a 50% increase in toothbrushing behaviors. Children in the group receiving tens plus social reinforcement acquired the self-care skills in two consecutive sessions whereas those receiving socials alone reached criterion in five sessions." To simply state that "Children did better when they received tokens plus social reinforcement than just socials alone", provides you with qualitative information but the questions, "How much better?" is left open. Prompt your students to include quantitative measures. They may describe data in terms of means (a mean of 10.5 as compared to 2.5), percentages (53% as opposed to 22%), or some other numerical measure.

The relationship between the students and the reference is presented next. Were the subjects setting, procedures, or behaviors studies similar? Commonalities must be cited. Their comparison sentence(s) might read: "The present study also used a multiple-baseline across individuals and social reinforcement in examining the acquisition of self-care skills." Again, a brief description is called for. One to three sentences should adequately cover the area.

Have the students locate new references if it is the case that the studies are similar only in that they used identical target populations (obese people, mental retardates, etc.) or the basic design (multiple base-line, reversal, multi-element, etc.) yet lack any procedural or behavioral similarities.

A paragraph summarizing the more important aspects of the students' study and how it relates to the references in terms of procedures and/or behavioral similarities follows. They may write.
"The Horner et al., (1975), Keilitz (1972), and Rincover (1975) studies related to the present one in that each examined the effects of punishment on reducing self-destructive behaviors. Both the present research and Rincover's (1975) study utilized time-out procedures for inappropriate behaviors."

The focus of this paragraph is on major similarities. Avoid the nitty-gritty details included in the earlier paragraph descriptions.

Once the above tasks are completed for each reference all the student has left to do is summarize the highlights of their own study. In doing this they might ask: Who are my subjects? What do I plan to manipulate? What results do I expect? And why do I expect them? An example of the summary paragraph is: "In the present study a multiple-baseline design across subjects was used to examine the acquisition of self-care behaviors in two multi-handicapped children. Social reinforcement and free access to toys were used to reinforce correct responding. A review of past research in the area using similar experimental conditions has strongly suggested that the current study would successfully demonstrate the acquisition and maintenance of self-care behaviors."

Read the following sentence. Note that the reader is not in anyway informed who the subjects are nor the procedures in effect. Also, nothing is stated about the expected outcome.

"The present study was undertaken to increase the performance motor skills by the subject as a function of social reinforcement for correct responses. Social reinforcement in the form of praises and light teasing was given contingent upon the subject's performing the required fine motor task."

Prompt your students to answer the questions listed above. Their revised paragraph might read: "In the present study a reversal design was used to examine the effects of social reinforcement on the acquisition of fine motor skills. Past research indicates that the use of social reinforcement for correct responses facilitates motor skill acquisition.

References

There are three basic ways an author, or number of authors may be cited in the introduction section. They are:

a) If the author's name begins the sentence specify the last name of the author (or authors) followed by parentheses enclosing the year of publication. "Horner and Keilitz (1975) has shown...."
b) If you wish to set off references within the text of the material then enclose both the author(s) name(s) and date of publication within parentheses. "A recent study (Rencover and Kogel, 1975) has shown...."

c) If you have already mentioned the authors and wish to refer to them once more, cite the senior author's last name followed by et al., and the date. Whether or not all or just a portion of this information is enclosed in parentheses depends on if your reference meets the conditions presented in (a) or (b).

Examples of such situations are:

"In the self-care study (Horner et al., 1976) a treatment package was used."

"Horner et al., (1975) also used a multiple-baseline design across subjects."

Reference Lists

The purpose of Reference Lists is twofold. First of all, it provides support for the student's research. All articles presented in the Introduction are included here. Secondly, it enables other people to use the necessary data for identification and library research. Consequently, accurate and complete information must be provided.

References must be presented on a separate page. The title REFERENCES should be centered and typed in capital letters one inch from the top of the page. Be sure the students list their references three spaces down from the title. Each line of the same reference must be single-spaced. Double-space occurs between references. They shouldn't indent the author's name, only subsequent lines of the same reference are indent three spaces from the left margin. See the examples provided at the end of the capitalization section. All references should be prepared in the style cited below.

Sequence. Arrange the information in the following order:

a) Author: all authors of the work, with initials. Last name first.
b) Title: the name of the article, book or address.
c) Publication facts:
   for journals - full name, date of publication, volume number, pages it includes.
   for books - city of publication, publisher's name, and date of publication.
Punctuation:

Periods separate the author, title, and publication data.

i.e., Author, Title of work, Publication data

Commas separate last name from initials and within the publication data.


A colon separates the place of publication and the publisher.

Kalamazoo: Behaviordelia, 1974

Capitalization: Capitalize last names, initials, and the major words of journal titles. Capitalize the initial letter of the first word of an article, chapter, book, or address title. Also capitalize the place a book was published and its publisher or the place where a paper was read.

Below is an example of the format the students reference page should take. The first reference is selected from a journal, the second from a communication, the third from a paper delivered at a scientific convention, the fourth from a book.

REFERENCES


INTRODUCTION APPLIED EXERCISES

1. What are the overall purposes and functions of the Introduction section?

2. List the order in which each topic area is presented in the Introduction section. Briefly describe the information that must be covered in the topic area. Also indicate the amount of sentence coverage required if appropriate.

3. List the three basic ways an author, or number of authors may be cited in the Introduction section. Provide an example of each. Avoid the ones presented in this package.

4. Prepare a REFERENCES page that includes the following references: a book, journal, informal communication, and a scientific paper that was presented at a scientific convention.
INTRODUCTION CHECKLIST

Use this as you edit your students introductions. Be sure all of the following items are included in the students writing.

Generalization Sentence
- Initial sentence that provides the range of applications. This justifies the rationale of the present study.

Three References are used
- For each reference examined a paragraph summarizing the following items must be presented: (that's one paragraph per reference)
  - the purpose of the study
  - procedure (exp. design, consequences, and behaviors)
  - results in quantitative form
  - comparison sentence that relates the similarities and/or differences between the students study and the references.

Summary of important aspects
- After the above is carried out, a paragraph summarizing the important aspects of the students study and how it relates to the reference in terms of procedural and/or behavioral similarities.
- Was any info omitted that was important?

Highlights of the students study
- Includes a paragraph summary that specifies:
  - who the subjects are
  - what is manipulated
  - the expected results
  - why the results are expected

Look at each citation of each author. Are they presented correctly?
- Punctuation right?

References
- Alphabetically ordered
- Information is sequenced such that author is first, then title, and last of all, publication facts.
Introduction Instructional Package Quiz I

1. Examine the order of the Introduction topic area. Are they correctly sequenced? If not, cross out the incorrectly placed area and write in the correct one. (2 points)

Each Introduction begins with a summary paragraph that provides justification of the area under investigation. Following this, for each reference cited, the student must write purpose, comparison, procedural, and results sentences. A generalization paragraph is next. In this paragraph the highlights of the student's study and their references are presented. Last of all, the important aspects paragraphs summarizes relevant information pertaining to the student's own study.

2. Correct the following citation of references: (3 points)

a) Results by Bowman suggest that verbal reinforcement can be used to teach motor responses.

b) In such instances, physical guidance procedures such as those described by Baer, Peterson, and Sherman (1967) have been used initially to insure that a target response occurs. For example, in the Baer, Peterson, and Sherman study, a child was verbally instructed to raise her hand.

c) In a similar fashion, Whitman, et al., (1971) taught a child to sit down for periods up to 30 min.

3. Why are Reference lists presented? (2 points)

4. Examine the following and correct any errors. (3 points)


TA: Please edit this like you would a lab report from one of your students.

The present study was designed to increase on task behavior of two mentally retarded children.

In a recent study by Frances P. Henry (1973) on the effects of reinforcement conditions on a discrimination learning task it was found that social reinforcement was an effective means of increasing behavior. They gave the children pictures of familiar objects and asked the children to match the pictures. When the children had matched the pictures correctly they were reinforced with social praise. This increased the children's correct responding. This was similar to the present study in that the children were reinforced for on task behavior with social reinforcement to increase their on task behavior.

William S. Mitchell and Beram E. Stoffelmayer (1973) did a study using the Premack principle. They used the Premack principle to increase coil stripping behavior in four schizophrenics. The experiment followed an ABAB design. Tangible rewards were tried as reinforcers, but they proved to be ineffective, so the Premack principle was used and that was found to increase the behavior substantially. The present study also used the Premack principle in that children were allowed to engage in a more preferred activity when they had finished coloring one page of drawings.

Competition and social stimulation effects on simple motor performance was the basis for a study done recently by Zolinda
Stomenan and Peggy A, Keilman (1969). They studied 40 children ranging in age from eight to fourteen. They had the children do mazes and connect dots. First with noncompetitive instructions, this acted as social stimulation, and then with competitive instructions. It was found that the children did better when they were in a non-competitive, socially stimulating situation. This study was related to the present study in that there were two subjects supplying each other with social stimulation, in a noncompetitive environment.

The present study was undertaken to increase on task behavior, though the use of social reinforcement and the Premack principle. The subjects were given social reinforcement in the form of praise while they were working on the task. After finishing one page of coloring the subjects were allowed to engage in preferred activities. The goal of the study was to achieve 90% on task behavior.

The Henry study (1973) related to the present study because of the use of social reinforcement to increase behavior. The Mitchel et al. (1973) related to the present study in that they used the Premack principle. The Stoneman et al. (1969) study related in that they used social stimulation to increase responding.
REFERENCES


RESULTS INSTRUCTIONAL PACKAGE

Objectives:

Be able to explain the function of the Results section.
Be able to cite: (a) what information is provided in the topic areas listed below; (b) how it should be presented.

Reliability paragraph
Topic sentence(s)
Calculation sentence
Graph placement
Fact paragraph(s)
Summary paragraph
Figure caption(s)
Figure(s)

Be able to prompt:

a) correct ordering of the information provided in the Results section.
b) concise topic coverage.
c) sentence length
d) paragraph formats.

The students' objective in reporting results is to quantitatively summarize the outcome of their study for the reader. The data description must be concise enough to stand alone. This enables the reader to understand the data without being forced to analyze the graphs themselves.

Often students ask, "What data should I report on?" Have them examine their raw data and pull out all relevant facts - even if they run contrary to earlier expectations. APA says "Results should be treated like an income tax return: take what's coming to you, but no more." This is a good rule to follow! We'll address this issue more thoroughly in the facts paragraph description.

Interpreting, qualifying, and drawing inferences from the results may not occur in this section. Direct your students to write the above in their Discussion section.

The reliability paragraph appears first in the Results section. In it the student describes when the checks were taken and the percent of agreement obtained during each. Examples: "Reliability checks taken at Sessions 6 and 8 yielded 50% and 60% respectively." If the student wrote "Reliability checks average 95%." they neglected to indicate when the checks were conducted. Prompt them to include this.
Once this is completed, the student must include the information presented below for each figure (graph) discussed.

**Topic sentence(s):** These sentences state how much data is presented and identifies the dependent variable as a function of the independent variable. The student may write: "Figure 1 represents data collected during Baseline and Phase I and II. The percentage of on-task time is presented as a function of Social praise." Or, "Figure I shows data for Baseline and Phase I. The rate of correct responding to instructional prompts as a function of reinforcement is presented."

If a student writes: "Figure I shows percent correct responding as a function of reinforcement," they have failed to indicate the conditions the data represents. Prompt them to include a statement prior to this as what phases, etc. are depicted in the graph.

Following this the student prepares a **calculation sentence.** This sentence tells the reader what calculations are made on the graph (percent accuracy, means, and so on) and how they are derived. They might say, "Percent scores were the summation of the number of minutes recorded for each separate phase divided by the total session time for each phase times 100." "Means were computed by adding the number of correct responses per session and dividing them by the number of sessions." Let's say the student wrote this, "Percent accuracy was computed by multiplying the total number of correct responses by the number of trials and dividing it by 100." This statement is grossly incorrect. An accurate percent result will not be obtained with such a technique. Examine your students' calculation sentences carefully. Be sure they are mathematically sound.

**Graph placement.** Next the student indicates where the figure should be placed in relationship to the remaining text. This is easily carried out by having the student enclose the words "Insert Fig. X about here" within a series of dashes typed across the page. Typing specifications are outlined here:

1) double space down from the **calculation sentence**
2) type a series of dashes across the page from the left to right hand margins
3) single space down
4) center and type the words "Insert Fig. X about here".
5) single space down
6) type another series of dashes from left to right hand margins
7) double space down to the **fact paragraph presentation**
Here's an example.

The fact paragraphs are now due. In these the student describes data relevant to the figures. Prompt them to include facts that will assist the reader in correctly viewing the results. Have them present the data in terms of means, percentages, and/or other representative values. Deviant points of trends may be mentioned. With each experimental condition (Baseline, Phase I, etc.) they should try to answer the following questions:

1) how many sessions were needed to reach criteria
2) what was the variation or range of the data in which sessions did this occur
3) what was the average responding for the sessions in each phase.

Their fact paragraph may read like this:

Responding during baseline was considered stable after four sessions, with 0% correct responding in all four sessions.

With the initiation of Phase I, the subject, in the first session of the phase (Session 5), responded correctly in all of the ten trials (100%). But in Session 6 responding dropped to 40%. Criterion, which was 90% correct responding for two consecutive days in each of the phases, was met in Session 13. The average level of correct responding in Phase I was 63%.

During Phase II correct responding began at 40% in Session 14 then rose sharply in Session 15 to 100%. Criterion was met in Session 16 as subject again responded correctly 100% of the time. The average level of correct responding in Phase II, which lasted three sessions, was 80%.
Note that in the following description we have no idea what results were obtained in Sessions 5 and 6. These must be quantitatively specified, also the words "Session" must be capitalized and the sessions numbers presented in arabic numerals.

The subject achieved a level of 30% correct responding in the first session of Phase I. However, the percentage fell on sessions five and nine. Criterion of 90% accuracy for two consecutive sessions was met after nine sessions. The average of accurate responding for Phase I was 55%.

Read over this one. What is wrong with it?

At the onset of Phase II correct responding was achieved. The subject was on a continuous incline from Session 19 to the present. At Session 23 the subject was achieving 85% correct responding. Thus far, the average percent of correct responding was 41%.

You are on the right track if you picked out the following errors: failure to place a comma after Phase II, and, not indicating what the last session was (rather than saying "to present" or "thus far"). However, one more very critical mistake has occurred. The student said, "The subject was on a continuous incline." The subject isn't on an incline, the rate of responding is. Additionally, the trend of this "incline" must be stated more clearly.

These errors occur frequently. Be sure you catch and correct such instances. Once the student has finished describing each figure they are to collate the data in a Summary sentence or short paragraph. In one-three sentences they should qualitatively present the pertinent data. Stating inferences such as "this" and "that" caused or produced the behavior change should be left to the Discussion section. Rather than writing "editing accuracy improved 10% after instructional package implementation", the student may say "The editing accuracy of research apprentices was higher after instructional package implementation."

Figure Captions. In this portion of the Results section students list the treatment variables (DV's) as a function of the manipulation (IV's) particular to each figure. The captions must be concise enough
that the graphs are understood without referring to the text.

Figure captions are presented on a separate page that immediately precedes the graphs. The title "FIGURE CAPTION(S)" should be centered and typed in capital letters one inch from the top of the page. Be sure the students list their captions three spaces down from the title. Each caption is listed according to the ordering of the figures (i.e. Fig. 1, Fig. 2, etc.). Double space lines of the same caption and between separate captions. Center subsequent caption lines directly below the first word of the caption.

Arrange the information in the following order:

1) figure number first (i.e., Fig. 1)
2) treatment variable (DV) as a function of the manipulation (IV) (i.e., Percent responding of correct responding as a function of social reinforcement)

Examine this example:

FIGURE CAPTIONS

Fig. 1 Percentage of correct responding as a function of over-correction.

Fig. 2 Percent of correct speech articulation as a function of social reinforcement.

Graphs are presented for each figure discussed in the Results section. Prompt your students to construct them according to the following specifications:

1) all graphs are centered on unlined white paper or standard graph paper. Lab graph sheets from the Center are not acceptable.
2) both axes are numbered in a neat, readable fashion. The axes should extend to the highest numerical value.
3) the dependent variable is centered and typed in capital letters on the ordinate (i.e. MEAN RATE OF CORRECT RESPONSES), as is the independent variable. Place this on the abscissa (SESSIONS)
4) phases are separated with vertical dotted lines. Points are connected within phases, not between them.
5) triangles cite the sessions in which reliability checks occurred. These are placed around the data points (i.e. △).
Percent agreement isn't included on the graphs since the student presented this earlier in their Results description.

6) Legends are required if more than one data symbol is used on the graph. These tell the reader what the symbols stand for. The legends appear in the right upper hand corner within the confines (axes) of the graph. Capitalize all words used in labeling.

Examine the graph provided on the next page to get a better idea of what is expected here.
RESULTS APPLIED EXERCISES

1) What is the purpose(s) of the Results section?

2) List the order in which topic areas are present in the Results section. Briefly list the information required in each.

3) Given the facts tabulated below, prepare an example of the following Results sections:
   a) calculation sentence
   b) fact paragraph(s)
   c) FIGURE CAPTION
   d) figure

Experiment involved reinforcing voice loudness in a 15-yr-old retarded girl.

<table>
<thead>
<tr>
<th>Experimental Condition</th>
<th>Number of Sessions</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Condition 1</td>
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Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
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<th>Number of Responses</th>
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<tr>
<td></td>
<td>5</td>
<td>78</td>
</tr>
</tbody>
</table>
A RESULTS AND FIGURE CHECKLIST

Use this as you edit your lab reports. Be sure all of the following items are included in the students writing.

- RESULTS is capitalized and centered on the paper
  reliability paragraph
  - when they were taken
  - % agreement obtained
  topic sentence
  - how much data is presented
  - dv as a function of iv
  calculation sentence
  - what calculations were made
  - how they were (derived) conducted
  graph placement
  - Insert Fig. X about here is enclosed in dashes
  - check typing format
  fact paragraph(s)
  - for each experimental condition:
    - sessions needed to reach criterion
    - range of data and the sessions this occurred
    - average responding per session
  summary sentence or paragraph
  - pertinent data are qualitatively presented
  - FIGURE CAPTION(S) is capitalized and centered on a new page
  - they're presented in the order in which they appear
-DV as a function of IV...whoops! with the figure # preceding this ..... 
-typing format is correct ____ 
graphs are attached behind Figure Captions 
-centered on graph or plain paper ____ 
-axes are numbered and readable; they cover the highest value ____ 
-DV and IV are centered and typed in capital letters on the dorinate and absicca respectively ____ 
-phases are separated with dotted lines ____ 
-points connected with phases only ____ 
-triangles cite reliability sessions ____ 
-legends are presented if more than one data symbol and are placed in upper rt hand corner w/in axes. All letters are capitalized. ____
1. What is the purpose of the Results section? (2 pts.)

2. State the order in which Results information must appear. (2 pts)

3. Cite the errors made in the following Results Sections. Make the appropriate corrections.
   a) Figure Captions (2 pts)

   Figure 1. Percentage of Correct Responding AS A Function of Social Reinforcement.

   Figure Two. Percent correct speech articulation as a function of mean accuracy.

   b) "In the twenty-third through the twenty-sixth session the client was in the 60 range. On the twenty-seventh session the client reached 70%. This remained for five consecutive sessions. The average response for "off-task" behavior was at a low level. (2 pts)

   c) (2 pts)
Results and Figures Behavior Rehearsal

TA: Please edit this like you would a lab report for one of your students.

RESULTS

Reliability checks were made at least once per phase by an independent observer and yielded a consistent 100% agreement.

Figure 1 presents data. The percentage of correct responses as a function of positive reinforcement is presented.

Baseline lasted two sessions in which correct responding was a consistent 0%.

The subject climbed to 65% during Phase 1. Criterion of two consecutive sessions of 90% correct responding was met after nine sessions. The initial session of Phase 1 yielded 52% correct responding.

In Phase II, eight sessions were required to reach the criterion of two consecutive sessions of 90% correct responding. The initial session of Phase I resulted in 67% correct responding, with an average for the phase being 73%. The subject did a good job in this experiment.
FIGURE ONE. PERCENTAGE OF CORRECT RESPONDING AS A FUNCTION OF POSITIVE REINFORCEMENT.

TA, the attached graph looked like this:
ABSTRACT INSTRUCTIONAL PACKAGE

Objectives:

Be able to explain the function of the Abstract section.

Be able to cite: (a) what information is provided in the topic areas listed below; (b) how it should be presented.

Title
Name
Affiliation
Purpose sentence
Subject sentence(s)
Setting sentence
Procedure sentence(s)
Results sentence(s)
Conclusion sentence

Be able to prompt:

a) correct ordering of the information provided in the Abstract section
b) concise topic coverage
c) sentence length
d) typing format of the title, name, affiliation, and abstract content

The purpose of the Abstract section is to provide the reader with the title of the study, the experimenters name and affiliation, and to summarize the critical elements of the students study.

It begins with the title of the students study. Included in the title are the dependent and independent variables, as well as the target population. It should be descriptive and short. The title appears one inch down from the margin. The first letters of all major words are capitalized. If the title is too long to place on one line, the remainder of it must be centered and typed a single space below the first line. For example:

Reactivity to Home Observations: A Comparison of Audio Recorded Behavior With Observers Present or Absent

Following this is the student's name. The first name, middle initial, and last name are presented. The name must be centered and typed two spaces down from the title. The first letters of each are capitalized (i.e., Betty B. Behaviorist).
The affiliation of the student is next. For our purposes, the affiliation of your students will be "Western Michigan University". The typing specifications outlined above are in effect here.

Here's an example of how the above three items should appear on the students Abstract page:

The Impact of Applied Behavior Analysis on Diverse Areas of Research

Alan E. Kazdin

The Pennsylvania State University

The body of the Abstract is written in one long paragraph. It must not exceed 175 words. Typing specifications for this section are as follows: 1) it starts seven spaces down from the affiliation name, 2) there are no indentations, and 3) the entire Abstract section is double-spaced.

The Abstract section begins with a purpose sentence. This sentence serves to describe the behavior under investigation. Examples: "The effect of instructional packages on the editing accuracy of research apprentices was examined." "The impact of applied behavior analysis on various areas of research was assessed." Make sure your students keep this sentence short and concise.

The experimental subject(s) are briefly described after the purpose is presented. In one to two sentences the students must state the number of subjects used in the study, their ages, sex, and disabilities. If the subjects behavior problems are relevant to the study, these must also be cited. Here are a couple of examples: "The subject was a 12 year old retarded male with speech deficiencies." "The subject was a severely mentally retarded 17-year-old female." Again, this information must be confined to one to two sentences. Any additional statements must be severely condensed or omitted.

A description of the setting follows: The experimental environment and materials (if relevant) are synthesized into one sentence. "Therapy sessions were conducted in a small classroom at the Kalamazoo Valley Multihandicap Center." "Therapy took place in the Kalamazoo Valley Multihandicap Center gymnasium." Note that they may not abbreviate the title of the setting (i.e., KVMC or DTC). These must be spelled out for the reader.

In the procedure sentence(s), the student cites the stimuli, consequences, and criterion for advancement required in each phase. This is often a troublesome spot in the Abstract section. Prompt them to cover the "bare bones" of their procedure. Here's an example
of a nice, tight, procedural description: "The subject received praise and edible reinforcers for correctly imitating the sounds prompted by the experimenter. Incorrect responses were conseuated by saying, "no". A new sound was introduced in each of the three phases. Criterion for phase advancement was 90% correct responding for two consecutive days."

Let's say a student wrote this, "A 5 second time-out period was implemented for head banging behaviors. Once the subject decreased this, the next phase was instituted." Well, what happened when no head banging occurred? Nothing? How much of a reduction in response frequency was required for phase advancement? What was the next phase? Prompt your people to answer these questions.

A one to two sentence statement of the results is next. Here the student gives a quantitative gross overview of the behavioral outcomes with and without the treatment conditions. The sentence(s) must coincide with the actual results. No fudging allowed. If we read "Correct responding was on a continual incline following baseline", we have no idea how much of an increase was a function of the experimental conditions. Prompt inclusion of this data. An acceptable results sentence may be "In the experimental condition on-task responding increased 95% from that of baseline measures."

The Abstract section is completed with a conclusion sentence. This sentence is not a restatement of the major results. Rather, it is an overall evaluation of the general usefulness of the procedure. It should indicate the strength of the students study. For example: "The results indicated social reinforcement was effective in establishing correct pronunciation of designated sounds" or, "Lemon juice did not prove to be an effective method in decreasing hand biting behaviors." As I've stated before, make sure your people tell it like it is, not like they wished it could be.
ABSTRACT APPLIED EXERCISES

1. What is the function of the Abstract section?

2. Given the facts outlined below construct the following abstract sections:
   a) subject sentence(s)
   b) procedure sentence(s)
   c) results sentence(s)
   d) conclusion sentence

Facts:
- 17 year old severely retarded female
- KVMC: classroom (socials)
- SR+ in-seat behavior, extinguish out-of-seat behavior
- Baseline sessions were three days each
- Phase advancement criterion: 85% in-seat behavior for two consecutive days
- Baseline 1, average of 3% in seat correct responding
- Phase 1, six sessions; SR+ every 3 consecutive minutes spent in seat; average % correct responding = 87%
- Baseline 11, average % correct responding = 50%
- Phase 11, five sessions; same as Phase 1 but for 6 min. spent in chair; 90% correct responding
- Baseline 111, 45% average correct responding
- Phase 111, eight sessions; same as Phase 1 but with 7 min. in seat required; average percent accuracy = 87%
DISCUSSION INSTRUCTIONAL PACKAGE

Objectives:

Be able to explain the function of the Discussion section and the questions it should answer.

Be able to cite: (a) what information is provided in the topic areas listed below; (b) how it should be presented.

- Introduction sentence
- Comparison paragraph
- Results paragraph
- Limitations/shortcomings paragraph
- Theoretical implications paragraph
- Practical implications paragraph

Be able to prompt:

a) correct ordering of the information provided in the Discussion section
b) concise topic coverage
c) sentence length
d) paragraph format

The purpose of the Discussion section is to allow the experimenter, the student, to evaluate and interpret the results of their study for the reader. Presented in this section is an evaluation of the extent to which the results support the original hypothesis. The Discussion section serves additional functions: results of the current study are compared with the references; limitations and/or shortcomings of the experiment are discussed; and, theoretical and practical implications of the research are stated.

While editing your students Discussion sections be sure that they present their information qualitatively. Also, that they have avoided speculation unless they have: 1) identified it as speculation, 2) it relates closely to the data or is logically derived from theory, and 3) it is in concise form.

Their Discussion section should answer the following questions: What has the study contributed to behavior analysis? Do the results support the original hypothesis? To what extent? How do the findings compare with past research? What may be done to improve the study? and, What practical and theoretical implications may be drawn from the study?

Introduction sentence: This sentence explains the extent to which the results support, or fail to support, the original hypothesis. The experimental population is also cited. If for instance the student examined the effects of time-out on the ruminating behavior
of a retarded child, their introductory sentence may read "This experiment demonstrated it was possible to decrease the ruminating behavior of a retarded child through the use of time-out." Another good example is "Results of this investigation indicate that human gastric secretion could not be brought under the control of visual feedback that was related to monetary control."

Let's say the student wrote the following sentence: "An individual training program was used to teach problem solving skills." What is missing from this description? The student has failed to state who the subjects are and how effective the program was in teaching problem solving skills. ["What is missing from this description? The student has failed to state who the subjects are and how effective the program was in teaching problem solving skills.] Prompt them to include these items. Their revised sentence may read "The data suggest that the individual training program, based on a behavioral model, was effective in teaching low-income individuals problem-solving skills usable in community board meetings."

In the comparison paragraph the student compares the results of their study with the references presented in the Introduction section. They may also compare the studies in terms of the similarities and differences of the stimuli used, target populations, and/or dependent and independent variables. Note that for each reference used in the Introduction, the student must discuss at least one of the above "categories". Be sure the references are cited according to the Writing Style and Introduction Instructional Package specifications.

An acceptable comparison paragraph may read "The results of the current study are comparable to that of Spencer (1973) and Scott et al., (1967) in that it indicated the effectiveness of overcorrection in the elimination of stereotypic behaviors. The current study was also similar to the Pendergrass (1971) study in that both involved retarded populations."

What is wrong with the following comparison paragraph? "The present study was similar to the Walker et al., (1968) and the Baer et al, (1973) studies in that identical independent and dependent variables were used." First of all, the student omitted stating what the variables are. Secondly, there isn't a comparison of a third reference. Prompt them to include this information. Their revised paragraph may read. "The present study was similar to the Walker et., (1968) and the Baer et al., (1973) studies in that each demonstrated the effectiveness of token reinforcement on the acquisition of self-care behaviors. In the Schutte (1970) study, token rewards and social praise were combined. Their data indicates that the pairing of such reinforcers could facilitate the acquisition of self-care behaviors."
The results paragraph follows. In this paragraph, the student examines the data obtained from their study and qualitatively describes points of interest. They may simply represent the major results or cite trends and fluctuations in the data. If the data run contrary to widely accepted points of view, these may also be presented here. Examples follow. "The lack of performance decrement for the children with high base rates of sitting is not in accord with Sechrest's (1963) finding, nor does it support predictions from equity theory (Adams, 1975)." "The control over hyperactivity by the enhancement of academic performance was quick, stable, and independent of the duration and dosage of the medication received by each child prior to the program. It usually took only one session for each child to learn that academic performance was associated with reinforcement while hyperactivity was not."

Let's say the student prepared this results paragraph: "The number of sessions required to reach criterion in each phase was an important factor. Social reinforcement helped establish 90% responding in Phase 1. The increase was immediately noticeable as opposed to a gradual increase. "Can you detect any errors in this passage? Look closely! The student mentioned the number of sessions required to reach criterion was important, however we weren't told how many sessions were needed. Prompt the student to write "For each experimental condition it typically took the subject three sessions to reach criterion." Another error was the description of the results in quantitative measures. Data presented here must be qualitatively expressed. For instance, "On-task behavior increased immediately and rose to a high level with the delivery of social reinforcers." The last sentence about the immediate increase in behavior being more noticeable than a gradual one does not increase the readers knowledge of the results. Prompt the student to eliminate this.

In the limitations/shortcomings paragraph the student describes experimental procedures or variables that made conclusions possible, or for that matter, impossible. For example, "The experimental design did not permit an analysis of the relative effectiveness of the individual components of the training package." "Although adjective-noun combinations were modelled and imitated in complete sentences, the purpose of the experiment was not to try to alter the frequency of complete sentence usage. This certainly would have been a beneficial byproduct; however, the probe sessions were not well-suited for this."

If the student wrote "The data is inconclusive in exemplifying the utility of time-out as an effective means of decreasing face slapping", have them indicate why it was. Perhaps the phases were too short, the subject was absent frequently, etc.
A paragraph addressing the theoretical implications of the study for future research is next. The basic issue on hand is whether or not the dependent variables (or experimental procedures) require more analysis. Good examples of such a paragraph include "There are many complexities involved in assessing the long-range result of training in problem-solving. Future research should address this issue." "Training tapes may be more effective in making the delivery of behavior modification technology more economic and efficient. The advantages of audio recordings remains to be demonstrated."

Last of all the student must write a paragraph describing the practical implications, or for that matter, applications of their study. For instance "This study offers a behavioral and educationally justifiable alternative to the use of medication for hyperactive children. The control of hyperactivity by medication, while effective, may be costly to the child, in that it may retard his academic and social growth, a human cost that schools and society can ill afford."

Unsupported conclusions must be avoided. Statements such as "The use of social reinforcement may be used to eliminate the worlds problems" are as yet unfounded and unjustified. If your students are having difficulty generating ideas for this paragraph, have them review their experimental procedures and results and to ask themselves "What utility does this research have for future applied use?"
1. What is the purpose of the Discussion section?

2. Examine the following Discussion section. Specify what information has been presented incorrectly and/or omitted.

DISCUSSION

Social reinforcement functioned effectively in establishing and maintaining correct pronunciation of designated sounds.

The number of sessions required to reach criterion in each phase is an important factor of the data. Social reinforcement helped to establish 90% correct responding in Phase I. Nine sessions were required in Phase I and thus far nine have been required in Phase II. By using continuous reinforcement I expect that once it has established correct responding, social reinforcement will maintain it. This is evidence that can be seen in the review session...Phase II. The number of sessions should decrease.

Data established by the current study coincides with that of Barton (1970) in that they both employed the use of contingent reinforcement. The results demonstrated that a complex verbal response could be trained in speech deficient children. Such data indicate that the utilization of contingent social reinforcement is effective in maintaining a variety of behaviors, as proven in this study of correct pronunciation of designated sounds.
TA DISCUSSION AND ABSTRACT CHECKLIST

Use this as you edit your lab reports. Be sure all of the following items are included in the students writing.

DISCUSSION
-the word is on the paper ____

introduction sentence
-extent to which results support or fail to support hypothesis ____

comparison paragraph
-for each of the three references they compare similarities and/or differences ____
-compare the above in terms of at least one of the following:
  -results ____  -stimuli ____
  -target population ____  -dependent and independent variables ____

results paragraph
-qualitative description of data by representing results, trends, and/or fluctuations in the data ____

limitations/shortcomings paragraph
-cites experimental procedures or other variables that made conclusions possible or impossible ____

theoretical implications
-dependent variables or experimental procedures in need of future research ____

practical implications or applications
-items in the study that need future research or that may be useful in future behavioral applications ____

ABSTRACT (No title) ____

title
-first letters of major words are capitalized ____
-the words are centered on the page; words are typed one inch down from the top ____

name
-first letter of first, middle initials and last name is capitalized ____
-it's centered on the paper; it's two spaces down from the title ____

affiliation
-Western Michigan University ____
-the above is centered on the page two spaces down from the name ____
-the first letter of each word is capitalized ____
Abstract (untitled)
-begins seven spaces down from the affiliation
-zero indentations
-the entire section is double spaced

purpose section states the behavior under investigation

subject section sentence(s)
-# of subjects
-age
-sex
-disabilities
-behavior problems (if relevant)

setting sentence
-experimental environment is cited
-materials (if relevant)

procedure sentence(s)
-for each phase conducted they must present:
-stimuli
-consequence
-criterion for phase advancement

results sentence(s)
-overview of results with and without treatment conditions

conclusion
-overall evaluation of the study or procedure
Abstract and Discussion Quiz

1. What is the purpose of the Discussion and Abstract sections?

2. Cite the errors made in the following sections. Make the appropriate corrections.
   a) Discussion section, results description:
      Both subjects improved tremendously when the experimental phase was implemented. One subject reached 64% on the first session. Data ranged from 30-80% with a 70% accuracy. The other reached 75%.
   b) Abstract title, name, and affiliation:
      THE ESTABLISHMENT OF CORRECT PRONUNCIATION OF SOUNDS USING SOCIAL REINFORCEMENT
      western michigan university
      Poindexter q. Rosenbaxter
   c) Abstract, procedure sentence(s):
      A 10 second time-out period was implemented for hand biting. In phase one a three second, phase two, 5 second, and Phase III a 20 second period. When responding decreased a new phase was implemented.
   d) Discussion section, comparison sentence(s):
      This study data shows that it concurs with that of Henry, Mitchell, and Stoffelmayer in that social reinforcement functioned as an effective means to control behavior. It also shows that the childrens behavior did increase and this could agree with other findings.
Abstract and Discussion Behavior Rehearsal

TA's: Please edit this like you would a lab report from one of your students.

ACQUISITION OF PICTURE
SEQUENCING INTO STORY FORM AS A FUNCTION
OF SOCIAL REINFORCEMENT

Eric Bosewick
Western Michigan University

This study was designed to establish picture sequencing behavior as a function of reinforcement and modeling.

The subject was a thirteen year old male.

Therapy was conducted at a table upon which four pictures were placed. The subject was then told to put the pictures in story book form. When he did right he received praise. All sets of cards was used till 80% correct responding was gotten. This was done to test generalization.

It took six sessions to reach correct responding.

The results indicate that contingent social praise and modelling were effective tools to use in establishing sequencing behavior in a retarded kid.
Discussion

An interesting aspect of the data is the number of sessions required to reach criterion in each phase. This aspect of the data is especially interesting when it is noted that with each new phase a new group of cards are used.

Data yielded by the current study is kind of like that of Henry 1973 in that it indicates social reinforcement functioned as the main controlling variable affecting the acquisition of new behaviors. The results of the current study is also in congruence with that Hopkins, etc. (1972) in that social reinforcement effectively maintained learned behaviors. Such data lends further support for the utilization of contingent rewards in the development and maintenance of behaviors.
EVALUATION

1. Was the material presented in an organized, logical manner?
   Comments:

2. Was adequate information provided?
   Comments:

3. Did the examples clearly illustrate the definitions they exemplified?
   Comments:

4. Did the study objectives adequately cover the major points covered in the package?
   Comments:

5. Did the Applied exercises adequately cover the major points covered in the package?
   Comments:

6. Did you consider the information presented relevant to lab report editing?
   Comments:
7. Do you believe the contents of this package will assist you in delivering more appropriate feedback?
   Comments:

8. What was (were) the best feature(s) of this package?
   Comments:

9. What was (were) the worst feature(s) of this package?
   Comments:

10. What information was omitted that should have been presented?
    Comments:
APPENDIX 2

The editing mini-course manual and laboratory editing hints are presented here in their original form.
Dear TA,

This editing mini-course is designed to assist you in the acquisition and maintenance of your lab report editing skills. Learning how to write technical lab reports is not an easy task for your students. Nor for that matter, is the editing of their work.

In the past the Writing Guide functioned as a source of reference for the research apprentice and the student. It specified the behaviors required for each lab report section, the contingencies, and consequences involved with following (or failing to follow) the prompts provided. Occasionally, the TA's editing accuracy was monitored by the 350 assistants. Corrective feedback was given and socials were delivered in an attempt to strengthen editing accuracy. However, even with periodic editing checks we've yet to design a sound system that will facilitate good technical writing and editing.

In our efforts to remedy this situation, I have designed a mini-course for the TA editors. For the next three to four weeks you'll progress through a series of instructional packages. Each package deals with major topic areas of interest to the lab report editor. Included are: Feedback, Writing Style, Method, Introduction, Results & Figures, and Discussion & Abstract packages. Each package consists of reading material, applied exercises, evaluations, quizzes, and behavior rehearsals.

The instructional packages will be distributed a few days prior to the discussion meeting. Read the material carefully, generate any questions you may have and bring them to our meeting. Complete the applied exercises and evaluations, these will be collected at the meeting. We'll all get together once a week (for approximately one hour) to discuss the packages, clarify the material, etc. A take home exam and behavior rehearsal will be given. Use your instructional packages and checklists while working on these activities. A 90% mastery criterion must be met on the quiz and behavior rehearsal. If for some reason you do not reach this criterion you may remediate the activity. Take home assignments are due two days after their delivery. Note that failure to submit the quiz and/or behavior rehearsal in on time will result in a -4 points per each day late. If you can't make our designated meeting time, please let me know at least 24 hours in advance. This will enable us to reschedule the meeting.

The points you earn in this course will go towards your final TA grade. The various point activities are listed below.
<table>
<thead>
<tr>
<th>Activities</th>
<th>Frequency</th>
<th>Points Possible</th>
</tr>
</thead>
<tbody>
<tr>
<td>attending the discussion meetings</td>
<td>4</td>
<td>5 each</td>
</tr>
<tr>
<td>turning in evaluations</td>
<td>6</td>
<td>5 each</td>
</tr>
<tr>
<td>turning in applied exercises</td>
<td>6</td>
<td>5 each</td>
</tr>
<tr>
<td>quizzes</td>
<td>6</td>
<td>10 each</td>
</tr>
<tr>
<td>behavior rehearsals</td>
<td>6</td>
<td>15 each</td>
</tr>
<tr>
<td>returning the completed quizzes and rehearsals</td>
<td>4</td>
<td>5 each</td>
</tr>
</tbody>
</table>

**total points possible = 250**

As you continue to edit the lab reports this semester, we will strive to tell you how you are doing in your editing accuracy. We'll cite your strengths and provide corrective feedback for any "weaknesses" you may display.

Please direct any questions you may have about the course policy, instructional packages, and so on, to me, Suanne Williams. Phone calls are welcomed: 349-6959.

Also, any feedback you may have on this mini-course will be greatly appreciated!
Lab Report Editing Hints

Lab report editing, as you may well know, is not an easy task. Here are some helpful hints that I believe will increase your editing accuracy.

1. Set aside specific times to edit. Do not attempt to edit all of the lab reports at one time. Chances are you'll burn out quickly. If this happens not only does the editing situation become rather aversive, but also your students will fail to receive the appropriate guidance from you.

2. Set a goal for yourself. Edit three or four lab reports at a time then take a break and relax.

3. Go with the Premack principle. If you know that some students have a rather difficult time writing and have many deficits, edit theirs first. They clearly require the best you have to offer, then go on to the other students reports.

4. Read through the student's lab reports once to get an overall feel for what it is they're saying. Then reread the report this time critically. Progress through the report sentence by sentence so that you don't miss any of the important items.

5. Use your instructional packages and checklists! For each students lab report check off whether or not they've included the appropriate material, related the information in the correct style, and so on. Be thorough!
APPENDIX 3

I examined data from the "best" and "worst" laboratory reports. Several considerations led to this decision. In the third week of the study I generated a randomized list of students reports to view. I used a randomized list to control for the selection of laboratory reports that were not representative of the students writing and/or the TA's editing.

I tried on several occasions to obtain reports from the students after the TA's finished editing the first two laboratory report sections. As a function of these efforts I was able to get nearly half of the reports I needed. In many instances I could have substituted the name on the list with the reports on hand. The potential danger with this procedure though was that perhaps only the good students were returning their reports. Maybe the students who had difficulty writing their reports retained previously edited reports as guides to upcoming ones.

When it became clear I was not going to be able to adhere to the randomized list, I asked each TA to provide me with the names of their "best" and "worst" writers. They were to determine this via the students content and style performance rather than by the number of points the student earned on past laboratory reports. With this procedure I was able to obtain the reports I needed.

It's possible that the use of the "best" and "worst" student reports may have distorted the results. This may have occurred
in terms of accurately measuring improved student writing and improve TA editing. The "worst" students may have entered the course with severe writing skill deficits. There may have been so many errors in their reports that the TA was unable to detect all of them. Conversely, the "best" students may have entered the course with excellent writing skills. If this was the case perhaps their reports contained errors so subtle that the TA's were unable to detect them.

Averaging the data from the "best" and "worst" student writers makes subtle differences difficult to detect. In the future I suggest the experimenters use a randomized list and arrange to observe the reports prior to handing them back to the student.
APPENDIX 4

I designed the materials in this section for the primary and reliability observers. The information is presented in the following order:

Data Collection and Recording Steps
How to Discriminate Negative Feedback from Positive Feedback
How to Discriminate Specific Feedback from General Feedback
Feedback Data Collecting Instructions
Feedback Data Sheet
General Style Data Items
General Style Number Usage Guide and Spelling Guide
General Style Data Sheet
Method Content Data Items
Method Content Data Sheet
Method Style Data Items
Method Style Data Sheet
Data Collection and Recording Steps
(and other relevant info)

1. Set aside specific times to collect data.

2. Establish a goal for yourself. Collect data on three or four lab reports (lr) then take a break and relax for a spell. I imagine you'll burn out quickly if you attempt to collect data on all the lab reports in one sitting.

3. Read through the lab report once to get a feel for what it is the student is saying. Then again for each set of data.

4. Order of analysis:
   a. collect content data using a sentence-by-sentence analysis
   b. collect grammar data using a sentence-by-sentence analysis
   c. collect feedback data using a sentence-by-sentence analysis

5. For each item you'll be examining the TAs editing accuracy.

The dependent variables include:

a. "correct"/correct (c/c): defined as an instance where the TA told the student that something they wrote in the l.r. was correct and it was.
   Examples: their punctuation was correct and the TA mentioned this. The students were told their data analysis was thorough and it was.

b. "Error"/correct (e/c): defined as an instance in which the TA tells the student they did something wrong when they really didn't.
   Examples: The TA told the student they should have placed a semicolon in a particular place but the student punctuated correctly. The TA said the student should have included the description of a section in the wrong place and the student was correct.

c. "Nothing"/correct (n/c): defined as an instance in which the TA neglected to tell the student something they wrote in the l.r. is correct when it is correct.
   Example: All of the Method Content items are presented appropriately but the TA says nothing.

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d. "Error"/error (e/e): defined as an instance in which the TA correctly tells the student something in their l.r. is incorrect and it actually is incorrect. 
Examples: The TA told the student they misspelled the word "receive" and the student did. 
The TA said the student omitted a portion of the lab report and the student actually omitted that section. 
The TA said the student had portions of the l.r. out of order and this was indeed the case.

e. "Correct"/error (c/e): defined as an instance in which the TA told the student something was correct when it really wasn't. 
Example: The student was told the student did a super job writing their Method, but upon closer analysis the student omitted many things.

f. "Nothing"/error (n/e): defined as an instance in which the TA neglected to tell the student something they wrote in the l.r. was wrong and it was wrong. 
Examples: The student indented 2" on all sides and the TA failed to indicate this. 
The student punctuated incorrectly and again the TA missed this.

6. Recording the data: On the data sheets record the students name, section of the lab report you're examining, paragraph #, line #, and the editing accuracy. For instance if the TA's accuracy meets the criterion or definition of an "error"/error, simply record e/e. If two or more data items appear in a sentence, separate these with commas according to the order in which they appear in the lab report.

If the TA provides a positive general comment on the cover sheet and/or top of a page, that comment holds for each student response unless otherwise stated. In other words, if the TA wrote "nice job" on the cover sheet, then each style and content item should be recorded as a c/c, unless of course the student errored. In this case you would record the TA's feedback as a c/e, "correct"/error. It's possible that the TA may make corrective comments in the report - for instance telling the student that certain words are misspelled, that they omitted a major topic sentence, etc. If this occurs then record such feedback separately.
How to Discriminate Negative Feedback from Positive Feedback

It's **positive** if the function of the feedback is to keep the current writing performance on course and/or to increase the probability that appropriate writing will occur.

Observe and record the data as **positive** feedback in situations where the TA:

- a) cites correct individual content and/or grammar items
- b) states in general terms that the writing meets the writing guides specifications

It's **negative** if the function of the feedback is to cause the student's writing performance to decrease and/or change course.

Observe and record the data as **negative** feedback in situations where the TA:

- a) cites an error of omission
- b) cites an error of inclusion
- c) suggests how to correct the writing(s) via symbols and/or written message
- d) asks questions about what is present and/or absent in the student's lab report
- e) states in general terms that the writing does not meet the writing guides specifications

How to Discriminate Specific Feedback from General Feedback*

In a nutshell if you have to ask what is good, bad, nice, etc. about the writing then we consider the feedback general. This feedback typically consists of vague one or two-liners that don't indicate to what extent the writing behaviors are on or off target.

Examples include: "wow", "nice job", "poor report", "great", etc.

**Specific** feedback answers the question what is correct or incorrect about the writing. It may also consist of suggestions for change in either written form (words) or symbols.

*If you come across feedback that doesn't seem to fit either category please make note of it for Suanne.
Examples include: "Overall your writing style is quite concise".
"You omitted the procedure description"
"This abstract is too lengthy, reduce the results description to one sentence"

Examples of Positive General Feedback (+g):

- wow
- OK
- excellent
- yes
- symbols: !
- ü

Examples of Positive Specific Feedback (+s):

- "Nice going, you included all of the Method content items"
- "This lab report meets the typing specifications"
- "This is an exhaustive data analysis"

Examples of Negative General Feedback (-g):

- poor report
- see me
- yuk
- bad
- tisk, tisk
- don't you know how to read
- crummy
- no
- the writing guide?

Examples of Negative Specific Feedback (-s):

- "Was this the only phase in your experiment?"
- "Your subject description is too long, reduce it to two sentences" 
- "reinforcer"
- " consistent tense"
- " The subject, [Clarissa Jones] was..."
- "A correct response in this usually consisted of..."

Combinations:

- "Nice Intro, next time watch your margins"
- "You've got all the content info needed for the R&D. Be sure to correctly spell reinforcer, occurrence, and receiving on your rewrite:"
- "OK Method, poor typing"
- "Wow, what a great typing job! Please use something other than your lab report to set your coffee cup on"
Feedback Data Collecting Instructions

1. Obtain data from the Original Ir's only.

2. Hunt for feedback data on the front and back of each page.

3. Ignore the point assignment - we are not examining this aspect of lab report editing.

4. Each separate issue the TA's feedback addresses = 1 feedback response. Look at the following examples. As you can see, two or more "types" of feedback may be incorporated into the TA's feedback. Record each response individually!!

   • A (pi© r(en)forcer (werg) used to ....... record as:
     \[ (2-s) (1-s) (1-s) = 4-s \]
   why:
     the TA noted these errors: no capitals, misspelling and tense.

   • See p. 47 again. Watch your grammar, punctuation and spelling. record as:
     \[ (1-s) (1-s) (1-s) (1-s) \]
   why:
     the TA's referring the student to a particular page and is stressing that greater attention be dedicated to the areas of grammar, etc.

   • My subjecl^jbat WillieLwas to told "pick up the green disk". record as:
     \[ (1-s) (1-s) (1-s) (1-s) \]
   why:
     delete my, delete comma, delete name, delete comma.

   • I like your intro, but watch your margin widths and the double-spacing. The data analysis of the child's acquisition of expressive language was very good but the rest of your report stank. record as:
     \[ 1+g \text{ for "I like the Intro" - doesn't say what is liked about it.} \]
     \[ 1-s \text{ for margin reference} \]
     \[ 1-s \text{ for double spacing} \]
     \[ 1-s \text{ for data analysis} \]
     \[ 1-g \text{ for saying the rest of the report stank without saying why or what stank} \]

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The child were punished each time Charlie soiled. An incorrect response, consisted of Charlie soiling his briefs.

Key: 1 = spelling
     2 = caps
     3 = tense
     4 = use of subjects name

Even though a key was used here, count each issue addressed as one feedback response.

There are seven (7) -s present here. In order of occurrence they are for capitalizing, spelling, tense, use of subjects name, sentence movement, spelling and last of all use of subject.
**FEEDBACK DATA SHEET**

Code Number

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<th>Paragraph #</th>
<th>Line #</th>
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<th>Feedback Type (+g, +s, -g, -s)</th>
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General Style Data Items

Please use the General Style Data Sheet to record the data for items 1-8.

**Items:**

1. Each section of the lab report begins on a new page.*

2. There are 1-1 1/2 inch margins at the:*  
   a) top of the page.....
   b) bottom of the page .....  
   c) left side of the page ..... 
   d) right side of the page ..... 

3. Typing in the body of the report is double spaced except for the Abstract section and other sections noted in the data sheets*.  

4. Each paragraph is begun 5, not more than 6 spaces in from the left margin*.  

5. The report is written in past tense*.  

6. The report is written in second and/or third person*.  

7. Numbers less than 10 are spelled out*.  

8. Each word is spelled correctly*.  

* Addendum.

**Item:**

1. Do this for each section including Results, Figures, Figure Caption(s), Abstract, Discussion, Method, Introduction, and References.

2. Use the margin guide. Do use for each page except that containing Figures. If more than 4 lines in the text of the report extend the right margin guide line, count it as an error.

3. Exceptions include Figure Captions, Figures, and the References.
4. Exceptions include the Abstract, Figures, Figure Captions and References.

5. Exceptions include Figures, Figure Captions, and References.

6. Exceptions same as #5.

7. Exceptions same as #5. See the number guide.

8. See the spelling guide.
NUMBER USAGE GUIDE

- Ages must appear in arabic numbers (4 years, 3 months).
- Measurements must appear in arabic numbers (3/4 inches, 3 x 6 x 7)
- All percentages must appear in arabic numbers UNLESS they head a sentence.
- Count it as a number if you can replace it with any other number without altering the meaning of the sentence.

Farfetched example: It isn't a number if the student says: The subject took turns working on the matching-to-sample color cards, one working after the other.

SPELLING GUIDE

Words Commonly Misspelled:

1. acquisition  10. maintenance  19. severely
2. affect 11. modeling 20. tangible
3. concurrent  12. occurring  21. therapist
4. contingent  13. occurrence  22. usefulness
5. deficiencies  14. received  23. withdrawal
6. edible  15. reinforcement
7. effect  16. reinforcer
8. imitating  17. responding
9. independent  18. response
## GENERAL STYLE DATA

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Method CONTENT Data Items

Record NA if not applicable.

1. The title of the section is given ....................................................
2. The word "subject" is presented ........................................................

In the subject subsection the student provides:
3. Age ............................................................................................................
4. Height (if relevant) ...........................................................................
5. Weight (if relevant) ...........................................................................
6. Subjects previous training (schooling) .........................................
7. Test scores (if relevant) ....................................................................
8. Description of the behavior under study (or deficit areas) ..
9. Description of the existing behaviors the study is addressing.
10. The word "setting" is presented .......................................................

In the setting subsection the student provides:
11. The name of the setting ........................................................................
12. Where the study took place .................................................................
13. Equipment used (stimuli used) ............................................................
14. The word "procedure" is presented ...................................................

In the procedure subsection the student provides:
15. The length of the sessions .................................................................
16. The # of sessions ....................................................................................
17. Frequency of the sessions ....................................................................
18. # of trials conducted per session (if relevant) ..........................
19. Operational definition of a correct response ............................
20. Operational definition of an incorrect response

21. How the responses were measured

For each phase the student is to include the information presented in data items a-f. Please record the data items in the spaces provided under each phase number. Examine each phase separately.

a) the stimulus conditions-how the trial began
b) the stimulus conditions-how the trial ended
c) how the responses were recorded
d) how correct responses were consequated
e) how incorrect responses were consequated
f) criterion for terminating the phase (phase advancement)

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24. Phase # 3
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b) ...............................................................

c) ...............................................................

d) ...............................................................

e) ...............................................................

f) ...............................................................

25. In the final phase the student gives the criterion required for terminating the study ..............................................

26. In the reliability section the student states who made the checks .................................................................

27. How many checks were made during phase # 1 .............
a) How many checks were made during phase # 2 .............
b) How many checks were made during phase # 3 .............
c) How many checks were made during phase # 4 .............

28. How the percent reliability was calculated ..................
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Method Style Data Items

Record NA if not applicable

1. The title of the section is centered on the paper.

2. The title of the section starts 1 inch down from the top.
   Redundant with Style data #2a. Omit this from total.

3. The first letter of this section's title is capitalized.

Grammar items a-g are required for each Method subsection. Please record the data for these items in the spaces provided for each.

   a) The subheading appears 3 spaces down from the title.
   b) Begins at the left margin (not indented).
   c) The first letter of it is capitalized.
   d) A colon follows it.
   e) The subheading title is underlined.
   f) The first word of the section begins two spaces down from the heading.
   g) The first word of the section is indented 5 spaces.

4. The subject subsection
   a) ..........................................
   b) ..........................................
   c) ..........................................
   d) ..........................................
   e) ..........................................
   f) ..........................................
   g) ..........................................

5. The setting subsection
   a) ..........................................
   b) ..........................................
   c) ..........................................
   d) ..........................................
   e) ..........................................
   f) ..........................................
   g) ..........................................

6. The procedure subsection
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Method STYLE Data

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APPENDIX 5

I did not obtain individual data on each TA. Instead, I analyzed the data using a group approach. There is one major disadvantage inherent in this procedure. Once the data for the TA's is averaged, individual differences are not detectable. Perhaps the editing behaviors of one or two of the TA's improved considerably. Possibly, the third TA's editing did not improve. His or her accuracy may have even decreased. Averaging the data decreases the probability of showing clear-cut effects. If this study is conducted again, I recommend viewing each TA's editing performance individually.
I averaged the data for each formula in the following manner. Each formula specifies the dependent variables representing the specific behaviors under inspection. The response codes for the variables include: "correct"/correct, "error"/correct, "nothing"/correct, "correct"/error, "error"/error, and "nothing"/error.

I based the total number of any given response code appearing in the numerator and/or denominator on the data obtained from the six laboratory reports I examined per group.

An example may help illustrate this point. When I computed error detection for Group 1 I used this formula:

\[
\frac{\text{"error"/error}}{\text{"nothing"/error + \"correct"/error + \"error"/error}}
\]

To determine the total number of "error"/errors required in the numerator, I examined the six data sheets from this group and summed the frequencies. Let's say "error"/error occurred 3, 6, 1, 2, 4, 6 times. The number I inserted in the numerator then was 22. I used this procedure to determine the frequency of the other codes specified in the denominator of this example as well as in the numerators and denominators of the remaining two formulas.

After obtaining the numbers that coincide with the response codes, I summed the scores in the numerator and denominator. In order to find percent, I divided the numerator by the denominator and multiplied the outcomes by one hundred.
Example:

\[ \frac{(2) \, e/e \quad 2}{(5) \, n/e + (6) \, c/e + (3) \, e/e} = \frac{14}{14} = 14.2\% \]

This computation is not appropriate however. The following example illustrates the correct technique.

\[ \frac{(2) \, e/e + (2) \, e/e + (2) \, e/e}{(5) \, n/e + (6) \, c/e + (3) \, e/e} = \frac{42}{30} = 14\% \]
APPENDIX 7

Earlier in this thesis I suggested combining two treatment strategies - point contingencies and the instructional packages. Whether or not the strategies will produce and maintain accurate laboratory report editing however is an empirical question.

We can evaluate the two tactics in the following manner. If the number of TA's is small (less than 20) each TA could progress through two experimental conditions. In condition #1 the staff could implement point contingencies for the TA's specified editing behaviors. In the second condition however, the staff could assign the instructional packages to the TA's. This procedure would permit a systematic evaluation of each strategy. Reversing the order of the conditions would not be wise. There could be information carry over from the instructional packages to the contingency condition.

What if the number of TA's exceeds 20? If this is the case the staff could divide the TA's into four experimental groups. Each group could be assigned one of the following independent variables: contingencies, instructional packages, contingencies and instructional packages, and no contingencies and no instructional packages. This procedure would allow a replicable model for observing and comparing the effects of each behavior strategy.
Rather than evaluating the effects of all seven instructional packages on laboratory report editing, I could have examined a single package in depth. For instance, I could have limited my investigation to just the Introduction instructional materials.

This technique may have provided me with more specific information on the packages' contents, materials in need of improvement and so on. An advantage with this procedure is that I may have had time to rewrite, implement, and assess the revised versions effects during the semester.
APPENDIX 9

I revised the data collection system so that I recorded any written comment on the report only once. I tested this system using the Introduction laboratory report sections. In each of the 72 reports I examined only the content data. Figure 7 shows percent appropriate editing using two recording systems: the "old" system where one feedback statement could be recorded several times, and the "new" system where written comments were recorded once.

There is a marked difference in the baseline and treatment data. For instance, the "old" baseline data for Groups 1 and 2 shows correct responding in the 90-95% range. This indicates no need for intervention. The "new" technique however shows baseline data for these groups in the 45-50% range. This is a 40% difference between recording procedures. In Group 3, the "old" system depicted an 8% increase from baseline to treatment as compared to a 30% increase using the "new" system.

In conclusion, recording written feedback only once appears to provide a recording system that is sensitive enough to detect changes in content editing behaviors. Perhaps similar changes will be observed when this system is examined with the editing of specific and general style.
FIGURE CAPTION

FIGURE 7. A comparison of the percentage of appropriate content editing using the "old" (o) and "new" (n) recording systems.
INTRODUCTION