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**A BEHAVIORAL SYSTEMS ANALYSIS OF TEXTBOOK  
QUALITY IMPROVEMENT**

by

**Elizabeth T. Suárez**

**A Dissertation  
Submitted to the  
Faculty of The Graduate College  
in partial fulfillment of the  
requirements for the  
Degree of Doctor of Philosophy  
Department of Psychology**

**Western Michigan University  
Kalamazoo, Michigan  
August 2001**

# **A BEHAVIORAL SYSTEMS ANALYSIS OF TEXTBOOK QUALITY IMPROVEMENT**

**Elizabeth T. Suárez, Ph.D.**

**Western Michigan University, 2001**

**Behavioral systems analysis is a deliberate approach to systems-design that is intended to help a system achieve its ultimate goals. The present study used behavioral systems analysis in an attempt to improve the quality of a college-level textbook. Formative and expert evaluations were used to assess the needs of the textbook. Once the needs were determined, a six-step process of analysis, goal specification, design, implementation, evaluation, and recycling was used to meet the objectives specified by the needs assessment.**

**The first objective of this study was to produce and publish an improved edition of a textbook and to begin utilizing the evaluation of that edition to guide the revision of the next edition of the textbook. Thirty-eight revisions were made to produce that improved edition of the textbook. The evaluation of the improved edition is ongoing and needed revisions for the next edition continue to be identified. To date, the evaluation of the improved edition has identified 28 needed revisions for the next edition.**

**The second objective of this study was to assess the utility of the behavioral systems analysis approach to text revision. Case studies are used to illustrate the**

revision process, and the utility of each step in the process is discussed. Successes and failures of the revision process are identified, and suggestions for improvement are discussed. Suggestions are also offered for textbook authors and other textbook revision researchers.



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### **Acknowledgements--Continued**

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Elizabeth T. Suárez

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## CHAPTER I

### INTRODUCTION

#### Textbook Importance

Textbooks are central to education in the United States (Elliot & Woodward, 1990). They are the primary learning tools given to students. Researchers have found that 98% of classroom instruction is from materials, not teachers, and 90% of students' homework time is structured by materials (Jackson, 1981). In a forward to an elementary behavior analysis textbook, Malott, Malott and Trojan (2000) endorse the textbook's value: "We believe that the lecture has been obsolete since Guttenburg, so we emphasize the textbook as the main source of concepts, illustrations, clarification and inspiration" (p. v). Because of the crucial role textbooks have, this study is focused on that textbook, Elementary Principles of Behavior (EPB).

Textbooks, along with lectures based on the content in these books, are the primary tools used to change the repertoires and values of students in college and university courses. As of 1989, there were roughly 3,400 post-secondary institutions in the United States, in which approximately 12.5 million students were enrolled as undergraduate or graduate full-time or part-time students. In almost every course, at least one textbook was assigned (Machung, 1989).

The potential of textbooks to change the repertoires and values of the students

who read them is clearly immense, though that potential may be largely unrealized. Given the central importance of the textbook in our educational system, it is not surprising that both researchers and administrators have paid considerable attention to its design and content. The primary goal of both groups is to make the content in the textbook easier to understand and learn.

Unfortunately, textbooks are often unclear for three reasons (Britton, Gulgoz, & Glynn, 1993):

1. People who write the textbooks are experts in the subject matter. However, the repertoires of the expert and the novice are vastly different. Sometimes experts' repertoires are so automatic, they can no longer state the rules necessary to describe a concept. Instead they have automatic conceptual control. The novice, however, does not have automatic conceptual control, and needs the rules describing the dimensions of the concept to develop such control.

2. Textbook authors are sometimes inexpert in the art of writing clearly. To assume the novice textbook writer can automatically write in a clear, succinct, and interesting fashion, without the benefit of training and extensive practice, is to underestimate the difficulty of the task. Writing well is difficult and time consuming even for experienced authors.

3. Publishing companies often impose crippling restrictions on the authoring process. For example, textbook authors are often obligated to include small bits of information about each item on a long list of topics prescribed by the publisher. Furthermore, authors are often expected to conform their writing to readability formulas

that the publishers think will improve the readability of the text. Authoring a clear text when one is completely free to use one's own best judgment is hard enough. To write clearly under detailed restrictions and guidelines is a great deal more difficult, and may be impossible for all but the most skilled writers.

Because clear, effective textbook writing is so difficult, and textbook quality is so important, Britton et al. (1993) suggest that publishers, textbook writers, and textbook selectors turn to textbook research to improve the quality of textbooks.

### Textbook Revision Research

A great deal of research has been dedicated to the instructional technology of the textbook. Improving instructional writing is not a discipline specific concern, therefore, research comes from a variety of areas: cognitive psychology, reading, composition, rhetoric, and linguistics.

Because research dedicated to improving instructional writing comes from a variety of disciplines, the terminology and hypothetical constructs used to report results vary from study to study. The following is a brief clarification and review of the terminology to be used in this paper.

The textbook revision research I will be reviewing frequently refers to "knowledge," "information-gained," "understanding," "idea," "comprehension," and "recall" when describing dependent measures. None of these terms come from behavior analysis. Behavior-analytic based theoretical analyses of "cognitive behavior" suggest behaviorists can interpret cognitive behavior in terms of the basic behavioral

concepts without using such hypothetical constructs (Shimanune & Malott, 1994).

Most of these hypothetical constructs imply that textbooks transfer facts to the mind of the reader. Once the reader has possession of those facts, he is said to have “knowledge” or “comprehension.” Facts are not transmitted from speaker to listener or from author to reader. What is made common to both listener and speaker is either a verbal response or a resulting nonverbal response.

The student comes to emit certain kinds of responses, both verbal and non-verbal, because of verbal stimuli occurring under specific circumstances... lectures, demonstrations, texts, and experiments all increase the verbal and nonverbal repertoires of the listener or observer through processes of this sort. (Skinner, 1957, p. 363)

Though many of the terms used in this paper do not fit into a behavior analytic interpretation, in the interest of parsimony, the terminology (verbal operants) that forms the stimulus class that would evoke a behaviorist to say, “repertoire change” (e.g., “recall” or “comprehension”) will be used.

There are three lines of research for improving instructional text. They are readability research, text structure research, and text “interestingness” research. These lines of research are dedicated to finding the text-revision model that produces text of the most improved quality. How should text be written so that it best facilitates comprehension? All three lines of research address this question. However, until recently this question has primarily dealt with the application of readability formulas.



## Readability Formulas

Readability research examines the value and validity of using quantitative measures (determined by formulas) to assess text difficulty. These quantitative measures predict a grade level for a selection of text by essentially measuring the length of sentences and the familiarity, length, or number of syllables of the vocabulary. The term "grade level" refers to the repertoire a person is assumed to possess when attending school at that grade.

Formulas stem from an interest in matching reading skills and text difficulty. Educators, such as Lorge (1939) and Dale and Chall (1948), developed formulas in order to determine if reading materials were suited for readers of given levels of reading skills. Other formula developers, such as Flesch (1948) and Gunning (1952), worked as writers. Their main concern was with the evaluation of writing in progress, to see if it matched the assumed reading skills of an intended audience.

Examination of the history of readability formulas reveals that that some popular formulas may have faulty standards. Rush (1984) observed "the Lorge and Dale-Chall formulas are based on the McCall-Crabbs Standard Test Lessons in Reading – materials that were not intended for, nor standardized for, this purpose" (p. 5). It is also unclear whether the grade-level scores the formulas yield are related to an acceptable standard of reading competence for a given grade in school. For example, the grade level indicated by the Dale-Chall formula implies that readers should be able to correctly answer one-half to three-fourths of comprehension and vocabulary knowledge questions on the text being examined (Dale & Chall, 1948). It is questionable

whether the fiftieth percentile is an adequate measure of reading competence.

In his review of readability formula research, Klare (1976) reported mixed results on the effects of "readability variables" upon a text's clarity. Of the 36 he reviewed, 19 studies reported statistically significant results, 6 reported only some significant results, and 11 studies reported non-statistically significant results. When formulas did reflect improved clarity, it was because the text revisers managed to change basic underlying causes of difficulty in producing their readable versions. It was not merely the length of the words and sentences that improved clarity, but rather more clearly written, detailed text. Klare concluded that readability formulas occasionally predict clarity. In those studies where the revision led to significant improvement, there was a confound between the improvement, the clarity and detail of the writing, and the improved readability measure due to shorter sentences and shorter words. However, Klare implies that the improvement in the precision and detail in the writing were more responsible for the significant results in improved clarity than were the changes resulting in the higher readability scores.

When researchers talk about readability (or the extent to which the text has short sentences and words), they mean the independent variable. When they talk about comprehensibility or clarity (or the number of questions a reader could answer about the text), they mean the dependent variable. There is an assumption that improved readability correlates with improved comprehensibility or clarity. Davison and Kantor (1982) attempted to show that this assumption is not only false, but also that proceeding under this assumption to produce a text that meets readability

measures, may negatively affect the comprehensibility or clarity of the text. They examined four texts designed for students in eighth, ninth, or tenth grade who were reading at levels four to six. They compared the original texts with the subsequent revised text, and did a sentence-by-sentence analysis. All the texts were shortened, average sentence length and average number of clauses per sentence were reduced, and scores on the Fry and Dale-Chall scales were lowered by zero to five grade levels. They found that the most successful changes in text often ran directly counter to what readability formulas would suggest, and that the most unsuccessful changes are often those motivated by the strictness of the readability formulas.

Similarly, in another study comparing two structurally different passages, Brennon, Bridge, and Winograd (1986) found that subjects recalled a greater proportion of explicitly stated concepts and relations in the well-structured, less “readable” stories ( $\bar{M} = .41$ ) than in the poorly-structured, less “readable” stories ( $\bar{M} = .28$ ). Subjects were also more apt to recall the explicit information in correct sequence after reading well-structured stories. The temporal sequence of the well-structured stories was better preserved ( $\bar{M} = .25$  vs.  $\bar{M} = .13$ ). The results were statistically significant ( $p < .05$ ).

Although the well-formed passages were predicted to be more difficult than the poorly formed passages on the traditional readability measures, they appeared to be easier to recall. In the well-formed version, the longer sentences, with more varied vocabulary, were necessary in order to make the relations between the events in the story more explicit.

Not only are readability formulas inadequate for improving text in terms of readability as measured by comprehension tests, which are typically designed to determine whether readers can talk about the material read, but the connection between formula rating and student ratings of readability is weak. No correlation between perception and the formula predictions existed (O'Hear, 1992) when comparing student ratings of text readability to formula prediction of readability. After reading seven selections of text, college students responded to the statements "this text was easy to read" and "the text chapters were interesting" using a four point Likert scale (1 strongly agree to 4 strongly disagree). Students mean ratings ( $\bar{M}=1.41$ ) of difficulty of a text rated 8<sup>th</sup> grade level by the Fry (1969) formula did not differ significantly from mean rating ( $\bar{M}=1.68$ ,  $\bar{M}=1.77$ ,  $\bar{M}=1.61$ ) of several texts rated college level. Similarly, there was a lack of agreement between student ratings and the Flesch human-interest formula results on whether the selections of text were interesting. While all but one of the books were rated "interesting" by the Flesch human interest formula, only one book received a mean student rating under 2.0 (partly agree). One would have expected all the selections of text to receive a mean student rating under 2.0. Though predicting student ratings of readability and interestingness are not the main goals of the Fry and Flesch formulas, these discrepancies raise further questions of their validity.

Formulas cannot discriminate between written discourse and nonsensical combinations of words (Redish, 1979). Also, formulas do not consider contextual factors, such as: text structure and cohesion; the content and the readers' prior

knowledge; the function of a document and readers' corresponding goals, a text's graphs, tables, heading, type face, color, indentation, blocking and white space; nor reader characteristics, such as their culturally-based expectations. Because these critical factors are not taken into account in readability formulas, the International Reading Association and the National Council of Teachers of English issued a joint statement declaring the wide misuse of readability formulas, saying, "It is not what readability formulae measure that concerns us; it is what they do NOT measure" (International Reading Association, 1984/1985, p. 1).

Readability formulas as guidelines to improving instructional writing remain popular because they are easy to use, inexpensive, and provide a quantitative measure. Of course, readability formulas only address some of the potential variables that may affect reading comprehension. Researchers have been forced to examine other potential variables, as we will see in the next two sections.

### Text Structure

Recent research on instructional text has suggested principles for text design that extend well beyond readability. Organizational structure is one important factor influencing text clarity. As long as readers are aware of the text's structure, a well-organized text is better than a disorganized or randomly organized text. A study completed by Meyer and Freedle (1984) supports this premise, as college students better recalled those texts that followed the more organized forms of comparison ( $\bar{M}$  = 38.09% on immediate free recall) and causation ( $\bar{M}$  = 38.82% on immediate free

recall) than those texts that were organized as a collection of descriptions ( $M = 28.64\%$  on immediate free recall). These results were statistically significant ( $p < .05$ ).

Textbook writers might also look to text-structure research to answer other questions regarding how texts are best organized for maximum recall and clarity and how to best utilize structural signals (such as headings and subheadings), adjunct aids (such as learning objectives, previews, summaries, and questions embedded in a text or inserted before or after a passage), and advance organizers (such as outlines and objectives).

Spyridakis and Standal (1987) studied the effects of signals in technical writing. They worked with college freshmen and exposed them to texts of differing difficulty levels ranging from grade 9 to grade 16. They found that signals had little, if any, effect on comprehension on the lower level text, but as the level of difficulty, length of text, and unfamiliarity increased, they found that the signals tended to produce statistically significant benefits. Significant effects ( $p < .05$ ) were not seen when signals were used on lower-grade-level (grade 9) text, but significant effects did appear with each of the different signal types as the passages became more difficult and unfamiliar. At grade level 16 in a biomedical text piece, all signals types produced a significant improvement in recall.

Structural variables improve clarity when the text read is unfamiliar, but not when the text is familiar. Familiarity ratings were obtained from participants on the topics of two passages. The participants were then given training in text structure.

Taylor and Beach (1984) found that a text structure studying strategy was effective ( $p < .05$ ) for a passage that was rated as unfamiliar, but not for the one that was rated as familiar.

Signals help to improve clarity when covering complex and unfamiliar material. It seems reasonable to suggest that a reader may be best served through the thoughtful inclusion of signals.

Coherence is another important dimension likely to affect clarity. Coherence refers to the extent to which a sequence of events make sense, and the extent to which the structure of a text makes apparent the nature of these events and their relationships. A text lacks coherence if it includes: (a) the use of references that are ambiguous or indirect, (b) the inclusion of concepts for which the reader lacks requisite background, (c) lack of clear relationships between events, and (d) the inclusion of events or concepts that are irrelevant to the rest of the text.

To determine whether improved coherence does improve a text's clarity, Beck, McKeown, Omanson, and Pople (1984) revised two texts to make them more coherent and then assessed the effect of the revisions on children's comprehension. The revisers attempted to make the stories more coherent by first identifying all textual problem candidates, then determining why that text feature was a problem candidate, and finally correcting the cause of the problem candidate. They classified problem candidates into three categories: (1) surface problem-candidates in which the text was difficult because of its form rather than its content, (2) knowledge problem-candidates in which the meaning or significance of a word was judged to be

unfamiliar and not in the children's repertoires, and (3) content problem-candidates in which the content was found to be confusing because of irrelevant detail.

The dependent measures used in the Beck study were story free recall and answers to questions. To elicit recall, examiners asked the children to tell the whole story from the beginning, as much as they could remember. Neutral probes, such as "what else happened" were used as needed. The second dependent measure consisted of answers to questions. The revisions to make the text more coherent were successful. Students recalled more of the stories revised to improve coherence (.16 vs. .10), and correctly answered more questions (.66 vs. .60) than did children reading the pre-revised stories (Beck et al., 1984). The results were statistically significant ( $p < .05$ ).

Two important lessons can be taken from the Beck et al. study: (1) text coherence affects comprehension, and (2) it is possible to improve a text's effectiveness by revising each small problem area one at a time. In other words, it may be possible to act locally and effect globally.

### Text "Interestingness"

A small body of research has focused on how the "interestingness" of text affects that text's clarity. Some researchers believe that if a text is interesting, students will find it easier to recall (Anderson, Shirey, Wilson, & Fielding, 1986).

There are several suggestions about how to increase text "interestingness." Anderson et al. (1986) suggested four characteristics that may contribute to sentence



interest when used in the writing process (see Table 1).

Shank (1979) proposed that interest is related to readers' expectations, which are based on the event structure of a given story. Expectations are either (a) violated through unusual, incongruent, or conflicting information, or (b) unfulfilled because potentially relevant information is missing.

Following on these various suggestions, Hidi and Baird (1986) compared three interest-improving strategies. They composed three versions of a text about inventors and gave all three to 4<sup>th</sup> and 6<sup>th</sup> grade students.

The first version (the base text version) included character identification, novelty, life themes, and active style (Anderson et al., 1986). The second version (the salient text version) was produced by starting with the base text and adding salient, descriptive elaborations after several of the important facts in the essay. The

Table 1  
Characteristics of Text That Make It More Interesting

Characteristics	Explanation
Character identification	People are more interested in characters with whom they readily identify.
Novelty	Novel or unusual content will enhance interestingness.
Life theme	People are interested in what is important to them.
Activity level	Material that describes intense actions and feelings is more interesting than static scenes and less intense states.

third version (the resolution text version) was produced by further modifying the salient text to present the reader with a need for resolution. For this version, they used the salient text as a starting point and introduced a manipulation in the presentation order that was intended to activate speculative thought on the part of the reader. This manipulation tested the hypotheses that interest is a by-product of the reader's need to resolve some incomplete or uncertain understanding of an event or text (Shank, 1979).

While there were no significant differences between recall for the three "interest-creating" strategies (Base text  $\bar{M} = .35$ , Salient text  $\bar{M} = .33$ , Resolution text  $\bar{M} = .30$ ), there was a significant difference between the interesting text and equivalent standard text, which had not been designed to be interesting (Revised for interestingness overall  $\bar{M} = .33$ , Standard text overall  $\bar{M} = .24$ ). The significant main effect of text interestingness indicated that the constructed "interesting" texts were effective in producing more general recall than a sample of other text on the same topic. Textbook writers may wish to utilize any or all of the above strategies to improve text interestingness in an effort to improve text efficacy. The base version uses as a treatment package the four suggestions by Anderson et al. (1986). The additions used for the salient text and the resolution text (Shank, 1979) did not improve the recallability above the base text. Therefore, from this study, it is unclear they had any effect in comparison to the non-treated text. Conservatively, it appears that using the treatment package consisting of the four suggestions by Anderson et al. (1986) will improve recallability. There may also be an interaction between the effectiveness of

these techniques and the length, level of difficulty, and unfamiliarity of the passage as was mentioned earlier (Sprydakis & Standal, 1987).

### Textbook and Writing Implications

Summarizing the relevant research, it is apparent that textbook writers should (a) focus on text structure when the text is long, unfamiliar, and complex (e.g., include signals, advanced organizers and logical connectives); (b) attempt to include interesting material (e.g., novel, active, themes with which readers can identify); and (c) all other variables being equal, attempt to use short sentences and short words.

Some of the above recommendations have more experimental support than others. However, the fact that some techniques do not have experimental supports does not mean that they are without value.

Ideally, the critical features distinguishing “exemplary” instructional text would be identified and made available to textbook writers as guidelines for effective writing. However, guidelines proposed by textbook revision research do not come in cookbook fashion. They do not suggest when and how they should be applied. Therefore, it is necessary to use an empirical, continuous-quality-improvement approach to text revision, as the art and technology of textbook writing is not mature enough to generate a sufficiently high level of clarity and ease of recall in texts after the initial writing.

## Textbook Evaluation

The research described to this point evaluates several methods for improving selections of instructional text. The focus of these studies is generally on short selections of text, less than a chapter in length. Evaluating the quality of an entire instructional product, such as a textbook, is more complex. The task of revising an entire textbook is enormous. Consequently, I suspect that most textbook authors fail to evaluate the effectiveness of their revisions as they revise from version to version of a textbook. This is not to say that useful evaluative methods do not exist. Two methods I reviewed are formative and expert evaluation.

### Formative Evaluation

Formative evaluation, first described during the late 1960s by Scriven (1973), is specifically intended to gather information to improve instruction as it is being formed, hence the term formative. Three characteristics distinguish formative evaluation from other types of educational evaluation (Dick & Carey, 1991):

1. It is conducted during the formulation of instruction for the purpose of locating the strengths and weaknesses in the instruction and for prescribing revisions.
2. It is iterative or cyclical, meaning that following prescribed revisions, the instruction is implemented again. Subsequent trials are used to verify that modifications to the instruction indeed corrected the previously observed weaknesses without creating other problems.
3. Judgments made during formative evaluations include those based on

actual performance data collected from target learners who complete the instruction.

Classical formative evaluation studies include three phases: (1) the one-to-one trials, (2) the small group trials, and (3) the field trials. Each phase is designed to provide the evaluator with different kinds of information. The one-to-one trials yield information about how clear the language, illustrations, examples, and procedures in the instruction are to the learner. The small group trials provide preliminary learner performance and attitudinal data as well as initial feasibility information. The field trials provide data on the quality and feasibility of instruction when it is finally implemented as intended.

Real world constraints make conducting a classical iterative formative evaluation impractical for most instruction. These constraints, however, do not mean that formative evaluations cannot be designed and conducted. In fact, Dick and Carey (1991), claim “after using formative evaluation for revising instruction, and discovering the power of well executed procedures, many instructional designers claim formative evaluation as the single step in the systematic design on which they rely most for ensuring good instruction” (p. 229).

### Expert Evaluation

One of the oldest forms of evaluation in education entails soliciting expert opinion. Employing expert opinion evaluation involves asking experts to render a professional opinion about the quality of an instructional product. Expert judgment is often the only evaluation approach used by instructional designers prior to the point

that prototype instruction is developed (Dick & Carey, 1991). Expert judgment is typically based on what seems right or good to the expert evaluator. While there are some problems with such subjective evaluation (personal bias, traditionalism, etc.), experts can usually provide insights for decision makers, absent from more objective methodologies. The procedures and standards used by selected experts vary, are often unique to the individual, and are based on personal experience and expertise. Expert evaluation typically provides a needs-assessment for instructional material that prescribes the content of that material.

### Purpose of the Present Study

Guidelines taken from research and feedback from users and experts provide product-based information—what the text should or should not look like. It is also important to consider the process: how product-based information should be used in revising a text. The obvious problem with guidelines is that they provide generalities, but do not suggest when or how the guidelines should be applied. Although formative evaluation is itself a method for determining where the problems lie within a text, one still must understand how to make sense of the wealth of information such evaluation provides.

There have been many focuses to instructional-text revision research, and of that research, one thing is clear: no method can be used without failure to improve all textbooks. The best method for textbook revision research might lie in the approach used to analyze, design, and evaluate the textbook and its subsequent revision. The

next section will describe a method that might lend success to the textbook revision process.

### Behavioral Systems Analysis

Behavioral systems analysis refers to the analysis of behavioral systems, the design, evaluation, and modification of systems to help them accomplish their objectives, an attempt to find the ultimate objectives of the unorganized "organization" and then help it get organized, to function as a smooth system with all components working toward the same set of ultimate objectives (Malott & Garcia, 1987, p. 129).

Behavioral systems analysis consists of behavior analysis, as well as systems analysis. Behavior analysis consists of the science and technology of studying and managing behavior, usually human behavior. Behavior analysis tends to concentrate on three major conditions that influence or control behavior: (1) the motivation of the individual, (2) the cues of the immediate environment, and (3) the results of the behavior. Behavioral systems analysis is an effort to first use a systems analysis approach to analyze the ultimate objectives of an organization, then to determine the manner in which the various components of the organization contribute or fail to contribute to the accomplishments of that organization.

Malott, Vunovich, Boettcher, and Groeger (1995) presented an integrated model of behavioral systems analysis applied to teaching behavior analysis. To illustrate the importance of behavior systems analysis, they analyzed its historical involvement in both the utopian society of Walden Two (Skinner, 1948) and in the development of programmed instruction. These authors contended that Walden Two had little to do with behavior analysis. Instead, they believed it was an early example

of the application of systems analysis to the design of an organization.

Malott et al. (1995) similarly contended that programmed instruction achieves success from its systems analysis components. It involves: (a) analysis of the content of a subject matter and the proper sequencing of that content, (b) specification of the detailed objectives that programmed instruction is to accomplish, (c) the careful design of a sequence of instructional frames, (d) implementation, (e) evaluation of the accomplishment of the objectives, and (f) recycling through the preceding steps until a satisfactory percentage of the students accomplish the instructional objectives. The behavioral system is what makes programmed instruction successful, not the supposed link it shared to behavior analysis.

These authors further claimed that, although behavioral systems analysis may seem like common sense to behavior analysts, most teachers of behavior analysis make little systematic or conscientious effort to use all components of behavioral systems analysis in their instruction and curriculum development.

Taking that line of reasoning further, I wonder if many behavior analysts, who are authoring behavioral textbooks, make a systematic, conscientious effort to use behavioral systems analysis in the development of their textbooks. It is plausible that the vigorous adoption of behavioral systems analysis would greatly improve the quality of textbook revision, and thereby the textbook's contribution to the well being of humanity. This dissertation may be the first to describe the use of behavioral systems analysis in textbook revision.

Richard Malott and I revised *Elementary Principles of Behavior* (EPB). For



reasons that will be shown later, we believed we already had a book that was clear, readable and interesting. Still, our interaction with the book allowed us to identify areas that could be improved.

A system is an organized, integrated, unified set of components accomplishing a particular set of goals (Malott & Garcia, 1987). The book, EPB, is a system. The goal of EPB is to teach the basic concepts and principles of behavior analysis to students with little or no previous conceptual knowledge base, so that those students might be able to see both the logic and utility of behavior analysis, as well as be able to understand basic behavioral principles in everyday life. We are using behavioral systems analysis to revise and re-design EPB as a system. When beginning this dissertation, I had the following two goals: (1) revise EPB 3 to produce EPB 4, and to begin to use the evaluation of EPB 4 to start the revisions to produce EPB 5; and (2) assess the utility of the behavioral systems analysis approach to textbook revision.

## CHAPTER II

### A BEHAVIORAL SYSTEMS ANALYSIS OF EPB 4

Behavioral systems analysis incorporates six steps that, when followed systematically, provide a road map for improving any system. The six steps of behavioral systems analysis include the following (Malott 1974): (1) analysis of the variables that affect the operation of the system, (2) specification of the objectives to be accomplished by that system, (3) design of the system to accomplish those objectives, (4) implementation of that design, (5) evaluation of the extent to which the implemented design accomplished the specified objectives, and finally, (6) recycling through the previous five steps until objectives are met because no system of any significance ever accomplished its objectives in its first several iterations.

I used behavioral systems analysis to revise EPB 3. This chapter illustrates that analysis and shows how the readers, the book, and the authors all interacted within the system. As I report EPB's revision process, I use the six-step format to present the analysis.

#### Step One--Analysis

The first step to improving the textbook, the system, was to analyze the variables affecting its quality. In the analysis phase, we define the system, evaluate the system, and assess the variables that might affect that evaluation.

## The Book

Elementary Principles of Behavior (EPB), first published in 1971 (Whaley & Malott), is a textbook designed to teach the basic concepts of behavior analysis in the context of real-life, everyday examples and applications. The content is flexible enough to be used in both graduate and introductory undergraduate courses. EPB uses fictional heroes and heroines that appear in storylines recurring throughout the text. The storylines refer to original research studies. All the data and graphs presented are based on the actual data from the relevant research.

The fictional storylines combine with a narrative style to produce an informal, didactic structure. The greatest changes in the text occurred when going from the 1<sup>st</sup> to the 2<sup>nd</sup> edition (Malott, Whaley, & Malott, 1993); however, the book maintained its style and structure. By the 3<sup>rd</sup> edition (Malott, Whaley, & Malott, 1997), the tenor of the book had been well established and well received by its users, both professors and students.

Figures 1 through 3 show student ratings of EPB 3's style. These questions regarding EPB 3 were posed to Bram Goldwater's undergraduate students at the University of Victoria, Canada.

## Reasons for the Revision

Though Malott and I received positive feedback from both professors and students using EPB 3, we nevertheless decided to revise it. The purpose of these revisions (from the 3<sup>rd</sup> to the 4<sup>th</sup> to the 5<sup>th</sup> editions) was threefold. First, publishers

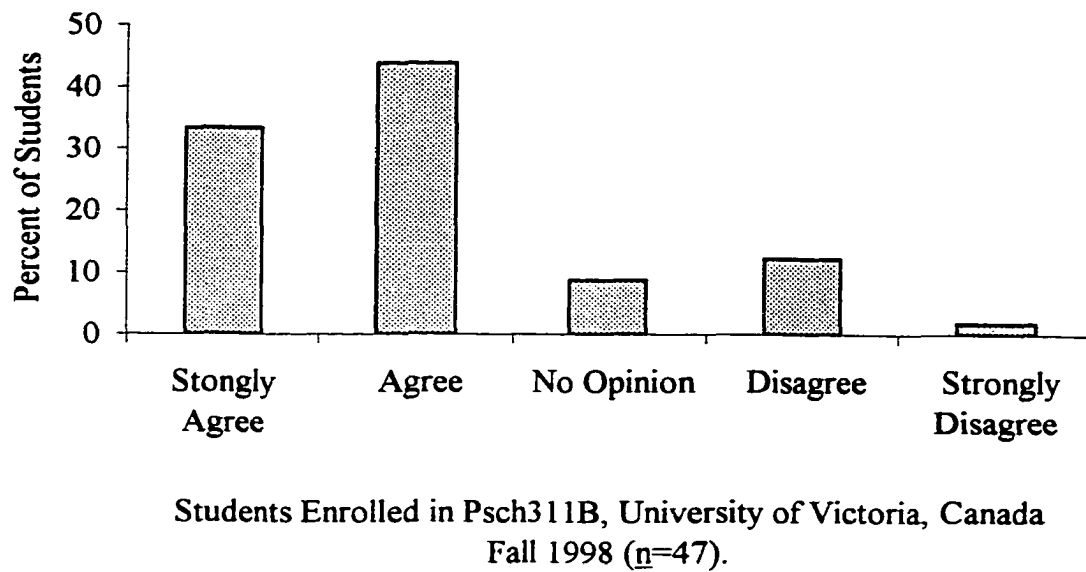


Figure 1. "I Enjoyed Reading the EPB Text." Likert Ratings of EPB 3.

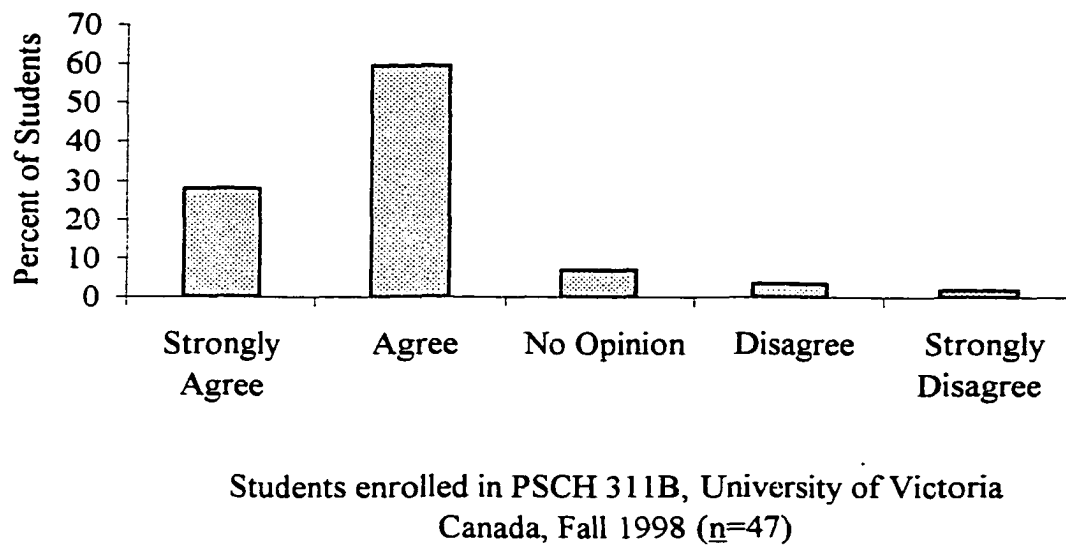
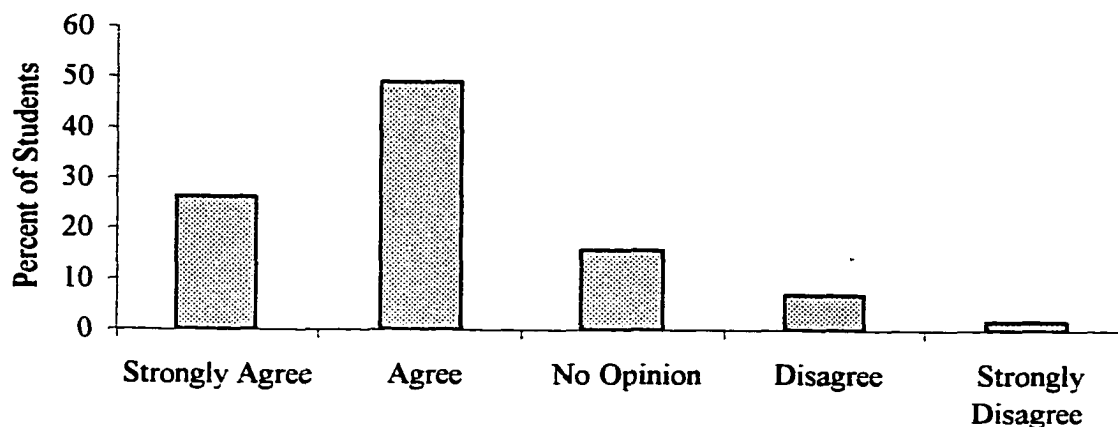


Figure 2. "The EPB Text Was Clear and Easy to Understand." Likert Ratings of EPB 3.



Ratings of EPB 3 by Students Enrolled in PSCH 31B, University of Victoria Canada, Fall 1998 ( $n=47$ ).

Figure 3. "I Learned a Lot From the EPB Text." Likert Ratings of EPB 3.

prefer that textbooks be revised in a timely fashion to promote textbook sales. Ideally, a text should be revised every three or four years to maintain sales. Books revised less frequently tend to lose sales for the following reasons: (a) professors teaching a new course tend to adopt newer textbooks; (b) publishers market books most heavily the first year of publication and then the marketing drops off; and (c) most importantly, the used book market rapidly replaces the new book market. Consequently, publishers want to have new editions every 3-4 years regardless of the academic or professional necessity of such revisions. The second reason for EPB's revision is because EPB is based on research, and contemporary research must continually be reviewed for possible addition into the new editions. The final and most important reason for EPB's revision is the continuous quality improvement of EPB's effectiveness as a textbook.

### Formative Evaluation and EPB 3

The quality of EPB 3 was continuously tested and evaluated as it was used. Several of the goals for the revision of EPB 3 evolved from the needs identified in the context of the courses at Western Michigan University, in which the text was being used. The two courses from which feedback was gathered were the undergraduate course, Psychology 360, "Concepts and Principles in Behavior Analysis", and the graduate course, Psychology 610, "Conditioning and Learning". In order to understand the methods by which these goals for revision were identified, the structure of these classes must be reviewed. In both courses, students met in a seminar twice a week. They read at least one chapter before coming to each seminar. During seminars, students discussed the topics in the chapter and asked questions about difficult issues. They also presented their own novel analyses of everyday events in terms of the concepts in the chapter. At the end of each seminar, students took a quiz. The seminars using EPB provided a situation similar to the field trials used in most formative evaluations procedures (Dick & Carey, 1991).

### Expert Evaluation--Authors

Malott and I subjectively evaluated EPB 3 to determine needs priorities for EPB 4. Several factors led us to believe that particular sections in EPB 3 were difficult or unclear. EPB 3 was revised, and the revision was used four times before becoming the published version of EPB 4. Each semester, students received the newest version of every chapter. As they used the newest versions, their questions

provided us with valuable feedback about each chapter's strengths and weakness. Student quandaries were identified in many ways that will be discussed next. These quandaries composed one component of the evaluative measures.

### Classroom Notes

Malott and I attended seminars to observe and take notes on the seminar discussion. The discussions highlighted problems and concerns that we would have been unable to measure or elicit using evaluation forms, Likert scales, or our standard quiz questions. As students talked through problems, the nature and magnitude of their confusion became clearer. This often allowed me to determine why a specific section was difficult. For example, a diagram may not have been clear, making the section itself less than clear. Using this feedback from students, we were able to review and revise the diagram without making a comprehensive change to the entire chapter. As students made suggestions for improvement or pointed out logical errors in the text, I recorded the suggestions as tasks (for revision) on a laptop computer using Microsoft Outlook 2000.

### Student Errors in the Classroom

During the twice-weekly seminars, students presented original examples of the concepts learned for that day. Sources of confusion became apparent when they presented examples with errors that the other students could not discriminate or when there were many similar errors from many different students.

### Staff Meetings

The seminar instructors of Psychology 360 met with me before each seminar to discuss problems with the previous class and to prepare for the next seminar. During these meetings, the instructors had an opportunity to bring problems with the text to my attention. The instructors also proposed solutions to the problems they identified. These problems and solutions were documented as tasks using Microsoft Outlook 2000 (Appendix A).

### Student Homework and Quiz Performance Errors

At each staff meeting, the seminar instructors also presented error analyses for each chapter quizzes. The error analysis indicated questions on the quizzes that caused students difficulty. This performance-based feedback contributed to our evaluation.

### Expert Evaluation—External Reviewers

Prentice Hall, the publisher of EPB, recruited five independent reviewers to read and evaluate the 3<sup>rd</sup> edition. These reviewers compared EPB to similar textbooks for the same intended use. The reviewers gave positive and corrective feedback on the text.

They suggested: (a) topics and concepts for inclusion, (b) clarification of concepts that were unclear to students, (c) changes in the organization of the book, and (d) the removal or change of topics that were offensive to students. I gave highest



priority to those suggestions received from more than one reviewer and to those suggestions that were aligned with our own orientation. They gave 30 suggestions. Figure 4 shows the types of reviewer suggestions, broken down by category.

■ Add New Concept/Study   ■ Lessen Offensiveness  
 □ Change Organization   ■ Clarification

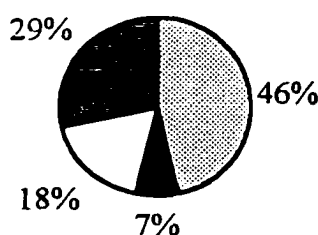


Figure 4. Percentage of the Types of EPB 3's Reviewers' Suggestions.

### Step Two--Goal Specification

From edition to edition, EPB's goals commence with mission statement. The mission for EPB is to teach the basic concepts and principles of behavior analysis to students with little or no previous conceptual knowledge base so that those students might be able to see both the logic and utility of behavior analysis, as well as to be able to understand basic behavioral principles in everyday life. A secondary goal is that EPB build and expand upon the behavioral training in the repertoires of graduate students with experience in behavior analysis.

The next step in behavioral systems analysis is to specify the goals of the

system. Usually these goals come from the prior analysis of the system, in this case the analysis of EPB 3 which I described in the previous section. We had conducted considerable global student evaluation of EPB 3 and found that students rated it favorably. Though we no longer have those data available, they are confirmed by Bram Goldwater's students' evaluation of EPB 3. In addition, we had much data from our monitoring the seminar sessions and teaching, both at the undergraduate and graduate level.

Although the overall evaluation in terms of clarity, ease of reading, and interestingness tended to be high across the book, the way we got data from the seminars tended to point to problems of clarity. We therefore ended up trying to improve the clarity, rather than the interestingness of specific sections. In addition, we had technical experts evaluate EPB 3 and indicate areas for improvement and updating. In the end all of these factors led us to the focus on certain areas for change from the 3<sup>rd</sup> to the 4<sup>th</sup> edition.

### Focus of Change

We wanted to achieve quality improvement by adding new concepts (as prompted by the reviewers). We also wanted to revise areas that: (a) lacked clarity, (b) had theoretical inconsistencies, (c) students found to be unconvincing, and (d) students found offensive.

### Step Three--Design the Intervention

#### Definition of Revisions From EPB 3 to EPB 4

Following from the previously described goals, I defined revisions as any changes or additions to the text designed to: (a) clarify (b) introduce new analyses of the authors, (c) remediate flaws within the explanations of existing analyses, (d) add new concepts and studies, or (e) lessen the offensive nature of controversial material. I did not define as a revision any changes designed merely to fix typographical or grammatical errors of a few words or sentences.

There were 38 significant revisions made from EPB 3 to EPB 4. Twenty of these revisions were prompted by evaluations of the authors, who were often influenced by student feedback and performance. Eighteen of these revisions were prompted by the reviewers. Figure 5 shows purpose of the revisions. For a complete list of the revisions see Appendix B. When designing EPB's revisions, we drew from a pool of techniques from our own experience and from techniques suggested in other

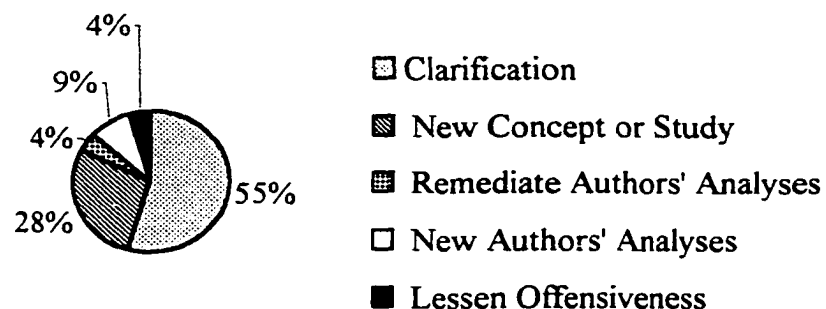


Figure 5. A Classification of the 38 Revisions From EPB 3 to EPB 4.

text revision research (see Table 2).

#### Step Four--Implementation

Implementation consisted of students and reviewers reading the fourth edition of EPB.

Table 2  
Common Revision Techniques Utilized in EPB's Revisions

Suggested by	Revision	Example
Text structure research	Changes in text structure	New section heading, lists, boldface
	Addition of diagrams	Contingency diagrams, pairing diagrams
	Changes in diagrams	Contingency diagrams, pairing diagrams
	Additions of tables	Compare and contrast
	Addition of more logical connectives	"First" "next" and "finally"
	Addition of adjunct questions	New questions after a section
Text interestingness research	Insertion of interesting material	e.g., respondent drug overdose of a celebrity
Malott and Suarez's previous experience with the text	Addition of new examples	Skinner box example, every day examples
	Deletion of confusing paragraphs	Interesting, but not essential information (e.g., analysis of complex examples)

### Psychology Undergraduate Students

Students in the undergraduate course, Psychology 360, “Concepts and Principles in Behavior Analysis”, at Western Michigan University (WMU) read EPB 4. Psychology 360 is the undergraduate class at WMU designed to introduce students to behavior analysis. Three separate semesters of Psychology 360 students used EPB 4. The first-semester group consisted of 60 students. The second-semester group consisted of 47 students. The final-semester group consisted of 55 students.

### Psychology Graduate Students

Students in the graduate course Psychology 610, “Conditioning and Learning”, read EPB 3 one semester. Although this graduate course used the same textbook as the undergraduate course, the required mastery of the material was much more stringent. These students also read supplemental text that covered advanced topics and provided advanced study objectives.

### Steps Five and Six—Evaluation and Recycling

The evaluation of EPB 4 served two primary functions:

1. It clarified that material in the text that was satisfactory. Satisfactory material will remain unchanged when the book is revised to produce EPB 5.
2. More importantly for quality improvement, it identified material with a high potential for improvement. The latter function has, and will continue to feed into a behavioral systems analysis of the revision from EPB 4 to EPB 5.

Formative evaluation, evaluating the instructional material as the target audience is using it, is a common practice in instructional design. I used formative evaluation within the context of behavioral systems analysis to evaluate EPB 4, and to begin analyzing EPB 5.

Wolf (1978) defined social validity of behavioral analysis as “assessing public opinion on the social significance of its goals, the appropriateness of its procedures, and the importance of its effects” (p. 204). Social validity was an important evaluative measure for determining the extent to which the revisions in EPB 4 improved the text. The authors, students, and external expert reviewers all provided helpful feedback on the social validity and clarity of EPB 4.

### Student Evaluations

Students evaluated EPB 4 by completing chapter evaluations. They evaluated each chapter overall and identified what they thought was the most difficult section within that chapter. They also completed section-specific evaluations of the new analyses and studies added to EPB 4. The information provided by these student evaluations was one of the measures we used to determine the quality of the new or revised material in EPB 4. Of the 38 revisions made from EPB 3 to EPB 4, 19 needed no further revision and 19 needed further revision. Table 3 shows the way we made revision decisions, based on the chapter evaluations, the section evaluations, or both.

In addition to evaluating the new or revised material in EPB 4, I evaluated the

Table 3  
Source of Revision Decisions for EPB 4

38 Sections revised from <u>EPB 3</u> to <u>EPB 4</u>			
19 still needed revision as determined by		19 satisfactory as determined by	
Chapter Evaluations	5	Chapter Evaluations	13
Section Evaluations	7	Section Evaluations	6
Both	4	Both	0

material that had not changed from EPB 3. I used the chapter evaluations to begin to identify problematic material in EPB 4.

#### Chapter Evaluations

Students completed chapter evaluations for every chapter in EPB 4. The chapter evaluations contained six questions. Table 4 shows the questions on the evaluations and the rationale for each (also see Appendix C).

The students identified 30 sections they felt were the most difficult, approximately one per chapter. Of these sections 15 contained revised material and 15 contained un-revised material. Students also gave 17 of those difficult sections negative Likert ratings. I assigned those 17 sections high priorities for revision for EPB 5. I gave the remaining 13 sections low priorities for revision. Nine of the 17 high-priority sections have been revised. The students have evaluated those nine sections,

Table 4

## Questions on the General Evaluation and Rationales

QUESTION	RATIONALE
"Chapter #"	I asked for the chapter number for the obvious purpose of identification of the chapter being reviewed.
"Rank the difficulty of the chapter on a Likert scale from 1-5 with 5 being most difficult."	This was done to help me focus on the chapters that students reported to be the most difficult.
"What was the most difficult section in this chapter?"	I assigned a number to each sub-section in the chapter and asked the students to identify the section that they found to be the most difficult to understand in each chapter. I did this because even some of the easier chapters, like Chapter 3, had very difficult sections in them.
"How difficult was the most difficult section?" Students ranked this using a 1-5 Likert scale with 5 being the most difficult.	Combining the difficulty of the chapter with the difficulty of the most difficult section helped us to create a priority list for revision.
"How could the most difficult section be made easier?"	Sometimes students saw ways to remedy a problem that I had not even considered. By asking for their suggestions I found several good solutions.
"Please give suggestions for the chapter."	Students gave me general feedback about the overall effectiveness and readability of the chapter. For example, "There were too many tables." or "It would help to use the same example for penalty and punishment."



and now four are considered satisfactory while five continue to be revised.

### Section-Specific Evaluations of the Revised Material in EPB 3

Students completed section-specific evaluations for each new section added to EPB 4, or each section that was revised (see Appendix D). The purpose of these specific evaluations was to get a micro-measurement of the clarity, importance, and persuasiveness of each new section.

These evaluations gave more detailed feedback about the strengths and weaknesses of the new sections than the chapter evaluations. Students received evaluations for 17 new or revised sections in EPB 4. Of these 17 sections, 6 were accepted without further revision based on the evaluations. Eleven were given priority for further revision for EPB 5. Of the 11 sections that were not accepted the first time they were evaluated, 6 were revised and re-evaluated, and of those 6, 2 were subsequently accepted.

### Expert Evaluations of EPB 4

The expert opinion is the most common form of evaluation (Dick & Carey, 1991). In the case of textbook evaluation, the expert evaluators' opinion is used to determine: (a) the completeness of the content of the instructional material, (b) the appropriateness for various courses, and (c) the accuracy, quality and feasibility of the instructional objectives.

Five experts hired by Prentice Hall reviewed EPB 3 to provide suggestions for

improvement. I compiled their feedback into one list of 30 suggestions. We addressed 18 of these suggestions when revising EPB 3 to produce EPB 4. Though we would have liked to address 3 more of the suggestions, time and logistical constraints prevented us from doing so. We chose not to address 9 suggestions that did not align with our own objectives for the book. Once we had completed EPB 4, I developed a questionnaire evaluating the effectiveness and quality of the reviewer-prompted revisions. I asked the reviewers of EPB 4, who were hired by Prentice Hall to provide suggestions for EPB 5, to give Likert scale ratings of: (a) the importance of each objective and (b) the extent to which we effectively met the objective (see Appendix E). Two of the reviewers of EPB 4 had evaluated EPB 3 and thus had contributed to the original list of suggestions.

I received four of these questionnaires back from the reviewers. The reviewers varied in their opinions about both the importance of each objective and the extent to which we met each objective. Of the 30 objectives, only two were deemed important by all of the responding reviewers as indicated by a Likert rating of one or two. Interestingly, they felt that we had dealt well with a new section on stimulus equivalence. However, student evaluations and observations of seminar classes have led us to believe that the stimulus equivalence section is in dire need of revision. This lack of agreement between expert evaluation and formative evaluation of the material makes a strong argument for utilizing a combination of sources of feedback to determine revision priority. If we were only to rely on expert opinion about the difficulty of our text, we would likely fail to revise sections that cause students difficulty.

In addition to completing the questionnaire, the reviewers of EPB 4 each wrote a comprehensive evaluation of the text. The feedback they gave will be used to prioritize revisions for EPB 5.

### Pretest and Posttest Performance

EPB covers a pool of topics and concepts. To measure whether the text has been effective in changing student repertoires with respect to those topics, students completed two pre/post tests. One of pre/post tests was a 50 question multiple-choice test based on EPB's definitions (see Appendix F). The purpose of this test was to determine whether, after reading the text, the students could identify the definitions when presented in a different way. The second test was a conceptual test designed by Miller (1997) to evaluate the extent to which eight kinds of contingencies exert conceptual control over student responding (see Appendix G). Students took both tests the first day of the course and the last day of the course. Because the pretests/posttests were based on the teachings in EPB, there should have been a significant increase in student performance on both tests. I wanted to make sure that the changes made in EPB 4 did not lessen this student performance.

I compared pretest and posttest scores from three semesters. Figure 6 shows these comparisons for the 50 question multiple-choice test. The first semester, used EPB 3. The later two semesters used EPB 4. The average increase across all three semesters ranged from 36% to 43%. Figure 7 shows the comparisons for the conceptual test. The average increase across all three semesters ranged from 25% to 30%.

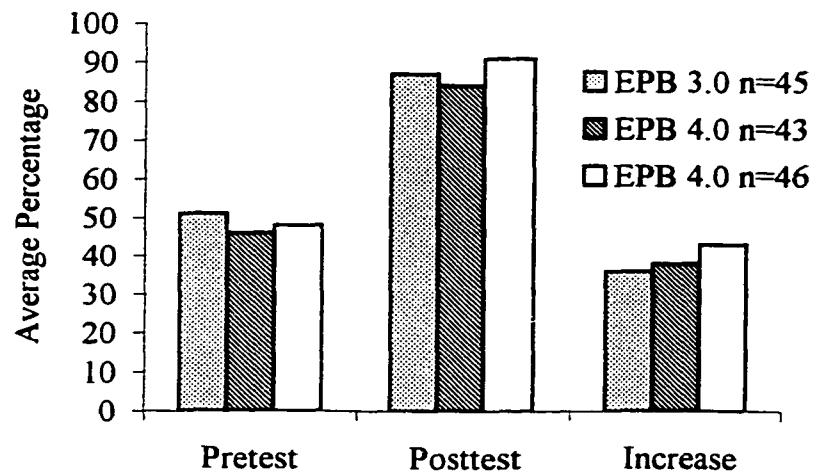


Figure 6. Student Performance on the 50 Multiple Choice Pretest and Posttest Across Semesters.

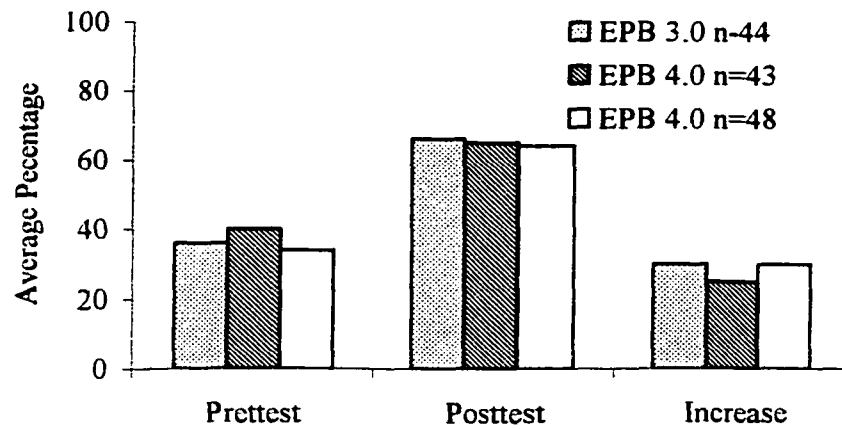


Figure 7. Student Performance on the Conceptual Pretest and Posttest Across Semesters.

The change from EPB 3 to EPB 4 did not lessen student performance on the posttests. I therefore had no reason to recycle based on posttest performance.

### Readability

Readability formulas lack much utility in guiding textbook revision beyond the sentence level (Rush, 1984). Revising to meet readability measures puts one in danger of actually making the text harder to understand if short sentences are used at the expense of logical structure and complete explanations. However, all other factors being equal, short sentences and short words make text easier to read. Malott and I wrote the 4<sup>th</sup> edition of EPB with readable writing in mind. Though we did not utilize readability formulas proscriptively, we made concerted efforts to use short words and short sentences.

I analyzed the readability of the revised portions of EPB 4. I was hoping the new material would not be significantly less readable than the old material because we added the new material using the same writing principles that guided the structure of the old material. I used readability formulas (Appendix H) to compare the readability of the new sections in EPB 4 with the readability of the 6 chapters containing no new material (see Table 5).

The readability scores indicated that the new material may be slightly more difficult to read, but we felt the scores were acceptable. We only looked to readability to improve our writing at the sentence level, choosing short words and short sentences when they could be used easily. These new sections have not yet had the

benefit of readability revisions. As we continue to revise the book, many of the sections will be reworded for style and readability.

Table 5  
Readability of New and Old Material

	Flesch Grade Level	Colman Liau Grade Level	Flesch Reading Ease Score	Flesch Kinkade Grade Level
New material average	11.1	14.7	55.3	8.9
Old material sample average	9.0	12.8	61.6	7.94

## CHAPTER III

### A BEHAVIORAL SYSTEMS ANALYSIS OF EPB 5

To continue the quality improvement of EPB, the 4<sup>th</sup> edition is currently being revised to produce the 5<sup>th</sup> edition. The six phases of behavioral systems analysis continue to be used. At the time of this writing, we are in the middle of the revision to EPB 5. At the molar level, I will discuss the first two steps in the behavioral systems approach, analysis and goal specification. At the molecular level, I will present four case studies of revisions to illustrate the use of behavior systems analysis.

#### Step One—Analysis

The analysis phase for the revision to produce EPB 5 began with the evaluation of EPB 4. Both formative and expert evaluations have again helped us to identify needed revisions.

#### Student Evaluations

Our experience with EPB 4 has allowed us to develop a much more formal evaluation process on which we are basing the revisions for EPB 5. This evaluation process consists of: (a) evaluations of each individual chapter, (b) evaluations of the most difficult section in each chapter, and (c) individual evaluations of the new sections added to EPB 4. These evaluations indicated 40 needed revisions for EPB 5.

Nine of these have already been recycled and subsequently evaluated as satisfactory for inclusion in EPB 5. An additional eight of these sections have been recycled and evaluated once, but are not yet satisfactory.

#### Prentice Hall Reviewers

Though we wanted to, we were unable to address three suggestions given by the reviewers of EPB 3, when revising to produce EPB 4. We will try to address those suggestions in EPB 5. Also, as part of the analysis phase for EPB 5, we will analyze the feedback from the reviewers of EPB 4. To date, we have looked at the questionnaires, but we have not analyzed the comprehensive reviews.

The reviewers gave us 30 objectives. Of these, we addressed 18, we chose not to address 9, and we wanted to address 3 that we were unable to address.

#### Professors Using EPB

Malott and I frequently solicited feedback from the users of EPB. Recently we asked them to complete a brief email evaluation. Figures 8 and 9 show the Likert scale ratings of EPB 4 given by professors using it in their undergraduate behavior analysis courses.

In general, professors liked the style of EPB 4. We intend to continue with EPB 5 in the same style. Seven of the nine professors who responded to the email questionnaire reported that they would like to see supplemental software available with EPB 5. This is consistent with the feedback we often get when talking with



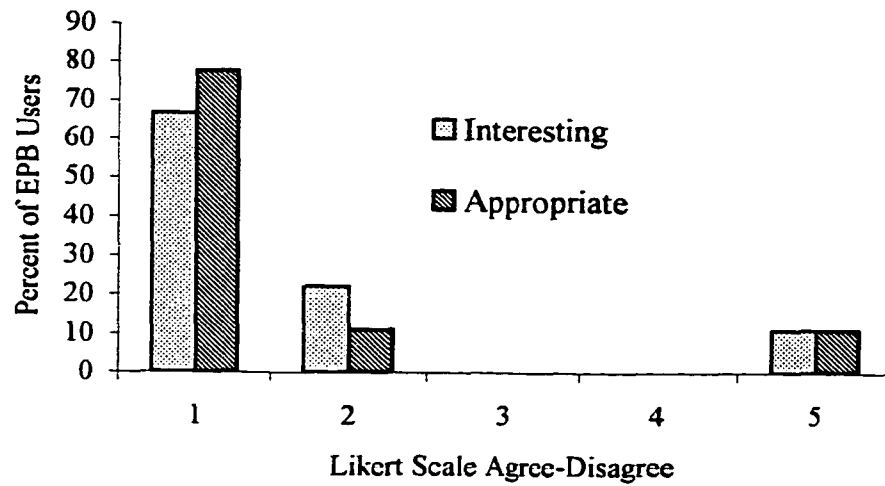


Figure 8. “The Storylines Using Fictional Heroes Are...” (Professors Using EPB) Likert Ratings.

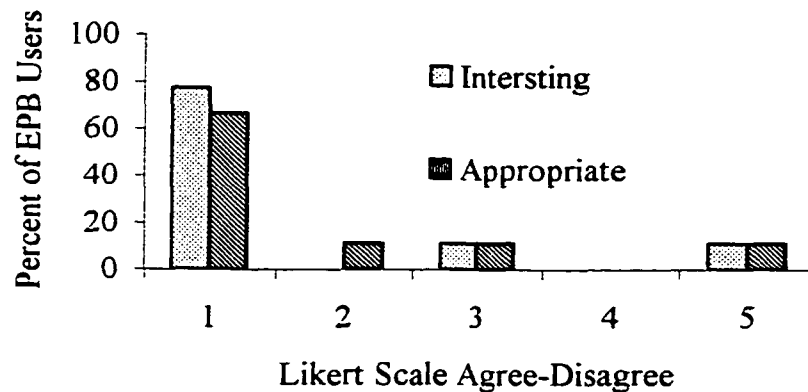


Figure 9. “The Informal Didactic Format of the Text Is...” Likert Ratings.

professors. They would like for us to provide an examination bank on disk. Some have also mentioned that a supplemental practice-question bank would be beneficial to their students. Professors also often mention that the text is too long to be used

easily within a semester-long course. These professors differ, however, in their suggestions to correct this problem. Some want us to remove chapters and some do not. The professors who want us to remove chapters are generally not in agreement about which chapters should be removed.

### Step Two—Goal Specification

Our goals for EPB 5 are similar to those that we had for EPB 4. First, we want to clarify any areas that our evaluations of EPB 4 indicated were unclear. Second, we would like to remediate more analyses. Third, we would like to continue to try to make some areas less offensive to students. Fourth, though we have not yet been able to analyze the reviewer feedback of EPB 4, we will want to address those reviewers' suggestions. Finally, because professors using EPB 4 have indicated a desire for an exam bank, we would like to develop a computer-based question/exam bank to be included as an adjunct to the instructor's manual for the 5<sup>th</sup> edition.

### Case Studies

To illustrate the way the six steps of behavioral systems analysis were used at a molecular level to analyze, design, and evaluate individual sections in EPB 5, and then recycle material when necessary, I will present case studies of 4 of the 17 sections that have been revised to date.

### Case Study One—Successful Revision

The following case study shows how one difficult section in EPB 4, identified by the chapter evaluations, was subsequently analyzed, revised for EPB 5, and evaluated using the six steps of behavior systems analysis. The section came from Chapter 11, “Learned Reinforcers and Aversive Conditions”, and was entitled “How learned reinforcers are established” (Appendix I).

#### Analyze and Specify

The generic evaluations showed that students found Chapter 11, “Learned Reinforcers and Aversive Conditions”, to be difficult. On a Likert scale from 1-5 with 1 being easily understood and 5 being extremely difficult, the average difficulty rating was 3.2 (the difficulty ratings for all the chapters ranged from 2.4 to 3.4). Students identified the most difficult section in the chapter by selecting the section number that corresponded with the section with which they had the most trouble. Approximately 45% of the students found one section to be the most difficult in the chapter, with an average Likert difficulty rating of 4.1. This section was entitled “How are learned reinforcers established?”

This section illustrated pairing procedures which establish learned reinforcers. It also provided a base from which behavioral phenomena are analyzed in terms of acquired values in EPB’s subsequent chapters.

### Design and Implement

“How are learned reinforcers established?” originally contained pairing diagrams showing previously neutral stimuli being paired with a reinforcer. It did not show any contingencies through which those learned reinforcers had strengthened behaviors. In the chapter evaluations, several students suggested I include contingency diagrams to make the learned reinforcer section clearer. In the revision, I added another example showing how a learned reinforcer could be established and included a contingency diagram showing how the newly acquired reinforcer could then reinforce behavior.

I also made a clearer distinction between the pairing procedure and the effect of the pairing procedure (altering the value of a previously neutral stimulus and subsequently reinforcing behavior). The revised version was given to students the following semester.

### Evaluate

The revision was successful. On section-specific evaluations, students reported that they understood how learned reinforcers are established and the difference between the pairing procedure and its effects. The average of the Likert scale rating was 2.07.

### Recycle

The revision was successful. It did not need to be recycled.

### Case Study Two—Unsuccessful Revision

The next case study comes from Chapter 17, “Ratio Schedules.” It involves the revision of a section about free-operant and discrete-trial procedures (Appendix J).

### Analyze

Students did not find Chapter 17, “Ratio Schedules” to be especially difficult. The average Likert difficulty rating was 2.6. (The difficulty ratings for all the chapters ranged from 2.4 to 3.4). The majority of students, however, did find one section to be extremely difficult. The section, “Discrete Trial VS. Free Operant Procedures” was chosen as the most difficult section in the chapter by 65% of the students. Because this was a new section to EPB 4, Malott and I were not surprised that it needed revision.

Furthermore, Figure 10 shows that those students who chose “discrete-trial vs. free-operant procedures” as the most difficult section rated it extremely difficult on a Likert Scale. Most student ratings were 3 or higher.

### Design and Implement

After reviewing the section, I made three significant changes:

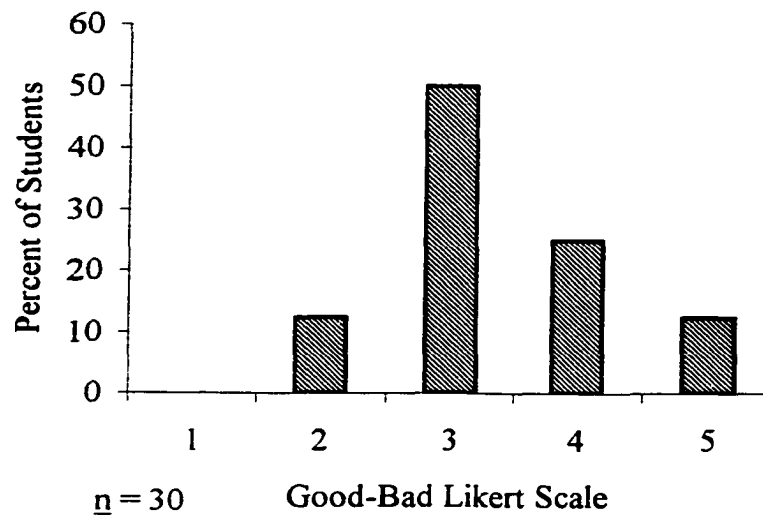


Figure 10. “Discrete Trial VS. Free Operant Procedures” Likert Ratings.

1. Though the original version had used headings and subheadings to delineate its organizational structure, review of that structure led me to believe that further categorization might help. I had shown discrete trial procedures, but I had not used subheadings to illustrate each trial within those procedures. I thought students might be having difficulty discriminating between the free operant and discrete trial procedures, in part, because the structure used to describe both procedures had been nearly identical, and their differences were not readily apparent. Therefore, the revised version used more subheadings to further delineate both procedures. More attention was also given to the main distinguishing difference between the two procedures, the presence or absence of an  $S^A$  after the outcome of each response.

2. The revised version included a new section illustrating discrete trial and free operant procedures in the Skinner box. EPB frequently uses Skinner box

examples to present difficult concepts at the most basic level before providing other, more complex parallel examples.

3. In the revised version I removed a subsection that had given examples of hybrid discrete-trial/free-operant procedures in everyday life. The section was confusing and the cost of expanding the coverage to explain the everyday examples would be more than the anticipated benefit to students understanding those examples. My main goal with the entire revision was to help students better discriminate free-operant and discrete-trial procedures. The revised section was given to students the next semester.

### Evaluation

According to student evaluations, the difficulty of the section did not improve with the revision (Figure 11).

### Recycle the Intervention

Because I did not succeed in improving this section, it will need to be recycled. Inclusion of the topic in EPB 5 is important as evaluated by the reviewers and by us. A more focused study might provide insight about the causes of reader confusion. The next semester the revised section is used, students will be asked to rate the difficulty of each of the examples within the section.

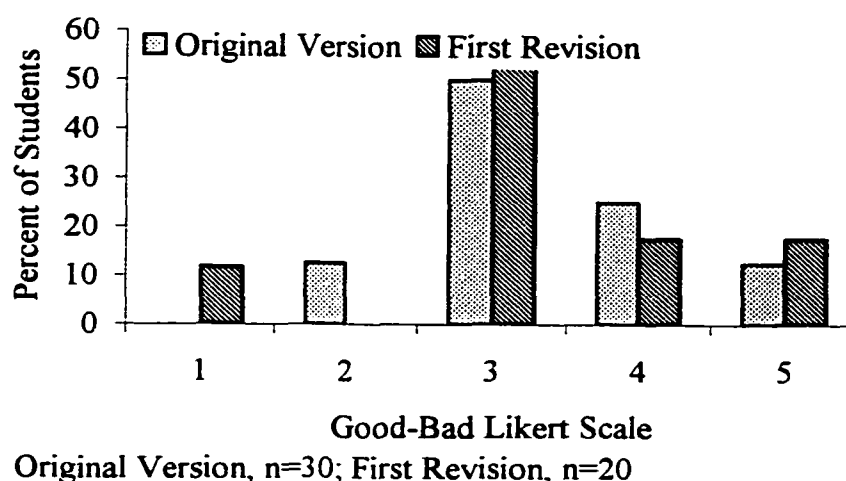


Figure 11. "Discrete Trial Procedures vs. Free Operant Procedures" Likert Ratings.

### Case Study Three—Cost Benefit of Recycling

The third case study involves a section in Chapter 4, "Punishment." This section deals with the "victim's punishment model of the sick social cycle" (Appendix K).

#### Analyze

Chapter 3, "Escape", of EPB 3 introduced the concept of the "sick social cycle." The "sick social cycle" is a way of seeing how one person's (the perpetrator's) undesirable behavior can be reinforced by the actions of another person (the victim). The victim's actions allow the victim to escape the undesirable behavior of the perpetrator. For example, a child throws a tantrum in the grocery store, and mom gives the child a candy bar to quiet the child. The end of the tantrum negatively



reinforced mom's inappropriate behavior.

By applying behavioral systems analysis to this section, I found there were novel instances that were impossible to diagram because they did not fit the model—the victim's appropriate behavior was punished by the perpetrator rather than negatively reinforced. For example, mom tells the child to take a bath and the child throws a tantrum. Mom's appropriate behavior is punished and she asks the child to bathe less frequently. To solve this problem, we added a punishment version of the sick-social cycle.

EPB 4 depicted both distinctions by dividing the information into two separate models and chapters to make the separation more clear. Chapter 3, "Escape", showed the victim's escape model of the sick social cycle. Chapter 4, "Punishment," showed the victim's punishment model. The goal was to help students correctly diagram the instances of the sick social cycle that did not fit into the model in EPB 3.

### Design and Implement

The sick social cycle addition to Chapter 4 was modeled after the sick social cycle section in Chapter 3.

### Evaluate

Students rated the new sick social cycle section to be the most difficult section in Chapter 4. Also, an error analysis of the homework for Chapter 4 revealed that students were not correctly diagramming the sick social cycle punishment model; 37%

of students missed a crucial homework question. Furthermore, a performance question on the section specific evaluation revealed that 39% of the students could not identify the contingencies involved in the punishment model of the sick social cycle.

### Recycle

Our goal was to help the students diagram the cycle properly and thus demonstrate mastery of the concept. I added the prompts to the cycle diagrams in the text. Students used and evaluated the revised text the following semester.

### Second Evaluation

The sick social cycle's section evaluation included one performance question, which required students to identify the two contingencies in the punishment model. Students continued to have difficulty identifying the two contingencies. Only 45% of students got the performance question correct. Likert ratings also indicated that students found the section to be difficult (Figure 12). Though the concept was difficult, Figures 13 and 14 show that most students felt that it was an important section/concept and that it should be kept in the book.

### Second Recycle

Difficult concepts are worth including (or keeping) in the book if they can be dealt with in a reasonable amount of space, so the benefit of including them exceeds the cost. However, if after several attempts to clarify a concept, I found it was still

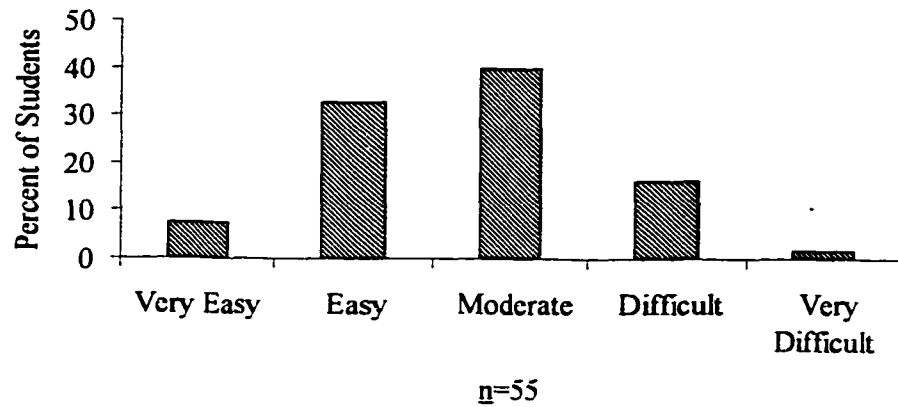


Figure 12. "How Hard Was the Sick Social Cycle to Understand?" Likert Ratings.

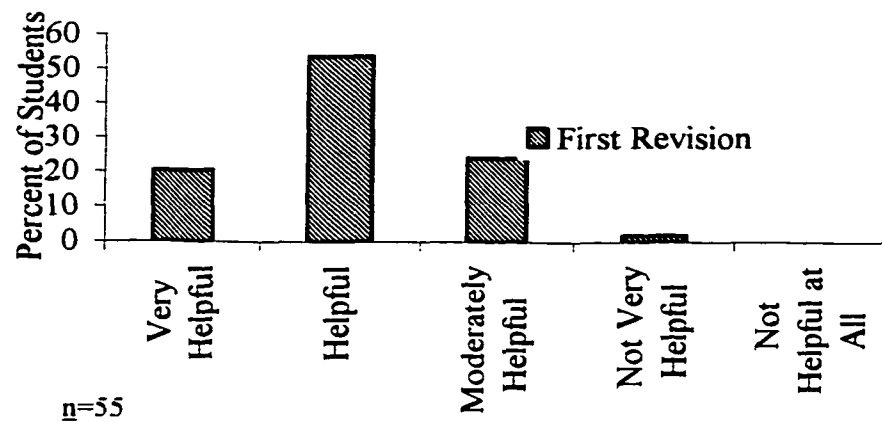


Figure 13. "How Helpful in Understanding Human Behavior?" Likert Ratings.

unclear, the necessity of including that concept was critically evaluated. In this case, the students and the seminar instructors felt it was a valuable concept.

Malott and I were somewhat equivocal about keeping the sick social cycle in the book, because it is not a basic concept or principle. However, we believe it has

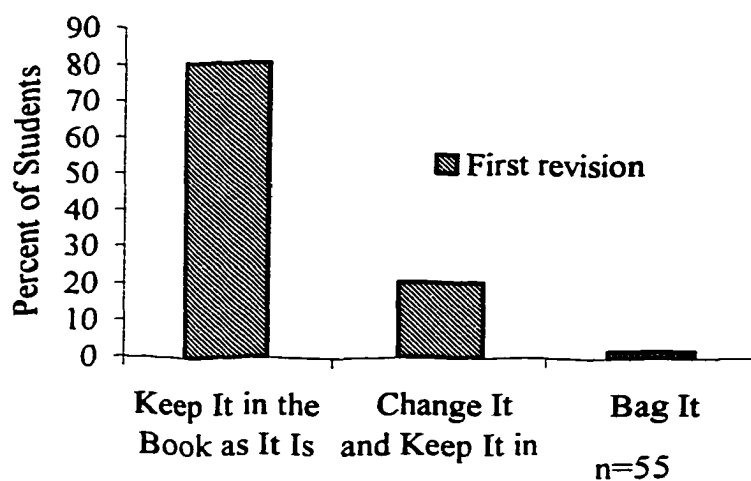


Figure 14. “What Should We Do?” Student Ratings.

value because it defines many realistic, problematic interactions in autism, developmental disabilities, and in everyday situations. We finally decided to keep the concept and plan to continue the revision process.

#### Case Study Four--Social Validity of Controversial Analyses

The mission of EPB is to build a behavioral repertoire with which students can begin to identify and apply behavioral principles to their everyday lives. As students' repertoires change, we hope they may develop a behavioral worldview. In other words, we hope they may tackle the illusive mysteries of life, using the analytical skills they have gained. To this end, EPB provides theoretical analyses of societal phenomena from the vantage point of a behavioral worldview.

Chapter 26, “Moral and Legal Control”, presents a theory about how molar analogs to behavioral contingencies can be designed to act on a society as molecular

contingencies act on the individual to promote the betterment of humankind. In addition to discussing the ways molar moral contingencies work within a society, the chapter addresses the processes by which people within societies acquire their values. To illustrate the behavioral evolution of values, this chapter also discusses sexual preference (Appendix L).

This theoretical analysis first appeared in EPB 3. It was received with a variety of strong opinions. Some students believed that religion should not be presented in a psychology course, and certainly not in such a scientific manner. Others reported that they enjoyed the presentation and that it brought up interesting points. The moral control section of this chapter conflicted with many readers' religious beliefs. The sexuality section in this chapter forced some students to reach beyond their comfort level and consider nurture where they had previously assumed nature. Still, the power of this chapter to illustrate a behavioral worldview was enormous. Therefore, though we considered removing it from EPB 4, we decided to keep it and focus on making it as clear, interesting, and inoffensive as possible.

### Analyze

A version of Chapter 26 was included in EPB 3. A special chapter evaluation was given to students to ascertain their reaction to the analyses and presentation in the chapter (Appendix M). Students received credit for completing the evaluation form, which was collected in an anonymous fashion. The evaluation form contained questions/statements from each section of the chapter. Students were instructed to

indicate whether they agreed or disagreed with each question or statement.

The evaluation forms made it possible to rate students' agreement with almost all of the analyses presented in the chapter. Though the evaluation was designed to encourage students to make comments, the multiple-choice format nonetheless required an "agree" or "disagree" with the authors' position. For data analysis, multiple-choice answers were graphed and comments were printed and examined.

As part of her psychology undergraduate psychology department honors project, Moira McGlynn helped to develop evaluative measures, compile lists of student feedback, and develop text revisions. She also conducted interviews about the chapter with two on-campus religious activity leaders and two comparative religion professors.

The interviews were designed to determine whether religious professionals agreed with the premises in the moral control section of the chapter and to gain insight into non-offensive ways of presenting the material. The responses the interviewees gave during the interviews with McGlynn varied. All of the interviewees agreed that moral control exists, but the two religious activity leaders were reluctant to admit its importance to religion and society. Three of the four interviewees mentioned that the emphasis on Christianity should be lessened. All interviewees agreed the discussion of moral control would most likely never be completely accepted by some students.

### Specify

The objective was to make the chapter inoffensive, correct, and understandable. An increase in the percentage of students who agreed with the authors' positions was to be the main evaluative measure.

### Design

Guided by student and interviewer comments, we added a disclaimer about the reason for the Judeo-Christian centered focus of the chapter. While the chapter did address other religions and sources of moral control, the disclaimer explained that most EPB readers are familiar with the Judeo-Christian concepts of heaven and hell. The chapter, therefore, focused on those concepts to simplify the task of the reader. Our purpose was not to "teach" any religion, but rather to analyze the moral control that affects everyone regardless of specific religious background.

Because students seemed to find contingency diagrams helpful in understanding concepts in other EPB chapters, we changed the moral control section of the chapter to include contingency diagrams showing behavioral contingencies and analogs to contingencies affecting both the individual and society.

Within the homosexuality section of the chapter, we attempted to further show the difference between, and the acquisition of, three separate aspects of a sexual "lifestyle." The aspects discussed included: (a) sexual stimulation as a reinforcer (unlearned), (b) sexual behavior (learned), and (c) sexual values (learned). The unlearned reinforcing value of sexual stimulation was compared to the unlearned

reinforcing value of food when food-deprived. The development of learned sexual reinforcers was compared to the development of food preferences.

### Implement

The revised chapter was given to students two different semesters. It was also given to Kent Johnson, a gay activist with a behavior analytic background who was kind enough to read, evaluate, and give feedback on it.

### Evaluate--Student Opinion

McGlynn and I observed and documented the seminar discussion of the chapter in the Psychology 360 classes (Winter 2000). Students tended to focus on the homosexuality section of the chapter. The discussion indicated they agreed that sexual behavior is learned. They also agreed that sexual stimulation was unlearned. They had the most difficulty understanding how sexual values could be learned. One important source of confusion became obvious during the seminar observations: Students did not understand the difference between something being learned and being taught. They frequently pointed out that many parents did not attempt to “teach” their children to value sexual stimulation from a same-sex partner.

Students also evaluated the revised version using the chapter’s evaluation. See Appendix N for graphs of the percentage of students agreeing with the authors’ analysis for each question on the evaluation (McGlynn, 2000)

Despite the substantial increase in student agreement shown by the number of



increased 'A' choices, there did not seem to be a decrease in the number of negative comments about the chapter. Negative comments (stating a point that disagreed with the authors' discussion) spread evenly throughout both evaluations. In all three semesters, there were more "positive" and "neutral" comments than negative. Most comments were neutral, agreeing with the points in the chapter, but not complimentary (Appendix O).

#### Evaluate--Expert Validity

The feedback provided by Johnson on the sexuality sections of EPB chapter has been extremely helpful. He thought that, in general, we did a good job of covering a complicated issue. He had several ideas about how we could improve our accuracy and clarity. He recommended that we revise these sections and (a) clarify the distinction among transgender, transsexual and transvestite; (b) keep our illustrating study, but express the limitations of that study; (c) talk about the Gay Lesbian Bisexual Transsexual (GLBT) community and its values; (d) present a brief statement about the current state of research including learning, hormones, genes; and (e) review the research concerning prenatal influence. His entire review may be seen in Appendix P.

#### Recycle

This chapter is not yet satisfactory. Though it has been revised once for EPB 5, it needs to be revised and evaluated. The multitude of feedback generated by the

evaluations and interviews has provided us with a list of future improvements for both the moral and legal control section and the homosexuality section. In order to show the concepts of moral control, the text needs to be less Christian-centric. We (Malott, McGlynn, and I) are investigating other religions to use as examples of moral control. Malott, Otto and McGlynn (2001) have developed an audio-visual presentation illustrating these concepts, which they deliver at conferences. The feedback they receive from these presentations also guides the revision of Chapter 26.

Our next revision to the homosexuality section will more clearly delineate the difference between behavior and values that are learned through chance pairing and contingencies, and behaviors and values that are intentionally taught through pairing and contingencies designed by people (such as parents) with the express goal of altering repertoire. Malott and I have decided to incorporate all of Johnson's suggestions with the exception of the addition of prenatal influences. We believe that covering prenatal influences to sexuality might be taking the subject further than most of our readers are prepared to go.

## CHAPTER IV

### DISCUSSION

The purpose of this project was two-fold. First, I wanted to produce an improved fourth edition of EPB and use the evaluation of that edition to begin making revisions for the fifth edition of EPB. Second, I wanted to use and troubleshoot the textbook revision process based on behavioral systems analysis. The extent to which I achieved these goals will be discussed next.

#### Goal One—Revise EPB

The first goal can be viewed on a continuum. Malott and I did, in fact, revise EPB 3 so that we could send EPB 4 to the publisher on January 15, 1999. EPB 4 contained 38 major revisions. After evaluation, nineteen of those revisions were accepted without further revision. We will send EPB 5 to the publisher on October 1, 2001. If all goes well, the 32 recycles identified through the evaluation of EPB 4 will be completed before then, as well as additional revisions that will be indicated by the reviewers of EPB 4, professors using EPB 4, and our own experience with EPB 4.

In our approach to textbook quality improvement, each revision of an edition starts with hundreds of MS Outlook tasks. Many of these tasks are not completed before the newest edition goes to the publisher. So, while we achieved the goal of revising EPB 3 into EPB 4, my evaluative measures indicate that we judged only 50%

of these revisions to be successful enough to require no further change. Furthermore, though we wanted to, we were not able to address three of the objectives given to us by the reviewers of EPB 3. There are also a few recommendations from the reviewers of EPB 2 that we have yet to address. Given the fact that we are making many of EPB 5's revisions based on student data, it is possible that we will never have time to accomplish the objectives set for us by the reviewers of the earlier editions. Though we are slowly making progress toward an exemplary textbook, we still have a long way to go.

### Goal Two—Evaluate the Process

The second goal of this dissertation was to assess the utility of behavioral systems analysis as an approach to textbook revision. This approach might be a helpful model for all textbook revision. However, it is not proscriptive. In other words, analyzing a problem and specifying the goals do not always suggest a specific solution, nor guarantee that that solution will produce a successful revision. Nonetheless, the six steps of behavioral systems analysis helped us to be more aware of where we were, where we wanted to go, and whether or not we had arrived.

I identified several procedural problems when applying behavioral systems analysis to EPB's revision. To conclude my description of the revision process, I will present these problems and possible solutions in terms of their place in the six steps of behavioral systems analysis. Additionally, for each phase, I will offer general suggestions for textbook revision.

## Analysis

### Timely Expert Evaluation

Problem. In order to be able to appropriately use reviewer feedback, that feedback must be obtained as early as possible in the revision process. Unfortunately, this does not always happen. For example, in the case of EPB 3, I received the reviewer evaluations one year before EPB 4 was due to go to the publisher. In the case of EPB 4, we received the reviewer evaluations in May 2000; only six months before the next edition was due to go to the publisher. Therefore, we were not able to utilize the feedback when we began the revision process for EPB 5.

Solution. When possible, one should develop a questionnaire to collect feedback and distribute it to as many experts as possible, independently of the publisher. Also, if one provides the publisher with the questionnaire along with the finished text, one might facilitate the feedback-gathering process.

### Recommendations for Authors

Before beginning the revision process, the variables affecting the textbook and its revision process need to be reviewed. Authors should be sure to gather feedback from professors and students using the book regarding its style, clarity, and appropriateness for the target audience.

### Goal Specification

Having completed the analysis, we had no problem with goal specification.

### Recommendations for Authors

Authors might begin by specifying the mission of the text. All sub-goals for revision need to align with the mission. One obvious goal is to produce a revised edition of the text. Other general goals might be to: (a) improve or maintain the clarity of the text, (b) improve or maintain the readability of the text, (c) improve or maintain the ease of recall of the text, (d) improve or maintain the motivational value of the text, and (e) update the text with current theories and research.

### Design

#### Too Much Data, Too Little Time

Problem. We intended to do evaluation-driven revisions to EPB. Unfortunately, this did not always happen. Often the chapter evaluations were not analyzed in a timely manner. Even when the evaluations were analyzed and problems were identified, it was sometimes difficult to bring our writing behavior under the control of the data. Because the revisions were evaluated in the context of psychology courses, the deadline for revisions followed a timeline specific to the courses syllabi. It was not always possible to revise a section before giving that section to the students the following semester. Consequently, several problem sections were analyzed more

than one time, even though no changes had been made to them. Furthermore, the revisions that did make it to the students were not always successful. Nine sections needed to be recycled more than once. Unsuccessful revisions further added to the number of revisions to be completed and evaluated before being accepted in EPB 5.

Solution. Assistance is needed to address data collection and recycles. Furthermore, there needs to be contingencies in place supporting such assistance. For authors working in university settings, work-study students or research assistants could provide such assistance for financial compensation.

#### Poor Control of Writing Behavior

Problem. Malott and I used Microsoft Outlook 2000 to document revision tasks. We filed the tasks under category labels, which designated the version and chapter of the book the task was for. Sometimes we also put reminders into the tasks to prompt us to complete them before certain times. Unfortunately, this method did not exert enough control over our behavior. We were able to procrastinate completing these tasks because the outcomes for completing or not completing one task were small, though of cumulative significance. The outcomes were not sizable enough to control behavior.

Not only were the outcomes small for completing each subtask by a specific time, also there were many competing contingencies with significant outcomes that did control our behavior.

Possible Solution--Bigger Problem. I found that the less time that lapsed between identifying a need for a revision and starting to write that revision, the more likely we were to complete the revision. Occasionally Malott made revisions to the text while observing seminar classes. Students would discuss a difficulty and Malott would immediately change the corresponding text on his laptop computer. This approach had two benefits: First, the revision could be read to the students for immediate feedback. Second, there were fewer contingencies supporting competing behaviors. But this method also had one big drawback. Frequently, Malott was making changes to his file for a chapter at the same time I was making changes to my file for that same chapter. We ended up with two different revised versions, which then needed to be reviewed and carefully merged. Currently, 17 of EPB's 30 chapters have two "most recently revised" versions to be merged.

Solution. When possible, revisions should be made as soon as they are suggested. To solve the problem of multiple versions between authors, it might be helpful to use an intranet to store all chapter files. When one author needs to work on a file, that author would get the file from the intranet. Meanwhile, all other authors would not be able to access the file. Once the revision is completed, the file would be returned to the intranet. In this way, the most updated files would always be stored in one place

### Performance Based Revisions

Problem. Though I had intended to revise materials for EPB 5 when student



quiz performance indicated a need, this has yet to be implemented. Though the seminar instructors identified the quiz questions with which students had difficulty, and I recorded these difficulties, they rarely controlled our writing behavior. Consequently, we may have missed 53 opportunities to clarify difficulties in the text.

Solution. One might have deadlines where one requires that all revisions based on error analyses be made before students use the materials the next semester. But then one faces the problem of probably already having more identified areas for revision than there will be time to complete. However, these revisions might often require little time and produce valuable results. For example, such a revision might involve merely changing the wording in a definition.

#### Recommendation for Authors

The design phase should be driven by formative evaluations, not just expert evaluations. That may seem trivial, but I suspect many authors make little use of student data when revising their textbooks. Both formative and expert evaluations provide useful feedback to improve textbook revision. In the design phase of revision, authors should: (a) allow enough time to analyze the data from formative evaluation, so it might be utilized in design; (b) when possible solicit help in analyzing data; and (c) make revisions as problems are identified when observing student discussions to increase the chance that the feedback will control writing behavior.

## **Implementation**

Because we used the book in the psychology courses at WMU, the implementation phase for EPB went smoothly. There were no problems and I have no non-obvious recommendations for other authors.

## **Evaluation**

### **Pre-measures and Post-measures Were Not Equivalent**

**Problem.** Some sections were flagged for revision because students indicated on the chapter evaluations that those sections were difficult. I created section-specific evaluations for those sections. I did this to determine the exact nature of the problem with the section and to evaluate individual components of the section. Because I evaluated the revised material with the section-specific evaluations and the old material with the chapter evaluations, I was not able to compare these pre- and post-measures.

**Solution.** It would be better to use a three-step process to complete the evaluation and revision of a section, though this would require an extra semester. When a chapter evaluation indicates a difficult section, a specific evaluation could be designed to evaluate the components of that section. Then the section-specific evaluation could be given to the students the following semester before a revision is made to the section. The feedback from the evaluation could then be used in conjunction with student suggestions from the chapter evaluations to revise the section. Finally, the

revised material could be given to the students with the section-specific evaluation. This method would allow a more valid comparison of old and revised material using the section-specific evaluation.

### Performance-Based Evaluation

Problem. Currently, there are no consistent measurements to determine the extent to which new sections in EPB are clear. Only three of the section-specific evaluations contain performance questions.

Solution. One should include conceptual questions on the evaluation questionnaire. Conceptual questions would help to: (a) determine whether students actually understand what they say they understand, and (b) more accurately pinpoint problems.

### Cross Validated Results

Problem. Students and experts socially validated the revisions to EPB. Student performance also played a role in the evaluation of the authors. For this study however, I did not evaluate student performance with a measure independent of EPB. Student performance was evaluated on posttests, quizzes, homework, and class discussions, all based on EPB. To evaluate student performance in a context outside of EPB, it would have been useful to give a pretest and posttest that had not been based on EPB.

Solution. One might give students a pretest and posttest created by an independent educator in behavior analysis.

### Recommendation for Authors

The evaluation phase of behavioral systems analysis feeds directly back into the design phase. To get the most useful feedback, authors should: (a) use equivalent pre- and post-measures, (b) use section evaluations to get detailed information about new or revised material, (c) include conceptual questions on the section evaluations to determine if students' report of their understanding matches their performance, and (d) when quizzes are to be used to identify difficulties in the text, have students take the quizzes before they receive supplemental instruction.

### Recycling

#### Cost/Benefit of Recycling

Problem. We revised 38 sections in going from EPB 3. to EPB 4. Of those 38 sections, 19 still needed revision in going from EPB 4 to EPB 5. Nineteen were considered satisfactory, needing no further revision. Of those 19 sections still needing revision, 6 were recycled and 2 were subsequently accepted. This left 17 sections that continued to need recycling. At some point the benefit of continuing to recycle any given section has to be weighed against the cost. If the cost is too high, we need to consider removing the section from the book. Often, however, this is a difficult decision to make. When we remove difficult material from EPB, we add it to EPB's

“Advanced Enrichment Section” (AES). The AES is a supplementary unpublished booklet available for use as an adjunct to EPB and used in WMU’s graduate course Psychology 610. It covers topics that supplement EPB and are too difficult to be included in EPB. This solution is acceptable when the removed material is too difficult for undergraduates but not too difficult for graduate students. Another way to make this material available to all students would be to post it on the World Wide Web. All students with sound behavioral repertoires could then access the material if they wanted.

Solution. To allow students to be exposed to difficult sections in easier formats, one might address those difficult sections using computer-based programmed instruction. The computer-based programmed instruction might be put on a supplemental CD. In this way the difficult sections could be made easier without taking valuable space in the book.

#### Recommendation for Authors

Recycling is inevitable in the revision process. When in this phase, authors should: (a) determine when the cost of continued recycling outweighs the potential benefit, and then, whether to remove the material or keep it in spite of its lack of clarity; and (b) when material is removed due to its difficulty, place it somewhere, such as the World Wide Web, where readers can still access it.

## Final Comments

Improving a textbook through successive revisions might seem like an obvious process, with automatic results, but my experience does not support this. It is often difficult to improve a text's clarity or student quiz performance in specific areas, in spite of conscientious revisions. And it is often difficult to keep track of all the feedback, the implications of the feedback, and the revisions, especially across successive semesters' revision cycles. While the six-step behavioral-systems-analysis model does not remove these difficulties, it may attenuate them somewhat and provide a useful framework within which to conduct textbook revisions. And while consistently effective textbook revision might not seem like an idealistic goal, I have come to believe that it is, in fact, idealistic.

I further believe that idealism is needed to keep the system of textbook revision moving toward a more effective textbook, rather than just a new edition for the publisher's marketing department. Concerning this need for idealism within a vast process, Malott and Garcia (1987) propose the concept of cynical idealism: "The assumption of cynical idealism is that nothing will end up the way it should; but if you work harder than you should have to, trying to get your system to accomplish its goals, then your system will not be as much of a disaster as it otherwise would have been" (p. 143). And the students and reviewers agree that EPB 4 is far from a disaster.

**Appendix A**  
**Microsoft Office 2000 Task Examples**

## **Beth Trojan Suarez**

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**Subject:** Ch 05. Penalty (1 done for EPB 4.0)  
**Due Date:** Wednesday, March 07, 2001  
  
**Status:** Deferred  
**Percent Complete:** 0%  
  
**Total Work:** 0 hours  
**Actual Work:** 0 hours  
  
**Owner:** Beth Trojan Suarez  
  
**Categories:** P360, P610, Writing – EPB 4.0, Writing – EPB Homework

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### **Ch 05. Penalty**

#### **Ch 5**

4 out of 5 strongly prefer my 2 by 2 table.  
 Some mild preference for just going with the preferred.  
 Or maybe just have this last one once.

**Done:** How long should a kid be in time out?

Time out doll.

Time out ribbons are nice S-deltas for the staff passing in and out.

Inclusionary time allows the classroom student to still receive instruction.

Are there data on descriptive praise.

#### **Ch 5. Homework**

Makes sure they don't confuse the before condition with the SD.

Melisa: Dad around. Child cries. Dad yells at her.

and

Mom around. Child cries. Mom comforts her.

Use new diagrams.



## **Beth Trojan Suarez**

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**Subject:** Ch 13. Quick and Dirty  
**Due Date:** Friday, March 05, 1999  
  
**Status:** In Progress  
**Percent Complete:** 25%  
  
**Total Work:** 0 hours  
**Actual Work:** 0 hours  
  
**Owner:** Beth Trojan Suarez  
  
**Categories:** P360, Writing -- EPB 5.0

---

Students still don't understand the difference between the stimulus dimension verses the value of the stimulus dimension.

Some possible extra example - 7ft tall. Height is the dimension, 7ft is the value  
 20 grams of force. Force is the dimension and 20 grams is the value

---

- Excellent analysis. They have had that problem with response dimension in the past. Do they still?
- How about starting a quick and dirty file for EPB 5.0, which we include in the students packet, each semester? It includes corrections and clarifications by chapter. It could be as little as just what you said in the three lines at the start of this. Or it could be much more elaborate. And we assign it as part of the reading for that chapter.
- And we get feedback on whether it does the trick.
- Then it would feed nicely into revisions for EPB 5.0

**Appendix B**  
**Table of Revisions**

Revision	Version of EPB	Chapter	Page in EPB 4.0	Section identification	New material for EPB 4.0	Revision Status
biologic aevolution	4	1	12	1.16	x	Accept
More terms than you'd care to know	4	1	12	1.12	x	Low priority
Expand the "Don't Say Rule"	4	2	32	2.19	x	Accept
Medical Model Myth	4	2		2.2		Low Priority
Change the sick social cycle diagrams 4.0	4	3	50-51	3.13	x	Recycle
Functional Assessment vs. Functional Analysis	4	3	46	3.11	x	Accept
Sick social cycle 4.1	4.1	3		3.13		Recycle 2
Multiple Baseline Design	4	4	75	4.25		To be recycled
sick social cycle punishment 4.0	4	4	67-68	4.16	x	Recycle
Sick social cycle punishment diagrams 4.1	4.1	4				Recycle
Visual Screening vs gentle teaching	4	4	61	4.1.0		Low priority
Comparing penalty, time out and response cost	4					
Rolling over the deadman	4	5	87	5.11		To be recycled
Extinction vs Forgetting	4	5	94	5.17		To be recycled
Functional Analysis before extinction example (contemporary study)	4	6	115	6.19		Low priority
Functional Analysis before extinction example (contemporary study)	4	6	102-105	6.7	x	Recycle
Recovery from punishment vs. Spontaneous Recover from Extinction	4.1	6				Accept
Fixed outcome vs variable outcome shaping	4	6	118-199	6.22	x	To be recycled
Shaping vs Behavioral Chaining	4	8	154	8.12		Low priority
Shaping vs Behavioral Chaining	4	8	157	8.16	x	Recycle
Shaping vs Behavioral Chaining	4.1	8	157	8.16		Accept
The EO's effect on learning and performance	4	9	160	9.7		To be recycled
A Behavior-Analytic Theory of Aggression	4	10	175		x	Accept
How are learned reinforcer acquired	4	11		11.5		Recycle
How are learned reinforcer acquired	4.1	11				Accept
Learned Reinforcers in the acquisition of verbal behavior	4	11	186	11.12	x	Accept
Definitions: Criteria for Diagramming Discriminated Contingencies	4	12	211	12.13	x	Accept
Differential reinforcement vs Stimulus Discrimination	4	12	203	12.17		To be recycled
Discriminative stimulus vs. operandum	4	12	209	12.14		Low priority
Prompt fading vs stimulus fading	4	12	206		x	Accept
Verbal Behavior	4	12	212	12.16	x	Recycle
Verbal behavior	4.1	12				Accept
Matching to Sample	4	13	224-226	13.16	x	To be recycled
Stimulus Equivalence 4.0	4	13	226-230	13.17	x	To be recycled
Control condition	4	14		14.10		Low Priority
Imitation as a prerequisite to language acquisition	4	14	241-242	14.8	x	Accept
Learning without awareness	4	15	258-259	15.18	x	Accept
Telology	4	15		15.17	x	Recycle
Telogy	4.1	15				Accept
Punishment by Prevention vs Dro	4	16		16.12	x	Accept
Discrete trial vs free-operant	4	17	275-277	17.8	x	Recycle
Discrete trial vs free-operant	4.1	17	275-277	17.8		Recycle
Discrete trial vs free-operant	4.2	17	275-277	17.8		Recycle
Ratio and Interval Schedule	4	18		18.13		Low Priority
Concurrent contingencies and the factors that interfere with language learning	4	19	295-297	19.6	x	Accept

Revision	Version of EPB	Chapter	Page in EPB 4.0	Section identification	New material for EPB 4.0	Revision Status
Two more factors that interfere with language learning	4	19	297-299	19.7	x	Accept
Differential Punishment of High Rates	4	20		20.13		AES
DRL vs FI chart	4	20	333	20.19	x	Accept
Recent work on respondent conditioning in the human immune system (Buske-Kirschbaum et al., 1992)	4	21	350	21.18	x	Accept
Added in a disclaimer about the Little Albert story	4	21		21..10	x	Accept
Compound conditioned stimuli: Overshadowing and blocking	4	21	351-352	21..20	x	To be recycled
Fear and football	4	21	336	21.7	x	Accept
Respondent conditioning and the Body's regulatory systems: Sid kicks the sugar monkey	4	21	349	21.17	x	Accept
Respondent conditioning vs operant conditioning	4	21	338-339	21.9		Recycle
Respondent conditioning vs operant conditioning	4.1	21				Accept
Respondent vs. Operant extinction distinction	4	21	344	21.14		Recycle
Respondent vs. Operant extinction distinction	4.1	21				Accept
SD vs CS spot example 4.0	4	21	332		x	To be recycled
SD vs CS spot example 4.1	4.1	21	332			Accept
Why drug addicts die	4	21	353	21.21	x	To be recycled
Rule Governed Analog	4	22		22.11		Low Priority
Addition of Procrastination Material	4	24	401	24.16	x	To be recycled
Rule Statements as Eos	4	24		24.6		To be recycled
Five philosophies of psychology	4	26	430-439	26.7	x	Recycle
Five philosophies of psychology	4.2	26	430-439	26.7		Accept
Five philosophies of psychology	4.1	26	430-439	26.7		Recycle
Moral and Legal Control 4.0	4	26	415-430		x	Recycle
Moral and legal control 4.1	4.1	26				
Moral and Legal Control disclaimer 4.0	4	26		26	x	Recycle
Moral and Legal Control disclaimer 4.1	4.1	26				
Sexuality 4.0	4	26			x	Recycle
Sexuality 4.1	4.1	26				
Jungle Jim	4	27		27.6		Low priority
Overall summary of maintenance and transfer	4	28		28.11		Low priority
New contingency tables	4	23456	38,61,90		x	Accept

## **Appendix C**

### **EPB Chapter Evaluations**

## EPB Chapter Evaluation

Chapter # \_\_\_\_\_,

Title \_\_\_\_\_

1. Please rate the ease of understanding this chapter compared to other chapters.

Easily understood		average		difficult to understand
1	2	3	4	5

2. What was the most difficult section of this chapter? *(Please fill in the corresponding number from the back of this form)*

3. How difficult was it?

Easily understood		average		difficult to understand
1	2	3	4	5

4. How could the most difficult section be made more clear?

5. Any suggestions for the chapter –

- ☐ I hereby give my consent for Elizabeth Trojan to use and to publish the information on this evaluation in her dissertation. I have read the informed consent and know that checking this box indicates my consent.

}

<b>CHAPTER 17</b>	<b>Section Number</b>
THE DIVERS OF NASSAU	1
SCHEDULES OF REINFORCEMENT	2
FIXED-RATIO REINFORCEMENT	3
THE CUMULATIVE GRAPH	4
VARIABLE-RATIO SCHEDULE OF REINFORCEMENT	5
RATIO SCHEDULES OF ESCAPE AND PENALTY	6
RATIO SCHEDULES OF REINFORCEMENT AND PUNISHMENT 7 IN EVERYDAY LIFE	
DISCRETE-TRIAL PROCEDURES VS. FREE-OPERANT PROCEDURES	8

}

**Appendix D**  
**Section Specific Evaluations**



### Functional Assessment Chapter 3 Evaluation

1.) How well do you think the Bob Ball example illustrated a functional assessment?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

2.) How important/helpful do think it is to complete a functional assessment before beginning an intervention?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

3.) How important is it for functional assessments to be taught in this book?

1	2	3	4	5
Very	Fairly	Moderately	Not very	Not at all

### **Sick Social Cycle (Punishment Model) Evaluation**

- 1.) How is the punishment model of the sick social cycle different from the escape model?
  
- 2.) In the punishment model of the sick social cycle there are two contingencies – what are they?
  - a. a reinforcement and a punishment contingency
  - b. two punishment contingencies
  - c. a reinforcement and an escape contingency
  - d. an escape and a punishment contingency
  
- 3.) How helpful is the Sick Social Cycle (Victim's punishment model) in understanding human behavior?

1	2	3	4	5
Very helpful		helped a little		waste of time

- 4.) How difficult was the concept to understand?

1	2	3	4	5
Very easy	Easy	Average	difficult	very difficult

- 5.) Should we \_\_\_\_?

- (1) leave it as is
- (2) change it and leave it in
- (3) bag it

## Chapter 6 evaluation Spontaneous Recovery vs. Recovery After Punishment

1.) How well do you understand spontaneous recovery after extinction?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

2.) How well do you understand recovery after punishment?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

3.) How well did you understand the difference between spontaneous recovery and recovery after punishment?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

## Extinction of Elopement Chapter 6 evaluation

1.) How well do you think the example of Josh's running away showed the use of a functional analysis?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

2.) How well do you think the example of Josh's running away showed the use of extinction?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

3.) How well did you understand the table showing the different contingencies in a functional analysis?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

4.) In this case, now necessary do you think a functional assessment was?

1	2	3	4	5
Very		Moderately		Not at all

5.) In this case, how practical do you think a functional assessment was

1	2	3	4	5
Very		Moderately		Not at all

## **Chapter 8 evaluation**

### **Shaping verses chaining**

- 1.) How well do you understand the difference between shaping and training a behavioral response chain?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

- 2.) When we first teach Rudolph to press the lever, do we use shaping or behavioral response chaining?

## **Chapter 9 evaluation - Sound as an unlearned reinforcer**

1.) How well do you understand the analysis explaining how sound is an unlearned reinforcer?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

### **Chapter 11 Evaluation – How are learned reinforcers established?**

1.) How well do you understand the way that learned reinforcers are established?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

2.) How well do you understand the difference between the definitions of the pairing procedure and the value altering principle?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

## **Chapter 11 Evaluation – Learned reinforcers in the acquisition of verbal behavior**

1.) How well do you understand the way that the neutral sounds of a parent's speech become learned reinforcers for an infant?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

2.) How well do you understand how these parental sounds, as learned reinforcers, differentially reinforce a baby's babbling?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly



## Chapter 12 evaluation – Verbal behavior

1.) What could be another name for a “mand”

2.) What could be another name for a “tact”

3.) How well do you understand the definitions of verbal behavior?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

## Chapter 13 evaluation –

### Matching to sample

1.) How well did you understand the example illustrating matching to sample in the Skinner box?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

2.) How well did you understand the example illustrating matching to sample in the classroom with the autistic child?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

3.) How well did you understand the example illustrating matching to sample in IQ testing?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

### Stimulus Equivalence

4.) How did you understand the definitions of transivity, symmetry and reflexivity?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

5.) How well did Al's example illustrate stimulus equivalence?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

6.) How clearly was the distinction drawn between a stimulus class and an equivalence class?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

## Chapter 14 Evaluation

### Imitation

- 1.) How well do you understand the different kinds of reinforcers that could maintain imitative behavior

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

- 2.) How well do you think the example of Rod at his birthday party demonstrated the necessity of imitative reinforcers for the development of verbal behavior to occur?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

- 3.) Do you think that imitative reinforcers are necessary for imitative control?

1	3	5
yes	not sure	no

## Chapter 15 Evaluation

### Teleology

1.) How well did you understand the explanation of teleology?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

2.) Do you think that the concept of an avoidance contingency is a teleological explanation?

1	2	3	4	5
No	Probably not	Maybe	Probably	Definitely

## Chapter 16 Evaluation

**Differential reinforcement of other behavior versus Punishment by prevention**

1.) How convincing was the argument for looking at Punishment by prevention rather than Differential reinforcement of other behavior?

1	2	3	4	5
Very convincing		either is fine		DRO seems more plausible

## Chapter 17 Evaluation

### Discrete trial verses free operant procedures

1.) How well did you understand the definition of a discrete trial procedure?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

2.) How well did you understand the definition of a free operant procedure?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

3.) How well did you understand the distinction between these two procedures?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

## Chapter 19 Evaluation

### Concurrent contingencies and the factors that interfere with language learning

1.) How well did you understand the explanation of the factors that interfere with language learning?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

2.) Do you agree with the logic behind the analysis of the factors that interfere with language learning?

1	2	3	4	5
yes		not sure		no

3.) Do you think that the behaviors and values associated with autism may develop in a similar way?

1	2	3	4	5
yes		not sure		no

## Chapter 19 Evaluation

### Concurrent contingencies and the factors that interfere with language learning

1.) How clear was the explanation of the factors that interfere with language learning?

1	3	5
Very clear	adequate	not clear

2.) Do you agree with the logic behind the analysis of the factors that interfere with language learning?

1	3	5
yes	not sure	no

3.) Do you think that the behaviors and values associated with autism may develop in a similar way?



## Chapter 21 Evaluation – Respondent vs. Operant Extinction and S<sup>D</sup> vs. CS

1.) How well did you understand the table contrasting the differences between operant and respondent extinction?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

2.) How well do you understand the difference between operant and respondent extinction?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

3.) How well do you understand the distinction between S<sup>D</sup> and a CS?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly.

4.) How well you understand the way to determine whether a stimulus that evokes behavior is functioning as an S<sup>D</sup> or a CD?

1	2	3	4	5
---	---	---	---	---

Very well	Well	Moderately	Poorly	Very poorly
-----------	------	------------	--------	-------------

5.) Suppose Baby raises his arms every time Mom bends over the crib. In this case, is sight of Mom most likely functioning as a

1	2
S <sup>D</sup>	CS

## Chapter 21 Evaluation

### Little Albert

1.) Was the little Albert story about conditioning a phobia offensive?

1	2	3	4	5
yes		not sure		no

2.) Did you agree with our disclaimer about the fact that we don't endorse the experiment, but feel that, as long as it was done, you should read about it for it's educational benefit?

1	2	3	4	5
yes		not sure		no

### Respondent conditioning and the body's regulatory system

3.) How well did you understand the description of the respondent processes involved in the conditioned insulin phenomenon?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

4.) How well did you understand the description of the respondent conditioning of the immune system?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

5.) How well did you understand the description of the respondent conditioning that is responsible for drug overdose?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

## Chapter 22 Evaluation

### Procrastination and deadlines

1.) How did you understand the causes for procrastination?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

2.) How well did you understand the role that deadlines play in helping us to avoid procrastination?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

## Chapter 25 Evaluation

### Five philosophical views of psychology

1. How did you understand the explanation of mentalism

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

2. How well did you understand the explanation of spiritualistic mentalism?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

3. How well did you understand the explanation of materialistic mentalism?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

4. How well did you understand the explanation of cognitive behavior modification?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

5. How well did you understand the explanation of radical behaviorism?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

6. How well did you understand the explanation of methodological behaviorism?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

7. How well did you understand the explanation of biological determinism?

1	2	3	4	5
Very well	Well	Moderately	Poorly	Very poorly

8. Do you agree with the simplistic biological determinism error? (do you agree that it's an error?)

1	2	3	4	5
yes		not sure		no

**Appendix E**  
**EPB Reviewer Questionnaire**

Dear Reviewer,

Thank you for your thoughtful, insightful, feedback on EPB 3.0. When revising that edition, we tried to address as many of your suggestions and comments as possible. Now we would once again like to benefit from an evaluation by the experts. Below is a rough sketch of the comments and suggestions made during your last reviews. Please review each one and then tell us what you think of our revisions to this edition of EPB. (Note -- because this is a composite of all the suggestions, we realize that you may not agree with every one.) Any comments not specifically prompted by the suggestions below will be welcome as well. Thank you for your time and consideration.

The following is a list of suggestions from all of the reviewers followed by our response in italics

**Suggestions from reviewers/ *Our comments and improvement index.***

**1. Combine the first two chapters and emphasize concept of reinforcement over that of the reinforcer. *We didn't do this yet -- we're afraid that it will make a chapter that is just too long to cover in one class period.***

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How disappointed are you that we didn't change it?

very		somewhat		not at all
1	2	3	4	5

**2. Subtopics that could be added**

**a. Chapters 1&2 -- define response rate as a primary datum. - *Added in a footnote***

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How well did we address this suggestion?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**3. Change definition of baseline so that it is less like operant level. - Added in as a footnote.**

How important was this suggestion

very		somewhat		not at all
1	2	3	4	5

How well did we address this suggestion?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**4. Functional assessments, Added in Chapters 3 (pp.. 46-48), 6(pp.. 102-105), 29 (pp.. 463-465).**

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How well did we address this suggestion?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**5. Add more contemporary studies to illustrate points. Added to Chapter 6 -- Josh's elopement (pp.. 102-105). Added to Chapter 21 Insulin and Respondent conditioning (pg. 349). Respondent Conditioning and the immune system (pg. 350). Added into Chapter 3 Functional assessment pp. 46-48. Added into Chapter 13 Stimulus Equivalence and Naming (pp. 226-229).**

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How well did we address this suggestion?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**6. Differential reinforcement could be used to refer to discrimination training as well as response differentiation** *We didn't do this because we fear it would be hard to really train the discrimination between the two without several pages.*

How important was this suggestion?

very          somewhat          not at all

1    2    3    4    5

How disappointed are you that we didn't change it?

very          somewhat          not at all

1    2    3    4    5

Any suggestions?

**7. The conditional aversive stimulus should merely be covered as a discriminative stimulus.** *We actually expanded on the conditional stimulus in chapter 11 (pg. 186) -- tell us what you think.*

How important was this suggestion?

very          somewhat          not at all

1    2    3    4    5

How effective was the expanded coverage?

very          somewhat          not at all

1    2    3    4    5

Any suggestions?

**8. Connect the EO to the response box in a contingency --** *We do now. See Chapter 9, (pp. 159-175).*

How important was this suggestion?

very          somewhat          not at all

1    2    3    4    5

How well did we address this suggestion?

very          somewhat          not at all

1    2    3    4    5

Any suggestions?



**9. Improve the coverage of Verbal Behavior - Added in chapter 11 (pg. 186), 12 (p. 212), 14 (pp. 241-243), & 19 (pp. 295-298) -- still want to add Sundburg's material in EPB 5.0.**

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How well did we address this suggestion?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**10. Make the distinction between the S<sup>D</sup> and the prompt. Added to chapter 12 (pg. 205).**

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How well did we cover this suggestion?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**11. S<sup>D</sup> and operandum distinction shouldn't be made. We still do (p 209)**

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How disappointed are you that we still make the distinction?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**12. When talking about a stimulus class and conceptual stimulus control, also discuss the role of generalization in the forming of a stimulus class. *Added to chapter 13 (pg. 215).***

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How well did we address this suggestion?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**13. Add stimulus equivalence *Added in Chapter 13 (pp.. 226-230) - would love feedback.***

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How well did we address this suggestion?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**14. Chapter 14 could include emergent relations. - *Added to Chapter 13, (pp.. 277-230).***

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How well did we address this suggestion?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**15. One doesn't like the diagramming of avoidance using the words "you will have" and "you won't have in the contingency diagram. *We could also say "in 10 seconds shock will come on", but we like to keep the subject in the before and after conditions to make diagramming more easily understood by the students. See diagrams in chapter 15 beginning on page 249.***

How important was this suggestion?

very          somewhat          not at all

1    2    3    4    5

How strongly do you feel that the wording should have been changed?

very          somewhat          not at all

1    2    3    4    5

Any suggestions?

**16. Any suggestions? Remove the Punishment by prevention stuff and expand on the Avoidance Chapter instead. - *No, we feel Punishment by prevention leads into the rule governed behavior stuff.***

How important was this suggestion?

very          somewhat          not at all

1    2    3    4    5

How disappointed are you in this lack of change?

very          somewhat          not at all

1    2    3    4    5

Any suggestions?

**17. Add in Free Operant Procedures vs. discrete trials, noting Skinner's recognition of the flexibility of operant behavior and focus on the likelihood or frequency of a response. - *Added to Chapter 17, (pp.. 275-277).***

How important was this suggestion?

very          somewhat          not at all

1    2    3    4    5

How well did we address this suggestion?

very          somewhat          not at all

1    2    3    4    5

Any suggestions?

**18. Add in some studies with developmentally normal individuals**

**i. Recent work on respondent conditioning in the human immune system (Buske-Kirschbaum et al., 1992) - Added to Chapter 21 (p 350)**

**ii. Study showing conditioning without awareness -- Added in Hefferline's thumb twitch to chapter 15, (pp. 258-259).**

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How well did we address the suggestion?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**19. Use the term operant more frequently before chapter 21 -- We didn't use it that much more often because it didn't seem too meaningful until the students had learned more about the contrasting "respondent".**

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How well did we address the suggestion?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**20. Respondent Conditioning. Cover more Respondent Conditioning. - Done in Chapter 21, (pp. 349-355).**

**a. Start the chapter with a story of drug tolerance and overdose, then cut to Shepard Siegel's work demonstrating the relevance of these phenomena of respondent conditioning to these phenomena. - We did this at the end of Chapter 21, (pp. 353).**

How important was this suggestion

very		somewhat		not at all
1	2	3	4	5

How well did we address this suggestion?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**21. Delete the Little Albert story -- it gives behaviorists a bad name. We added a disclaimer that it would never happen today with Institutional Review Boards (p 348).**

How important was this suggestion?

very      somewhat      not at all

1    2    3    4    5

How offensive is this lack of change?

very      somewhat      not at all

1    2    3    4    5

How helpful was the disclaimer?

very      somewhat      not at all

1    2    3    4    5

Any suggestions?

**22. Keep phobia stuff, but mention that systematic desensitization combines operant procedures with the respondent extinction procedure. Done in chapter 21, (pg. 347).**

How important was this suggestion?

very      somewhat      not at all

1    2    3    4    5

How well did we address this suggestion?

very      somewhat      not at all

1    2    3    4    5

Any suggestions?

**23. Emotion - Added in Chapter 21, (pp.. 347-348).**

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How well did we address this suggestion?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**24. Add in research on self-control and the value law -- *We added procrastination to chapter 24, pp. 400-404. We didn't add the value law.***

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How well did we address this suggestion?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**25. Rule Governed Behavior may be too extensively covered (designating 6 chapters) *Maybe -- but we haven't taken any out, yet.***

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How disappointed are you in this lack of change?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**26. Add in a chapter at the end to focus of the conceptual philosophical underpinnings of Behavior analysis - Added the five philosophical views of psychology to chapter 26, pp. 430-439**

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How well did we address this suggestion?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**27. Take out the Bobby story (offensive, gives behaviorists a bad name) -- Sorry guys, it gets good ratings with the students as an explanatory example.**

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How offensive is this lack of change?

very		somewhat		not at all
1	2	3	4	5

What is your preference?

Any suggestions?

**28. Reduce the number of explicitly defined terms. Give secondary terms a more obviously secondary nature. We were going to put asterisks next to the most important terms in the glossary, but we had a hard time determining which terms were less important.**

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How well did we address this problem?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?

**29. Add in practice quizzes (with an answer key at the end of the text) at the end of each chapter. *We really would have liked to, but were restricted by space limitations.***

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How well did we address the suggestion?

very		somewhat		not at all
1	2	3	4	5

Any suggestions

**30. Add in a multiple choice question bank to go along with the text as supplemental material, *Look for it in EPB 5.0 if the publisher gives us the space in the instructor's manual. If not – what would you like to see dropped from the instructor's manual to make room for the question bank?***

How important was this suggestion?

very		somewhat		not at all
1	2	3	4	5

How disappointed are you in this lack of change?

very		somewhat		not at all
1	2	3	4	5

Any suggestions?



**Appendix F**  
**50 Question Multiple Choice Pre/Post Test**

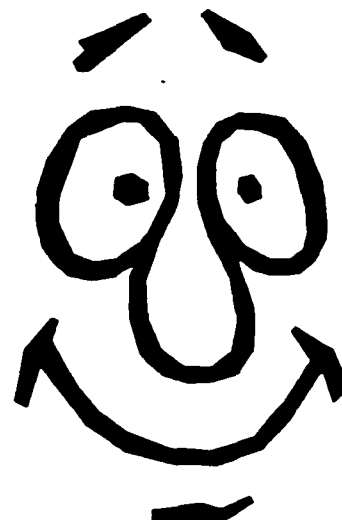
# GENERAL BEHAVIOR ANALYSIS EVALUATION

Select the most specific and most technically correct answer. Mark your answers on the answer sheet, not on this sheet. Also mark your name etc. on the answer sheet. Thanks.

1. \_\_\_\_ a stimulus, event, or condition, immediately following a response, that will increase the likelihood of that type of response, in the future.
  - a. reinforcer
  - b. repertoire
  - c. borderline bulimia
  - d. a behavioral intervention
2. \_\_\_\_ a view of human behavior that the behavior is a mere symptom of an underlying psychological condition.
  - a. behavior analysis
  - b. behavior analyst
  - c. medical model
  - d. none of the above
3. \_\_\_\_ response-contingent, immediate presentation of a reinforcer resulting in an increased frequency of that response.
  - a. behavioral connection
  - b. bribe
  - c. delayed gratification
  - d. reinforcement
4. \_\_\_\_ the occasion for a response, the response, and the outcome of the response.
  - a. behavioral connection
  - b. behavioral contingency
  - c. gestalt
  - d. reinforcement by the presentation of a reinforcer
5. \_\_\_\_ response-contingent presentation off an aversive condition resulting in a decreased frequency of that response.
  - a. punishment
  - b. reinforcement
  - c. extinction
  - d. avoidance
6. \_\_\_\_ any stimulus, event, or condition that will increase the future likelihood of a response, if the termination of that condition immediately follows the response.
  - a. alternative stimulus
  - b. aversive condition
  - c. positive reinforcer
  - d. terminational stimulus
7. \_\_\_\_ the replacement of a maladaptive response with an adaptive response that produces the same reinforcing outcome (i.e., either the removal or reduction of an aversive condition or the presentation of a reinforcing condition).
  - a. differential reinforcement of alternative behavior
  - b. symptom substitution
  - c. punishment by the presentation of an aversive condition
  - d. the sick social cycle
8. \_\_\_\_ When a resident trashed the ward of an institution, the behavior analyst required that she make the ward even better and cleaner than before.
  - a. negative reinforcement
  - b. positive reinforcement
  - c. overcorrection
  - d. extinction
9. \_\_\_\_ the removal of access to reinforcers, contingent on a response, with a resulting decreased likelihood of that response.
  - a. prevention
  - b. escape
  - c. punishment by the presentation of aversive conditions
  - d. time-out
10. \_\_\_\_ the effects of our actions determine whether we will repeat them.
  - a. controverted effect
  - b. the adverse effect
  - c. the law of effect
  - d. actional effect
11. \_\_\_\_ stopping the reinforcement or escape contingency for a previously reinforced response causes the response rate to decrease
  - a. control condition
  - b. extinction
  - c. forgetting procedure
  - d. punishment
12. \_\_\_\_ temporary reappearance of extinguished behavior.
  - a. control condition
  - b. forgetting process
  - c. spontaneous recovery from extinction
  - d. temporary resurgence
13. \_\_\_\_ reinforcing one set of responses and not reinforcing another set of responses increases the rate of the reinforced set of responses, relative to the other set.
  - a. complex behavior analysis
  - b. differential reinforcement
  - c. multi-element design
  - d. selective reinforcement
14. \_\_\_\_ set of responses that either are similar on at least one response dimension, or serve the same function (produce the same outcome), or share the effects of reinforcement and punishment.
  - a. common set
  - b. crucial group
  - c. response class
  - d. response differentiation
15. \_\_\_\_ using reinforcers to reinforce responses that more and more closely resemble the terminal response.
  - a. minimal response method
  - b. shaping with reinforcers
  - c. terminal behavior or terminal response development
16. \_\_\_\_ a procedure that affects learning and performance with respect to a particular reinforcer or aversive condition.
  - a. establishing operation
  - b. Premack procedure
  - c. procedure of reinforcer specificity
  - d. sensitization

17. \_\_\_\_ if one activity occurs more often than another, the opportunity to do the most frequent activity will reinforce the less frequent activity
  - a. added (extrinsic) reinforcement contingency
  - b. principle of deprivation and satiation
  - c. establishing operation
  - d. Premack principle
18. \_\_\_\_ a reinforcer for which repeated exposure is an establishing operation.
  - a. additive reinforcer
  - b. adjunctive reinforcer
  - c. early stimulus reinforcer
  - d. other-delivery reinforcer
19. \_\_\_\_ a learned reinforcer that is a reinforcer, because it was paired with a wide variety of other reinforcers, when the organism has been deprived of those other reinforcers.
  - a. deprivational reinforcer
  - b. variegated reinforcer
  - c. paired reinforcer
  - d. none of the above
20. \_\_\_\_ a system of learned generalized reinforcers in which the organism that receives those generalized reinforcers can save them, and exchange them for a variety of backup reinforcers, later.
  - a. token economy
  - b. backup system
  - c. bribery
  - d. none of the above
21. \_\_\_\_ a stimulus in the presence of which a response will be reinforced or punished.
  - a.  $S^D$
  - b. prompt
  - c.  $S^A$
  - d. warning stimulus
22. \_\_\_\_ reinforcing or punishing a response in the presence of one stimulus and extinguishing it or allowing it to recover in the presence of another stimulus.
  - a. discrimination training procedure
  - b. intervention design
  - c. reversal design
  - d. alternating design
23. \_\_\_\_ the organism emits the same response to a different stimulus
  - a. class differentiation
  - b. common stimuli
  - c. stimulus generalization
  - d. undefinable stimulus control
24. \_\_\_\_ the use of a fading procedure to establish a discrimination, with essentially no errors during the training
  - a. errorless discrimination procedure
  - b. establishment procedure
  - c. gradual change procedure
  - d. gradual dimension
25. \_\_\_\_ imitating the response of a model without previous reinforcement of the imitation of that response
  - a. generalized imitation
  - b. the nonreinforcement procedure
  - c. transfer of imitation
  - d. verbal stimulus method (verbal approach)
26. \_\_\_\_ selecting a comparison stimulus equal to a sample stimulus.
  - a. equal selection
  - b. matching to sample (stimulus matching)
  - c. physical approximation method (physical approach)
  - d. stimulus selection
27. \_\_\_\_ after a response is reinforced, no responding occurs for a period of time, then, **ABRUPTLY** responding occurs at a high, steady rate until the next reinforcer is delivered.
  - a. continuous-reinforcement responding
  - b. fixed-ratio responding
  - c. variable-interval responding
  - d. variable-ratio responding
28. \_\_\_\_ the way reinforcement occurs, as a result of the number of responses, time between responses, and stimulus conditions.
  - a. availability schedule of reinforcement
  - b. schedule of reinforcement
  - c. the schedule of occasional reinforcement
  - d. the reinforcement matrix
29. \_\_\_\_ a reinforcer is delivered after the passage of a fixed period of time, **INDEPENDENTLY** of the response
  - a. independence programming
  - b. fixed-interval schedule of reinforcement
  - c. fixed-time schedule of reinforcement
  - d. extinction training
30. \_\_\_\_ reinforcement is available for only a limited time.
  - a. independence programming
  - b. fixed-interval schedule of reinforcement
  - c. limited hold
  - d. no correct answer in this list
31. \_\_\_\_ more than one contingency of reinforcement or punishment is in effect at the same time.
  - a. behavioral relativity
  - b. concurrent contingencies
  - c. differential reinforcement of incompatible behavior
  - d. multiple schedule
32. \_\_\_\_ the relative rate of responding on two concurrent schedules of reinforcement equals the relative rate of reinforcement on those two schedules.
  - a. behavioral relativity
  - b. concurrency principle
  - c. underlying causes
  - d. matching law
33. \_\_\_\_ If you get rid of one behavior, another will take its place, until you get rid of the underlying cause of the problem.
  - a. behavioral relativity
  - b. concurrent contingency
  - c. underlying causes
  - d. symptom substitution
34. \_\_\_\_ the establishment of the final link in a stimulus-response chain, with the addition of successive links, until the first link is acquired.
  - a. backward chaining
  - b. forward chaining
  - c. successive linkage
  - d. the first link last method
35. \_\_\_\_ With differential reinforcement of low rate, a response must occur before the reinforcer is delivered.
  - a. true
  - b. false

36. \_\_\_\_ a neutral stimulus acquires the eliciting properties of an unconditioned stimulus through pairing the unconditioned stimulus with a neutral stimulus.  
a. acquisitional conditioning  
b. establishing operation  
c. habituation  
d. respondent conditioning
37. \_\_\_\_ combining relaxation with a hierarchy of fear-producing stimuli, arranged from the less to the most frightening.  
a. acquisitional conditioning  
b. deconditioning  
c. higher-order conditioning  
d. systematic desensitization
38. \_\_\_\_ a description of a behavioral contingency  
a. contingency control  
b. descriptive contingency  
c. independent variable  
d. rule
39. \_\_\_\_ behavior under the control of a rule  
a. controlled behavior  
b. dependent variable  
c. rule-governed behavior  
d. subjective behavior
40. \_\_\_\_ the phase of the experiment where the dependent variable is measured in the absence of the intervention.  
a. baseline  
b. contingency control  
c. independent variable  
d. nonintervention phase
41. \_\_\_\_ number of instances of behavior over time.  
a. numerosity  
b. rate or frequency  
c. relative frequency  
d. latency
42. \_\_\_\_ In behavioral psychology, what is usually placed along the horizontal axis of a graph?  
a. hypothetical construct  
b. intervening variable  
c. independent variable  
d. dependent variable
43. \_\_\_\_ an experimental design in which the replications involve baselines of differing durations and, therefore, interventions of differing starting times.  
a. component analysis  
b. differential-baseline design  
c. method of response repetition  
d. multiple-baseline design
44. \_\_\_\_ private behavior (not visible to the outside observer)  
a. covert behavior  
b. intuitive control  
c. mystical behavior  
d. none of the above
45. \_\_\_\_ a written rule statement describing the desired or undesired behavior, the occasion when the behavior should or should not occur, and the added outcome for that behavior.  
a. performance contract or contingency contract  
b. written rule statement  
c. specification sheet  
d. the accounting of occasions or accountability agreement
46. \_\_\_\_ pay (usually with money or the equivalent) is contingent on specific agreed-upon achievements.  
a. pay for performance  
b. the immediate change method  
c. bribery  
d. achievement programming
47. \_\_\_\_ Add a reinforcement contingency to increase the rate of behavior. Then the behavior will frequently contact built-in reinforcement contingencies. And those built-in contingencies will maintain that behavior.  
a. the incremental method  
b. the principle of the behavior trap  
c. the built-in procedure  
d. the frequent contact method
48. \_\_\_\_ the goals, procedures, and results of an intervention are socially acceptable to the client, the behavior analyst, and society.  
a. social validity  
b. internal validity  
c. external validity  
d. consensual validity
49. \_\_\_\_ reliability between observations of two or more independent observers.  
a. internal validity  
b. external validity  
c. consensual validity  
d. interobserver agreement
50. \_\_\_\_ The rate of a response is a typical example.  
a. hypothetical construct  
b. intervening variable  
c. independent variable  
d. dependent variable



**Appendix G**  
**Conceptual Pretest and Posttest**

Name: \_\_\_\_\_ Instructor: \_\_\_\_\_ Grade: \_\_\_\_\_

## Conceptual Test:

### *The 8 Basic Contingencies*

The following are examples of the 8 basic contingencies, as taught in Dr. Malott's Psy 360/510. For each scenario, choose one of the following options.

- A. Reinforcement
- B. Escape
- C. Punishment
- D. Penalty
- E. Avoidance of the loss of a reinforcer
- F. Avoidance of an aversive condition
- G. Punishment by the prevention of the presentation of a reinforcer
- H. Punishment by the prevention of the removal of an aversive condition

1. Susie is climbing a tree when she hears a slight cracking sound. Shortly thereafter, the limb she is on breaks and she falls to the ground. Thud! Ouch! Later that day she is back to climbing trees. Once again she hears that familiar cracking sound. This time she quickly crawls back to the trunk of the tree. Thus, she does not fall when she otherwise would have. With regard to falling, what type of contingency is responsible for Susie's crawling off of the cracking branch?

Answer: **B**

2. You are walking leisurely across the parking lot at the mall on a busy shopping day. You are about half way to your car when it begins to rain heavily. You run to your car, dive in, and close the door. You're drenched, but at least you're out of the rain now. What type of contingency is responsible for your running, rather than walking, to your car?

Answer: **B**

3. Young Herbert is sitting quietly at the dinner table with his sister Sally. His mother is just about to give him his favorite meal when he reaches over and slugs Sally in the arm. Sally begins to cry and Herbert's mother withholds his meal for 5 minutes. Herbert is less likely to slug Sally due to which type of contingency?

Answer: **G**

4. Billy is on the playground minding his own business when one of the older boys puts him in a head lock. The older boy says, "I'll let you go if you admit you're a pansy." Billy quickly admits "I am a pansy," but just when he is about to be released he adds "you %\$#@ jerk." The older boy now holds Billy in the head lock until he admits once again that he is a pansy, without the profanity this time. What type of contingency is decreasing Billy's likelihood of swearing at the older boy next time he puts him in a head lock?

Answer: **B**

5. I have horrible vision. As usual, I woke up this morning barely able to see because I didn't have on my glasses. I fumbled about for a second or two, then immediately slipped on my glasses. Suddenly I could see everything. What a glorious morning! Well, at least better than it would be without my glasses. What type of contingency keeps me putting my glasses on each morning?

Answer: **A**

6. Once again Herbert is sitting quietly with his sister Sally. This time they are watching one of their favorite movies. Sally and Herbert begin to argue. Immediately their mother steps in. She turns off the TV. Herbert and Sally will now have to wait a few minutes before they can continue watching. Assuming they are less likely to argue in the future, what contingency is in operation here?

Answer: **D**

7. About a week later, Herbert and Sally are watching another movie. They begin to argue. They have learned from experience that their mother will turn off the TV when they argue. Fortunately, they have also learned something else. If they apologize to each other right away, their mother will allow them to continue watching TV without interruption. What type of contingency is controlling apologizing?

Answer: **B**

8. I was in the park one day watching two squirrels. Each of them was gathering nuts. After about 20 minutes, one of them scurried over and grabbed one of the other squirrels nuts. The other squirrel immediately pounced on the thief and began to chatter loudly. After another 10 minutes, the same thing happened again. Soon, the one squirrel was constantly grabbing the other squirrels nuts and the other squirrel was chattering and pouncing wildly. Aside from the comedy of the situation, I noticed a possible contingency supporting the behavior of the thieving squirrel. What type of contingency was it?

Answer: **C**

9. You are baby sitting for some neighbor kids and you decide to have a picnic. In the middle of the picnic, the family dog steals the potato chips, much to the distress of the kids. You decide to be the hero and grab the chips from the dog. Just as you reach for the bag, the dog bites down hard on your arm. My guess is you'd be less likely to try to take food from a dog in the future. Why?

Answer: **C**

10. In the process of driving down the road you make a large number of steering responses. If you didn't steer appropriately, you'd surely crash into something. What type of contingency keeps you making these steering responses?

Answer: **B**

11. You're playing a game of pinball in the Bernhard Center between classes. You very much enjoy the flashing lights, the sounds, and the sight of the silver ball bouncing around. They have become reinforcers. In the process of the game, you bump the machine from time to time (you use a bit of English). On many occasions, you have bumped the machine and managed to keep the ball in play. What type of contingency is supporting this behavior?

Answer: **B**

12. Later in the game, you bump the machine just a little too hard. The machine flashes "TILT, TILT" and the little silver ball rolls out of sight. The game is over. What type of contingency is responsible for your decreased likelihood of hitting the machine so hard in the future?

Answer: **D**

13. I went to the dentist recently to have a cavity filled. It was a rather deep cavity, thus it's very sensitive to temperature. So when I took a nice cold drink of water, it produced a rather unpleasant sensation in my tooth. Over the course of the next few days, I noticed a significant decrease in the amount of cold water I was drinking. What type of contingency is responsible for this decrease?

Answer: **C**

14. While I was having my cavity filled, the dentist told me to raise my hand if the drilling became painful. Most of the time, it didn't hurt at all. The dentist had effectively numbed my entire mouth. Eventually, the dentist was drilling deep into a sensitive area. I raised my hand a bit and immediately he stopped drilling. He started again and all was fine. The next time the drilling began to hurt, I was a little quicker to raise my hand. What contingency is in effect on hand raising?

Answer: **D**

15. You have a "friend" who seems to be unable to shut up. Whenever he starts talking, he seems to just ramble endlessly as long as someone is paying attention. When you first met him, you would be courteous and acknowledge what he said. Over time you became less and less likely to acknowledge his talking, even if it were occasionally interesting, because when you did, he'd talk even longer. What type of contingency is responsible for your decrease in acknowledgment?

Answer: **B**

16. I'm a rather sadistic uncle, so I'd occasionally do things to my niece that the rest of my family didn't think was very nice. Here's an example: If my niece was being loud and getting on my nerves I'd say, "If you can sit quietly on the couch for 2 minutes I'll give you a piggy back ride." The first few times, she'd sit down, but soon she'd be up and be noisy again. After some practice, she was able to sit perfectly still and silent, so I'd give her the piggy back ride as promised. Over time I'd increase the requirement, until she could sit still for incredibly long periods of time. What contingency is responsible for her decrease in getting up and being noisy?

Answer: **G**

17. Incidentally, what sort of contingency was probably controlling my saying, "If you can sit quietly on the couch for 2 minutes, I'll give you a piggy back ride"?

Answer: **B**

18. A few years ago I worked with a developmentally disabled client named Todd. Todd would often walk into the kitchen at inappropriate times and steal food from the refrigerator. Since Todd had a weight problem, the staff decided to intervene. Whenever he would go into the kitchen they would gently turn him around and escort him to his room. The plan was to decrease his food stealing. In actuality, Todd began to steal food more frequently. What type of contingency did the staff add for Todd's food stealing behavior?

Answer: **B**

19. Todd had another interesting behavior problem. Whenever the staff would try to teach him something new, he would begin to hit himself in the head. Of course, this would immediately stop the lesson for a few seconds. When he calmed down, they would resume. This made it very difficult to teach him anything. What type of contingency is most likely maintaining Todd's hitting himself in the head?

Answer: **B**

20. April is an autistic child. A common problem with autistic clients is that they are quite antisocial. Most of the time April would sit alone and watch TV, only occasionally emitting any social behavior. The staff working with her wanted to change that. Whenever April would engage in any social behavior (making eye contact, walking toward someone, making speech sounds, etc.), the staff would immediately give her praise and attention. After only one month of intervention, April had completely stopped emitting social behavior. The intervention has failed. What type of contingency had the staff implemented?

Answer: **B**



## **Appendix H**

### **Readability Formulas**

### Coleman-Liau Grade Level

This index determines a readability grade level based on characters per word and words per sentences.

### Flesch Reading Ease

This index computes readability based on the average number of syllables per word and the average number of words per sentence. Scores range from 0 to 100. The average writing score is approximately 6- to 70. The higher the score, the greater the number of people who can readily understand the text.

### Kincaid Reading Grade Level

RGL standards are measured in terms of the overall RGL of the publication. The target audience determines allowable RGL. Maximum RGL should never be over 12. Comfortable reading is usually in the –10 level to reach most people. The Kincaid Readability Formula used to gauge reading difficulty measures sentence and word length. The reading difficulty is expressed numerically as a RGL. The RGL can be found by using the following formula:

$$(\text{Words per sentences} * .4) + (\text{syllables per word} * 12) - 16 = \text{RGL}$$

### Flesch-Kincaid

This index computes readability based on the average number of syllables per word and the average number of words per sentence.

The Flesch-Kincaid Readability Formula is calculated by multiplying the

sentence length by .039 and adding to the product of the word length and 11.8. The number 15.59 is then subtracted from the sum of those numbers to complete the formula.

**Appendix I**  
**“How Are Learned Reinforcers Established?”**

## Chapter 11. Learned Reinforcers and Learned Aversive Conditions

much imagination to think of psychotic talk as reinforced behavior. It also took courage to test a technique for extinguishing this psychotic talk, especially because no one had tried it before.

## QUESTIONS

1. What are some mentalistic interpretations of the causes of psychotic talk?
2. What are some objections to a behavioral analysis and intervention for psychotic talk?
3. Diagram the use of differential reinforcement to reduce psychotic talk.
4. What happened when Helen's psychotic talk received bootleg reinforcement after a few weeks of the extinction procedure?

## How to Be Cool

Don't confuse *infer* and *imply*.

*infer* verb—To conclude from evidence or premises. We can *infer* that his motive in publishing the diary was less than honorable.

Usage Note: Infer is sometimes confused with imply; don't. When we say a speaker or sentence implies something, we mean it is suggested without being stated outright: When the mayor said she would raise the taxes, she implied (not inferred) the city need the money. Inference, on the other hand, is the activity performed by a reader or interpreter in deriving conclusions that are not explicit in what is said: When the mayor said she would raise the taxes, we inferred the city needed the money.

## Concept

## HOW ARE LEARNED REINFORCERS ESTABLISHED?

Remember the definition of *unlearned reinforcer*: a stimulus, event, or condition that is a reinforcer, though not as a result of pairing with another reinforcer. So it won't take too much imagination to guess the definition of a *learned reinforcer*:

*Definition: Concept*

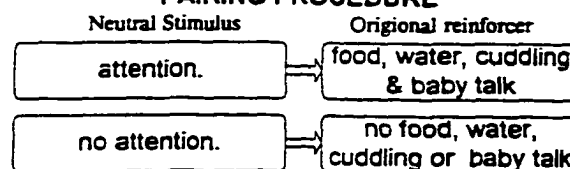
**Learned reinforcer (secondary or conditioned reinforcer)**

- A stimulus, event, or condition that is a reinforcer
- because it has been paired with another reinforcer.

Attention may be a good example. We've suggested that attention was a powerful learned reinforcer for Helen. If attention was a learned reinforcer, that means it hadn't always been a reinforcer for Helen. Helen was not born with attention acting as

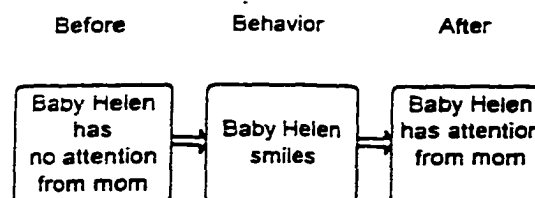
a reinforcer for her behavior. When Helen was first born attention was a relatively neutral condition. When it immediately followed a behavior, it neither increased nor decreased the frequency of that behavior. Only through learning did attention become a reinforcer for Helen's behavior. Attention became a learned reinforcer because it was often paired with other reinforcers, that is it often immediately preceded other reinforcers, like the sight of her parents just before they fed Helen when she was a baby. What are some other reinforcers normally available to Helen the baby, only if she had someone's attention? Water. Cuddling. Baby talk.

## PAIRING PROCEDURE



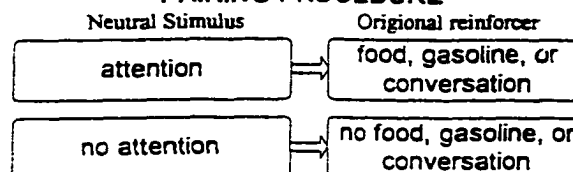
Again, Helen was not born with attention functioning as a reinforcer. It took many pairings of attention with other reinforcers for attention to become a reinforcer. Once attention becomes a learned reinforcer, it functions just like an unlearned reinforcer. It increases the frequency of any behavior it immediately follows. The following reinforcement contingency shows how smiling can be reinforced by attention. If the behavior did not increase in future frequency, attention would not have been functioning as a reinforcer.

## REINFORCEMENT



What about Helen the adult? Even an adult must have someone's attention before getting food in a restaurant, gasoline at a full-service pump, or conversation at home.

## PAIRING PROCEDURE



We are all such social animals that attention is paired with many of our most important reinforcers, from the day we're born until the day we die.

## Chapter 11. Learned Reinforcers and Learned Aversive Conditions

Attention is such a powerful but sneaky reinforcer, it often controls our behavior without our knowing it. What do you think is a hidden reinforcer that controls your professor's lecturing? If you're not sure, try falling asleep. What reinforces telling a joke? Try walking away in the middle of someone's joke to find out.

Often social approval goes hand in hand with attention, but not always, as in Helen's case, where attention maintained inappropriate behavior in spite of the disapproval. In some circles, belching and flatulence produce reinforcing attention, though not approval. (If you don't know what flatulence means, grab your dictionary.) Do you know people, other than your professors, who run in such circles?

Incidentally, it's not clear how immediate the pairing should be between the neutral stimulus and the reinforcer. We would assume within a few seconds. Maybe no more than a fraction of a second should elapse between the presentation of the neutral stimulus and the reinforcer. It also may be that the onset of the neutral stimulus should slightly precede the onset of the reinforcer. But the main point is that probably no professional behavior analyst would expect to establish a learned reinforcer if, say, an hour, or even several minutes, elapsed between the neutral stimulus and the reinforcer. We'll call this pairing of a neutral stimulus and a reinforcer or aversive condition the *pairing procedure*, and we'll describe the results in terms of the *value altering principle*.

**Definition: Procedure****Pairing procedure**

- The immediate pairing of a neutral stimulus with
- a reinforcer or aversive condition.

**Definition: Principle****Value-altering principle<sup>41</sup>**

- The pairing procedure
- converts a neutral stimulus into
- a learned reinforcer or learned aversive condition.

Note that we include *immediate* in the definition of *pairing procedure*; probably the two stimuli or conditions being paired must be paired within a few seconds. For example, suppose you were working with an autistic girl, and you were trying to create a learned reinforcer out of the statement *good girl* by pairing *good girl* with other reinforcers such as little bites of favorite foods. You sure as heck wouldn't want to say *good girl* and then give her the bite of food an hour later; you'd be doomed to failure. A delay of only a fraction of a second would come much nearer to doing the trick.

**QUESTION**

1. *Learned reinforcer*—define it and give a couple examples and show how they might have acquired their reinforcing value
2. *Pairing procedure*—define it.
3. *Value-altering Principle*—define it.

<sup>41</sup> We've introduced these two concepts in the third edition of *Elementary Principles of Behavior* (EPB 3.0), because we found the students were not focusing adequately on how learned reinforcers and learned aversive conditions are acquired.

**Appendix J**  
**“Free Operant VS. Discrete Trial Procedures”**

## QUESTION

1. Give four differences between typical gambling contingencies and the usual variable-ratio schedules of the Skinner box in the professional research laboratory, not necessarily an

introductory student lab. Warning: This one may be crucial for getting your A today.

## INTERMEDIATE ENRICHMENT

### DISCRETE-TRIAL PROCEDURES VS. FREE-OPERANT PROCEDURES

#### IN THE SKINNER BOX

##### Free-Operant Procedure

*The light is on in the Skinner Box; 23-hour-water-deprived Rudolph presses the lever. "Click". Rudolph has a drop of water. Rudolph presses again. "Click". Water. And so goes the rhythm of continuous reinforcement.*

*The light is on in the Skinner Box; Rudolph presses the lever once, twice, three times.....10 times — "Click". Rudolph has a drop of water. This, as we've discussed is intermittent reinforcement.*

*Both of the preceding examples demonstrate free operant responding — there may or may not be an  $S^D$ ; then there can be several responses, with the responses being reinforced either continuously or intermittently. In a free-operant procedure, there is no  $S^D$  after each outcome; in other words, there is no intertrial interval between each outcome and the next  $S^D$ .*

##### Discrete Trial Procedure

*The light is on in the Skinner box; Rudolph presses the lever. Click. Rudolph has a drop of water and the light goes off. Rudolph presses the lever again. Nothing. Then, after a few seconds, the light comes on again; and Rudolph's pressing is once again reinforced with water.<sup>47</sup> This is an example of a discrete-trial procedure — there is an  $S^D$ , a single response, and an outcome, followed by an  $S^D$  (intertrial interval); then the next trial starts.*

#### IN THE CLASSROOM

*Now let's look at discrete-trial and free-operant procedures in the classroom. Here, are two procedures Mae and crew are using both in their work with Jimmy, the little boy with the big label, autism.*

##### DISCRETE-TRIAL PROCEDURE

*Sue sits at a small table facing Jimmy. She puts several objects on the table.*

##### First trial

*$S^{D\Delta}$ : Sue says, "Jimmy, point to the horse."*

*Response: Jimmy points to the horse.*

*Outcome: Sue says, "Good boy, Jimmy." (a learned reinforcer for Jimmy)*

*$S^A$  (Intertrial interval) Sue says nothing.*

##### Second trial

*$S^D$ : Sue says, "Jimmy, point to the cup."*

*Response: Jimmy points to the cup,*

*Outcome: Sue says, "Good boy, Jimmy."*

##### $S^A$ (Intertrial interval)

*The basic features of this discrete trial procedure in the classroom are the same as those in the Skinner Box. There is an  $S^D$ , a single response, and an outcome, followed by an  $S^A$  (intertrial interval); then the next trial starts. Again, there is an  $S^D$  (maybe the same one as before, maybe a new one), a single response, and an outcome, followed by an intertrial interval.*

*Then Sue starts the next discrete trial:*

##### Third trial

*$S^D$ : She says, "Jimmy, point to the shoe."*

*Response: But this time, he points to the car.*

*Outcome: So Sue goes into what's called a correction procedure: she says, "No, this is the shoe," as she points to the shoe. Then she says, "Jimmy point to the shoe." This time Jimmy points to the shoe. "Good boy, Jimmy." And the correction procedure ends. (We can think of that entire correction procedure as the outcome for the third discrete trial.)*

##### $S^A$ (intertrial interval)

*Behavioral approaches to working with children labeled autistic make much use of discrete-trial procedures. This training has proven so effective, that parents of such children often ask their school districts to provide discrete-trial training for their*

<sup>47</sup> This example of a discrete trial procedure is fairly contrived — it would rarely, if ever, actually be done in a Skinner Box.

<sup>48</sup> Remember,  $S^D$  — a stimulus in the presence of which a response will be reinforced or punished. It may help to review the concept of a discriminative stimulus in chapter 12.



## Chapter 17. Ratio Schedules

children. As a result, the demand for trained behavior analysts has greatly increased.

**FREE-OPERANT PROCEDURE**

Now let's look at a different type of training procedure....

$S^0$ : Sue and Jimmy at the snack table.

Response 1: Jimmy says, "Juice, please."

Outcome: Sue gives him a sip of juice."

Response 2: Jimmy says, "Juice, please."

Outcome: Again, Sue gives him a sip of juice."

$S^A$  ((intertrial interval): Sue and Jimmy leave the snack table.)

*Notice that basic features of this free-operant procedure in the classroom are the same as those in the Skinner Box. There may or may not be an  $S^0$ ; then there can be several responses, with the responses being reinforced either continuously or intermittently. In a free-operant procedure in the classroom, there is no  $S^0$  after each outcome, and there is no intertrial interval between each outcome and the next  $S^0$ .*

In the juice example, Jimmy's responses were reinforced continuously. In the next example, his responses are reinforced intermittently. Notice that there is still no  $S^0$  or intertrial interval in the procedure:

Jimmy and Sue are sitting on the floor in the structured-play area.

Response 1: Jimmy picks up one toy and puts it back in the storage box.

Response 2: Then another.

Response 3: And another, etc.

Outcome: Once all the toys are in the box, Sue says, "Thanks Jimmy, good boy; now what do you want to play with?"

In this case, I don't think there's an  $S^0$ , at least not for each, individual response: our operandum test suggests that each toy is an operandum (like Rudolph's lever), rather than an  $S^0$ . But—I really had to strain to come up with such an example without failing our sleaze test—(sleaze test—is the example unnaturally strained or distorted from reality just to illustrate the concept at hand?)

*In the classroom, just as in the Skinner Box, trials which are separated by intertrial intervals distinguish discrete-trial procedures from free-operant procedures.*

**HYBRID DISCRETE-TRIAL/FREE-OPERANT PROCEDURE**

*Though understanding the distinction between a free-operant procedure and a discrete trial procedure can be helpful when talking with behavior analysts, it was difficult to come up with a classroom free-operant example.<sup>99</sup> We really had to strain to come up with such an example without failing our sleaze test (sleaze test—is the example unnaturally strained or distorted from reality just to illustrate the concept at hand?). Whenever we have to strain that much to come up with an example, it suggests to us that perhaps there just aren't that many examples in that context. This, in turn prompts us to take an honest look at what really is going on.*

Here's a more typical free-operant example in the classroom:

Jimmy and Sue are sitting on the floor in the structured-play area.

Response 1: Jimmy picks up a piece of the puzzle and puts it in the puzzle form.

Response 2: Jimmy picks up a second piece of the puzzle and puts it in the puzzle form.

Response 3: Jimmy picks up a third and final piece of the puzzle and puts it in the puzzle form.

Outcome: Jimmy now has the completed picture of (gag me with a spoon) his much beloved Barney. And Sue says, "Good work, Jimmy."

Now what's so typical about this example is that it's really a hybrid, discrete-trial/free-operant procedure—each free-operant response, itself, consists of a discrete trial—as follows:

**Free-Operant Component — Putting Together the Entire Puzzle**

$SD$ : None. The puzzle is an operandum.

Response: Jimmy puts the puzzle together.

Outcome: The puzzle looks like Barney.

$S^0$ : None.

*When looking at the behavior of completing the puzzle, it is clear that there is*

**First discrete-trial component — putting each piece into the puzzle.**

$S^0$ : The puzzle form has a particular configuration and the piece in Jimmy's hand has a particular configuration.

Response: Jimmy puts his piece in the matching hole in the puzzle.

<sup>99</sup> We don't want to suggest, however, that free-operant responding doesn't exist. Take the very simple example of eating an apple. Each response of biting into the apple is reinforced by the sweet taste of the apple. There is no  $S^0$ , no  $S^A$  and no intertrial interval. Free-operants surround us everyday. It's just hard to used them in the classroom.

## Chapter 17. Ratio Schedules

Outcome: The piece fits (and during initial training he also got praise from Sue). Now we are in an  $S^d$  condition for that piece, but not for the entire puzzle.

*SD (Intertrial interval) for that piece.*

*So, putting each puzzle peice in the puzzle constitutes a discrete-trial response. There is an intertrial interval after each response. But the response of putting the whole puzzle together is a free-operant. There is no  $S^d$  or intertrial interval after the puzzle is done.*

**QUESTIONS**

1. What's an example of
  - a. a free-operant procedure in the Skinner Box?
  - b. a discrete-trial procedure in the Skinner Box?
  - c. a discrete-trial procedure in the classroom?
  - d. a free-operant procedure in the classroom?
  - e. hybrid discrete-trial/free-operant procedure in the classroom?everyday-life?

**Appendix K**  
**“Sick Social Cycle”**

## Chapter 4. Punishment

**Definition: Concept****Overcorrection**

- o A contingency
- o on inappropriate behavior
- o requiring the person
- o to engage in an effortful response
- o that more than corrects
- o the effects of the inappropriate behavior.

**QUESTION**

1. *Overcorrection*—define it and give an example.

**CONCLUSIONS**

These experiments suggest several conclusions:

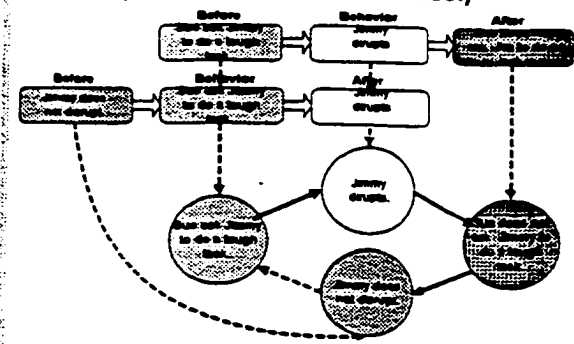
1. In many cases, you don't need to use electric shock. You can get rid of inappropriate behavior using more acceptable aversive outcomes, such as
  - o the effort of squeezing your fist
  - o the effort of correcting for past disruptions
  - o the effort of physical exercise
  - o the brief touching of an ice cube to the face
  - o a squirt of sour lemon juice
  - o a reprimand
  - o visual screening
2. These aversive outcomes can quickly and effectively suppress behavior, even if the person has been doing that behavior for many years, for example, in the cases of
  - o habitual behavior
  - o self-injurious behavior
  - o aggressing
  - o teeth grinding
  - o goofing off
  - o self-stimulating
3. Even with excellent reinforcement programs, added punishment sometimes greatly improves performance, as in the cases of
  - o a remedial grade-school classroom and
  - o vocational training for people classified as profoundly mentally handicapped
4. Because the punishment contingency usually suppresses behavior so quickly and effectively, the client usually makes little contact with the aversive outcomes, as in the cases of
  - o lemon-juice punishment of regurgitation
  - o shock punishment of self-injurious behavior
  - o shock punishment for harmful sneezing
  - o visual screening for disruptive self-stimulation
  - o contingent exercise for aggression against people
  - o overcorrection for aggression against property

**Example of the Sick Social Cycle  
(Victim's Punishment Model)  
Behavioral Special Education**

**JIMMY, THE AUTISTIC CHILD<sup>15</sup>—PART II**

Remember from chapter 3, how Jimmy escaped difficult tasks by disrupting the training sessions. Well, he and Sue had another type of sick social cycle going, because she reinforced his violent disruptions by allowing him to escape the difficult training task. On the other hand, Jimmy's violent disruptions punished Sue's insisting that he stay on task. In this case, Sue (the victim) stopped her appropriate insistence that Jimmy stay on task because her insistence was being punished by Jimmy, the perpetrator's aversive disruptions.

**Jim & Sue's Sick Social Cycle  
(Victim's Punishment Model)**



We start with Sue's asking Jimmy to do a tough task. In a sense, that causes Jimmy to disrupt (the solid arrow between the two). And in a sense, Jimmy's disruption causes Sue to stop insisting that he do the tough task (the next solid arrow). And in a sense, Sue's no longer insisting causes Jimmy to stop disrupting (the third solid arrow). For the final connection, we've continued with our dashed-arrow tradition; here it indicates that it might be better here just to say Jimmy's not disrupting is followed by Sue's asking him to do a tough task. But once again, these arrows are becoming metaphysical, and your or your teacher may want you to say *followed by* for all four arrows.

We should not read more into Jimmy's violent disruptions than is there. He is simply making a response that has been reinforced in the past. We should not say that he is trying to escape, nor trying to control Sue, nor trying to communicate his needs, nor on a power trip. He is not necessarily even aware of what he's doing and most likely not aware of the contingencies controlling what he's doing. And the same might be said of Sue; she might not have realized that she was letting Jimmy off the hook when he disrupted; let alone that her failure to hang in was reinforcing

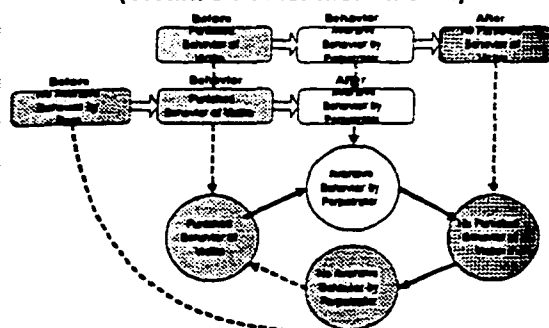
<sup>15</sup> Based on Carr, E. G., & Durand, V. M. (1985). Reducing behavior problems through functional communication training. *Journal of Applied Behavior Analysis*, 18, 111-126.

## Chapter 4. Punishment

his disruptions. Such lack of awareness is almost certainly the case for many classroom teachers, even special ed. teachers.

In chapter 3, we saw an example of the sick social cycle based on an escape contingency for the victim. Dawn's inappropriately timed behavior was reinforced by escape from Rod's crying. In the case of Jimmy and Sue, we have a different type of sick social cycle, one based on punishment of the victim's appropriate behavior. The following is a generic diagram of this sort of social interaction.

**The Generic Sick Social Cycle  
(Victim's Punishment Model)**



Note that the first contingency is always an escape contingency, where the inappropriate behavior of the perpetrator is reinforced by escape from an aversive condition.

Note that the second contingency is always a punishment contingency, where the appropriate behavior of the victim is punished.

Remember that the dead-man test does NOT apply to the before and after conditions of a contingency diagram. So it's O.K. that the victim is not behaving in the after condition of the first condition, because that's really a stimulus condition for the perpetrator. And similarly, it's O.K. if there's no aversive behavior by the perpetrator in the before condition of the second contingency diagram.

**Definition: General Rule**

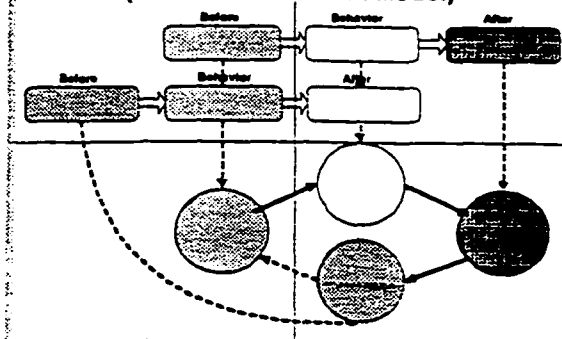
**The sick social cycle (victim's punishment model)**

- Often aversive behavior occurs
- because such behavior is reinforced
- by escape from an aversive condition imposed by an other person.
- In turn, that aversive behavior
- punishes the imposing of the aversive condition by the other person.

**QUESTION**

1. Sick social cycle (victim's punishment model)—define it and give an example.
  - Draw the two contingency diagrams for your example.
  - Draw the circular diagram of the sick social cycle.
2. Now please fill in the diagram for your whole sick social cycle. (The contingency for the perpetrator goes in the top row, and the contingency for the victim goes in the second row.)
3. Sick social cycle (victim's punishment model)—define it and give an example.
  - Draw the two contingency diagrams for your example.
  - Draw the circular diagram of the sick social cycle.
4. Now please fill in the diagram for your whole sick social cycle. (The contingency for the perpetrator goes in the top row, and the contingency for the victim goes in the second row.)

**The Generic Sick Social Cycle  
(Victim's Punishment Model)**



- Make sure the first contingency is an escape contingency, where the inappropriate behavior of the perpetrator is reinforced by escape from an aversive condition.
- Make sure the second contingency is a punishment contingency where the appropriate behavior of the victim is punished.

**Appendix L**  
**“Moral and Legal Control”**

## 26

# Moral and Legal Control

## FUNDAMENTALS

What's the meaning of life? What's the purpose of life? Every freshman trudges off to college hoping to find the evasive answer (in addition to an improved social life and the skills and/or diploma [union card] needed for that high-paying executive position).

But those students with enough intellectual and self-management skills to make it into their sophomore year find no answer to this question. And by the time they graduate from college, they have learned that a search for the meaning of life is appropriate only for the same green-horn freshman they now send off in search of sky hooks, left-handed monkey wrenches, and snipes. The graduating senior knows life has no purpose, no meaning.

Well, the humble authors of this book never gave up the search for sky hooks, left-handed monkey wrenches, snipes, or the purpose of life. And now that we've recently discovered that purpose, we'll stop to share it with you, before going on with our search for the left-handed monkey wrench and other illusive goals of the naive.

### GOAL-DIRECTED SYSTEMS DESIGN<sup>1</sup>

At first, it might seem that the "purpose" of all life is the promotion of its own well-being. As Darwin pointed out, the environment selects the surviving forms of life; and as a result species evolve in ways that support their own continued survival. The losers don't evolve in surviving ways. So the survivors do survive, and the losers don't. And thus we have biological evolution. However, their well-being or even survival isn't the purpose of those surviving forms of life, any more than the purpose of a wave is to lap against the shore. That's just the way it works.

But we human beings aren't just any life form. We aren't snails. We aren't paramecia. We aren't fungi (the plural of fungus). We're thoughtful, reasoning life forms—at least sometimes. So, though our lives *may not* have a purpose, they *can* have.

### THE WELL-BEING OF LIFE FORMS (HUMAN, NONHUMAN, AND PLANT)

Regardless of how humanity got here, whether through divine decree or cosmic accident, *we suggest that humanity should select as its purpose the well-being of life in the universe.* We suggest this, even though a careful analysis shows that purpose doesn't logically follow from Darwin's analysis of the evolution of life forms. We believe human beings can act intelligently enough to select their purpose; and we nominate the well-being of life as the purpose we human beings should select.

Regardless of whether we are now atheists, agnostics, or born-again true believers, most of us have grown up in the context of one or another of the world's great religions. So most of us have acquired learned values (learned reinforcers and aversive conditions) that support the notion that we should work toward the betterment of life on earth.

#### Definition: Concept

##### Values

- Learned and unlearned reinforcers
- and aversive conditions.

In other words, most of us find it reinforcing to know life will survive, especially animal life, more especially human-animal life.

(In fact, hidden deep in our value structure is usually a learned bias for the well-being of the human animal that has the same skin color as ours, the same religion, the same nationality, the same profession, and even the same special orientation within that profession. But nowadays, many of us struggle to rise above such a narrow bias, to embrace all humanity, or even all life.)

Some need to resort to *enlightened self-interest* to justify their concern for nonhuman and plant life. For example, they argue we must care about the survival of the varieties of species in the Amazon rain forest because those species may ultimately help the survival of humanity. Others argue we must care, even if

<sup>1</sup> For an advanced treatment of goal-directed systems design, see Malott, R. W., & Garcia, M. E. (1987). A goal-directed model for the design of human performance systems. *Journal of Organizational Behavior Management*, 9, 125—159.

## Chapter 26. Moral and Legal Control

their survival isn't in our self-interest. However, we've heard of few outside of India who argue for the survival of flies and mosquitoes.

So we're willing to admit some arbitrariness about the ultimate goal of the well-being of life in the universe. We're just saying we've been brought up to value that, and we bet you have, too. Here's what B. F. Skinner said on a related theme. He said pity the culture that doesn't convince its young that its survival is of great value, because that culture will be less likely to survive. We're just expanding the concept of culture a bit to include all life. If you find that too much of a strain and want to reduce it to the well-being of humanity, you wouldn't hurt our feelings.

#### RULES, RESOURCES, AND CONTINGENCIES

Suppose you agree that our ultimate value and goal should be something like the well-being of life in the universe (perhaps with a special bias toward human life on earth). How do we achieve it? Just letting human nature (the direct-acting contingencies of reinforcement and punishment) take its course ends in wars and rumors of wars, threats of nuclear annihilation, starvation, pollution, destruction of our environment, crime, drugs, and on and on. Darwin's survival of the fittest through natural selection works. But the largest creature fit to survive the havoc we are creating may be the cockroach.

So, in self-defense, we may need to provide guidance to our human nature, as wonderful and as horrible as it is. We may need to design systems that guide humanity toward our ultimate goal — the survival and well-being of life, including our human descendants. We may need to use goal-directed systems design.

Goal-directed systems design assumes that to achieve a goal, you should state that goal and consciously design your systems to achieve that goal. Systems are organizations — the United Nations, the United States, Michigan, Western Michigan University, the Psychology Department, this course, this book, your family, you, your car. Yes, we think of you as an organization and a system; and you can be chair of your board of directors, if you like.<sup>2</sup>

If a system is to do more than float aimlessly through life, it needs a goal, an ultimate value. For example, the goal of the United Nations might be the well-being of life in the universe. Systems need resources to achieve their goals. For example, the United Nations may need food, grain, and agricultural technology to prevent people from starving in some Third World countries. Systems also need rules for the use of those resources. For example, the food must go to the starving but powerless masses. And they need contingencies to ensure that food distributors follow those rules. For example, the local distributors of those resources will lose their privilege of distribution if they don't distribute properly—if they put the food on the black market for the highest bidder.

The system must obtain each of those components—the resources, rules, and contingencies. So all systems, including the United Nations and you and your car, need subsystems. And those subsystems must in turn have clear goals, such as the production of food for the United Nations. And those subsystems also must in turn have resources, rules, and contingencies. On and on, unto to the lowest level: Like who buys the paper clips? Like whose turn is it to run over to the deli and pick up sandwiches for the office staff?

#### Definition: Concept

##### Goal-directed systems design

- First you select the ultimate goal of a system,
- then you select the various levels of intermediate goals needed to accomplish that ultimate goal,
- and finally, you select the initial goals needed to accomplish those intermediate goals.

As we will see next, legal and moral control involves setting contingencies to get people to use the world's resources (everything from food and other people down to paper clips) so as to contribute to the well-being of life in the universe. In other words, we suggest that legal and moral control is, or at least should be, part of a goal-directed systems design aimed toward the well-being of life in the universe.

#### QUESTIONS

1. What do the authors suggest is the purpose of life?
  - a. Why?
2. Give a few examples of systems.
3. Goal-directed systems design—define it and give a partial example.
  - a. Point out the role of resources, rules, and contingencies..

#### CONTINGENCIES FOR FOLLOWING THE RULES OF GOOD RESOURCE USE

1. Do you think religion is one of the most important aspects of people's lives?
  - a. yes
  - b. no
  - c. Why?
2. Do you think it's important to understand the role religion plays in people's lives?
  - a. yes
  - b. no
  - c. Why?

<sup>2</sup> System: 1. A group of interacting, interrelated, or interdependent elements forming a complex whole. 2. A social, economic, or political organizational form. *The American Heritage® Dictionary of the English Language (3rd ed.)*. Copyright © 1992 by Houghton Mifflin Company. Electronic version licensed from INSO Corporation.



## Chapter 26. Moral and Legal Control

3. Do you think it's important to understand the role religion plays in people's lives in terms of the principles of behavior?
- yes
  - no
  - Why?

Well, that's what we're going to try to do in part of this chapter. But it's tricky; because it's so important, there is often confusion. What we are trying to do is understand how religion works from a behavioral perspective; but, in no sense, do we mean to offend anyone—Christian, Jew, Muslim, Buddhist, Confuciusist, or atheist.

### Concept LEGAL RULE CONTROL

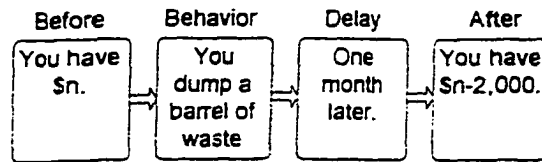
*Don't dump your hazardous wastes here, buddy.*

Goal: healthy life forms.

Resource: uncontaminated environment.

Legal rule: *Don't contaminate or you'll be fined.*

Legal contingency: a fine — analog to a penalty contingency — punishment by the loss of a reinforcer (dollars).



This is an example of legal rule control — the use of added contingencies involving fines, jail, etc.

#### Definition: Concept

##### Legal rule control

- Control by rules specifying added analogs to behavioral contingencies
- and added direct-acting behavioral contingencies
- based on material outcomes.

Note that the legal contingencies are added to the ineffective natural contingencies. Most often the contingencies are analogs, though sometimes they're direct acting (for example, all curfew violators will be shot on sight).

### Concept MORAL (ETHICAL) RULE CONTROL

Ah, there ain't nobody lookin'. So I'll just dump this hazardous waste over here and . . .

**STOP!**

What? Who's that? Who said that?

*This is your conscience, brother. Even when the cops aren't around, I'm always here to keep you on the straight and narrow.*

Well, hee-hee, I was just kidding. I wasn't really gonna' . . .

This is moral rule control — the use of added contingencies involving excommunication, heaven, hell, reincarnation into a lower caste, etc.

#### Definition: Concept

##### Moral (ethical) rule control

- Control by rules specifying added analogs to behavioral contingencies.
- Such rules specify social, religious, or supernatural outcomes.

Note that the moral contingencies are added to the ineffective natural contingencies. Sometimes moral rules are supplemented with direct-acting physical outcomes (for example, the time your mother boxed your ears when she heard you use the Lord's name in vain).

Come on, conscience, it'll cost a fortune to move all these barrels over to an authorized hazardous-waste dump.

*Brother, you dump it here and you'll be a polluter.*

So?

*Polluters are evil people who don't care about anything but the fast buck.*

Well, for sure I don't want to be an evil person.

*Brother, I knew you'd choose the moral path.*

But still, I've only got a few barrels; and that won't hurt much.

**NO!**

Why not, conscience, just a few barrels?

*Because God won't like you. There is no room in Heaven for polluters.*

Are you sure, no room for just one or two?

*No room for even the little toe of a single polluter. Never!*

That's heavy.

Yes, when you sin, the outcomes are sizable and certain, even if they are delayed.

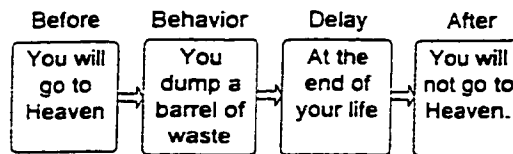
Goal: healthy life forms.

Resource: uncontaminated environment.

Moral rule: *Don't contaminate or you'll experience God's wrath.*

## Chapter 26. Moral and Legal Control

Moral contingency: an analogue to a penalty contingency — exclusion from Heaven or an analogue to a punishment contingency — time in hell.



This is another example of *moral rule control* — the use of added contingencies involving excommunication, heaven, hell, etc.

We started out with this contrived and whimsical example, but we'll end with some serious questions.

1. Do you think most of the world's religions (or at least yours) contain rules of conduct that are important for the proper functioning and even the survival of society?
  - a. yes
  - b. no
  - c. Why?
2. Do you think those religions also contain some sort of contingencies to support the following of those rules?
  - a. yes
  - b. no
  - c. Why?
3. Do you think our whimsical example of the polluter's struggle with her conscience is a good illustration of such a rule and such a contingency?
  - a. yes
  - b. no
  - c. Why?

### MORAL RULE CONTROL<sup>3</sup>

The hungry Yanomamo hunter goes into the Brazilian forest and bags a monkey. Does he skin it, cook it, and eat it on the spot? No, he takes it back to the village to share with others. Why? Because he believes that if he doesn't he will lose his hunting skills. Many hunters even insist that everyone else get a piece of meat before they do, again to avoid losing their hunting skills.

This is an example of goals and their needed resources, rules, and contingencies. The goal is the nutritional support of the village. The resource is the scarce animal protein. The rule is share it. The contingency is punishment by the loss of hunting skills if you gobble it down all by yourself.

For another example, look at the Ten Commandments; for instance: Thou shalt not mess around with someone else's

husband or wife. The goal is the rearing of children. The resource is the family. The rule is don't endanger it with hanky-panky. The contingency is punishment by the wrath of God.

### LEGAL VS. MORAL CONTROL

Usually legal control works well as long as someone is around to observe the behavior and impose the contingency. But often nobody's lookin'—for example, at midnight polluters or at solitary hunters or at married people with roving eyes. Moral or ethical control comes in handy in such cases. So social systems need to arrange for individuals to observe their own behavior and apply the punishment and avoidance contingencies (perhaps automatically). That way the social system (society) can get the individual to follow the rules for the proper use of the system's resources, even when no one's looking. Then we can work toward our ultimate goal (the well-being of universal life) during all our waking days; or at least we can avoid working against that ultimate goal.

As we've seen, sometimes moral control works when legal control fails. But the reverse also applies. Sometimes legal control works when moral control fails:

*Fellow citizens, you have a moral obligation to your country to preserve our scarce resources during these times of crisis. Therefore, to preserve our oil supplies, I ask that you not exceed 55 mph.*

Lots of luck.

*Fellow citizens, we have a new law in this great land of ours. Anyone caught exceeding 55 mph will get a traffic ticket. Collect a few of those tickets, and you'll need to dust off your walking shoes, good buddy.*

*Fellow citizens, you have a moral obligation to your babies and toddlers under four to secure them in an infant or child restraint seat when driving.*

Well, I meant to. Be reasonable. I drive carefully. Who are you to tell me what to do? I know what's best for my child, don't I?

*Hear, hear, fellow citizens. It is now a law of the land that all children under the age of four must be buckled into an infant or child restraint seat.*

If society can't observe the behavior or its outcomes, it doesn't have much choice but to use moral control. For example, impure thoughts are not illegal, just immoral. If society can observe the behavior and cares about the outcome, it uses legal control. For example, letting your parking meter expire won't cause you to go to confession, but it might cost you a buck or so. If society can sometimes observe the undesirable behavior and sometimes it can't, it often uses both moral and legal control. For example, stealing may send you both to the confessional *and* to the police station.

<sup>3</sup> Based on Malott, R. W., & Kent, H. (1976). The development of moral control. In J. Krapfl (Ed.), *Behaviorism and ethics*. Kalamazoo, MI: Behaviordelia.

## Chapter 26. Moral and Legal Control

When Society Cares about an Outcome of a Behavior	
And the behavior is	Society uses
Observable	Legal control
Not observable	Moral Control

**THE COSTS AND BENEFITS OF MORAL CONTROL**

Moral control is hard to establish and maintain. For example, to establish and maintain something that even vaguely suggests moral control, the Jewish culture needs the Old Testament and the Christian culture needs both the Old and New Testaments. These cultures also need the continuous efforts of the rabbis with their synagogues and the priests and ministers with their churches.

Religion battles eternally with harmful direct-acting contingencies — those that lead to the misuse of resources (often human resources), direct-acting contingencies that will destroy the temple of our bodies — drugs of a rapidly increasing variety, from caffeine and nicotine through alcohol and on to crack. Religion battles eternally to prevent the powerful from exploiting the powerless (except when a representative of religion has been bought by the powerful; then religion's function reverses).

Moral control is hard and costly to establish, hard and costly to maintain, and often fails. But when no one else is looking but you and your conscience, or you and your God, moral control earns its keep. The world would be in an even greater mess if we didn't have these moral contingencies.

**THE COSTS AND BENEFITS OF LEGAL CONTROL**

For moral control to work, the social system must establish a special learned aversive condition — the thought of the wrath of God or the thought of the wrath of your parents. And those thoughts must be aversive, even when no one's looking. Such an effective aversive condition is hard to establish and hard to maintain.

Getting people to memorize the specific commandments or rules is easy. The hard part is putting teeth in the bite of those commandments. The hard part is arranging learned aversive outcomes for noncompliance with those rules. Don't be selfish. That's easy for people to memorize. If you are selfish, you will be no more likely to pass through Heaven's gates than would a camel to pass through the eye of a needle. Getting people to accept that rule is the hard part, especially when being selfish generates so many sizable and probable reinforcers.

Sometimes it's easier to establish legal control because it's fairly easy to establish the fear of legal outcomes as learned aversive conditions: Steal this, buster, and we're throwing your rear in jail. Children needn't go to Sunday school for 6 years to establish the possibility of jail as an aversive condition. And the parents needn't go to church the rest of their lives to maintain that possibility of jail as an aversive condition. As long as jail is a highly probable outcome, rules involving it control behavior well. Of course, it all falls apart when jail is improbable.

However, there's a trade-off. True, it takes most of the efforts of organized religion to establish and maintain our sensitivity to the reinforcing and aversive values of religious outcomes. But all it takes is God or our conscience to monitor compliance with those moral rules, once society has established a conscience or a belief in God. And we needn't pay taxes to support God or our conscience (though we must financially support religion's efforts to maintain our sensitivity to the reinforcers and aversive conditions associated with religious moral rules).

But we do pay heavy taxes to support the police and the judges. Also it may not cost us much to establish the thought of jail as an aversive condition, but the jails and prisons themselves add a heavy tax burden. By contrast, we don't have to pay taxes for the maintenance of Heaven and hell; we just have to support religion's efforts to establish and maintain our belief in them.

	Costs	Benefits
Moral Control	Aversive control is hard to establish and maintain.	Easy for God to monitor compliance with moral rules.
Legal Control	Expensive to monitor compliance with rules.	Easy to establish jail as an aversive condition.
	Getting caught is often improbable	

**RESPECT FOR OTHER PEOPLE'S VIEWS**

We have three different but overlapping groups of readers for this book — believers, atheists and agnostics, and behaviorists: some behaviorists are believers and some are atheists and agnostics. We want to remain friends with all of them.

We have the greatest respect for and appreciation of religion. In no way are we criticizing organized religion. We are simply analyzing one of the crucial contributions of organized religion. We are trying to understand the contribution of religion to the material well-being of humanity; others have written more effectively than we could about the contribution of religion to the spiritual well-being of humanity. Some of our best students think we should not include an analysis of the behavioral processes underlying the material contributions of religion; other of our best students think this is the most important part of our book. It ain't easy, but we're doing our best to keep everyone happy.

without shirking our responsibilities to point out this important intersection between behavior analysis and religion<sup>4</sup>.

On the one hand, we are not challenging traditional views of Jesus, God, the devil, Heaven, and hell. On the other hand, we are not endorsing them. Challenging or endorsing these views is not the point of this chapter. We are simply looking at part of the profound impact these religious views have on humanity. And we are simply trying to understand the psychological (behavioral) processes through which these views have their impact.

Also, some behaviorists may be suspicious of our use of the mentalistic term *conscience*. We may seem to be losing touch with our behavioristic base. No. We just mean self-observation, self-evaluation, and rule control. We're using poetic license only to keep things flowing. Just consider us to be scientists trying to get across complex concepts and analyses without putting our readers to sleep.

### THE AVERSIVE BASIS OF MORAL AND LEGAL CONTROL<sup>5</sup>

#### THE MODEL OF RELIGIOUS CONTROL

We should note that the contingencies described in this chapter are generalized forms of moral and legal control and that cultures vary in the specifics of moral control. The use of heaven and hell as a form of moral control comes from Judeo-Christian traditions. And we write within this context because most of the readers of this text are familiar with the concepts of Heaven and Hell. However, in some cases, aspects of moral control may be more complex and subtle than we indicate here. Even agnostics and atheists are affected by the moral contingencies in their cultures. Although they may not believe their behavior has religious consequences, their morality is usually similar to that of their religious peers. Agnostics and atheists refrain from stealing, lying, killing, etc., just as the religious do.

#### WHY DO WE NEED HELL TO HAVE MORAL CONTROL?

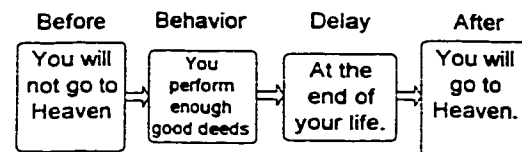
Why aren't the promises of Heaven enough to produce moral behavior from believers? Why do we need the threat of hell, as well? Why must aversive control play such a large role in our moral contingencies?

From a functionality standpoint, it may be helpful that religion invokes the threat of hell. Here's the problem with using rule-governed analogs to reinforcement based on the promise of rewards in an afterlife such as access to Heaven. We can always postpone that difficult walk on the razor's edge that leads to Heaven. We can always sin today and struggle up the straight,

narrow, and steep road to Heaven tomorrow, or maybe the day after tomorrow. But rule-governed analogs to punishment and avoidance often control our behavior more reliably than rule-governed analogs to reinforcement. Why? Because they don't let us procrastinate our lives away in sin.

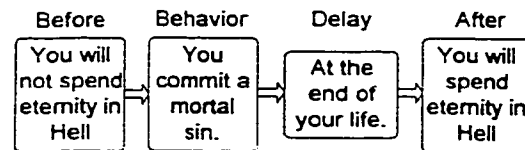
This rule won't control our behavior very well: Perform many good deeds and you will spend eternity in Heaven. Why not? Because the statement of that rule makes noncompliance an aversive condition. It allows us to cop out and procrastinate. It allows us to say, I am too busy to perform any good deeds right now, but I will perform them when I get time. This is an ineffective rule-governed analog to reinforcement by the presentation of a reinforcer.

#### INEFFECTIVE RULE-GOVERNED ANALOG TO REINFORCEMENT BY THE PRESENTATION OF A REINFORCER



But what about this rule? Commit a mortal sin and you will spend eternity in hell. The statement of that rule does make noncompliance a most aversive condition (for believers). This is an effective rule-governed analog to punishment.

#### EFFECTIVE RULE-GOVERNED ANALOG TO PUNISHMENT



#### WHAT IS THE ROLE OF HEAVEN IN MORAL CONTROL?

But, you might say, moral control isn't all that aversive. People think of Heaven as an afterlife rich with reinforcers. We would agree that Heaven, rich with reinforcers, is crucial to moral control, but not because Heaven is the end result of procrastination-tolerating reinforcement contingencies.

<sup>4</sup> We've asked some professors of religion about the appropriateness of this topic and they thought that the topic was interesting and important. One in particular thought that one important benefit to society of religion is moral control and he believed, as we do, that moral control is primarily based on aversive control. He told us that our presentation of moral control can be applied to most religions without dismantling their belief systems. analysis of the moral control.

<sup>5</sup> Based in part on Malott, R. W. (1988). Rule-governed behavior and behavioral anthropology. *The Behavior Analyst*, 11, 181—203.

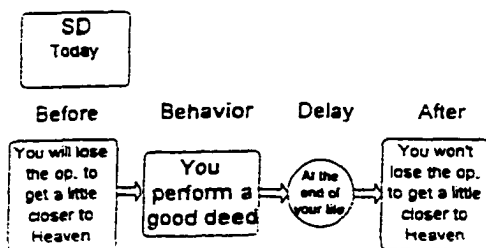
## Chapter 26. Moral and Legal Control

Then what role does Heaven play in supporting our moral behavior? Heaven gives us something to lose! If you do too many evil deeds (sins of commission), you will not get the reinforcers of Heaven (a rule-governed analog to punishment by the prevention of the presentation of reinforcers). And if you fail to do enough good deeds (sins of omission), you also will not get the reinforcers of Heaven (a rule-governed analog to avoidance of the loss of reinforcers). And with analogues to avoidance come the deadlines that battle procrastination.

For example, at one time, parents instructed their children to perform the following prayer: *If I should die before I wake, I pray the Lord my soul to take.* The parents said or implied to their children something like this: Say your prayers every night before you go to bed (deadline); so you will avoid harm to your soul, should you die before you awake.

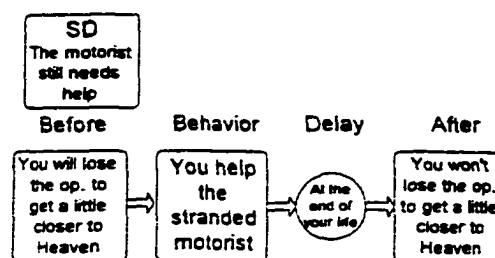
A similar precautionary rule might be: *Always do good deeds every day (deadline) to ensure the salvation of your soul, because you never know when you may die.* But this is similar to the analogue to reinforcement contingency we discuss earlier; so why would this analogue to avoidance contingency control behavior when the simple instruction to perform many good deeds, analogue to reinforcement, didn't? Because the daily-deed rule contains a deadline.

## EFFECTIVE ANALOG TO AVOIDANCE OF THE LOSS OF A THE OPPORTUNITY FOR A REINFORCER.



Deadlines that fight procrastination may also be established in other ways. When an opportunity to do a good deed is presented to a person, it sets up a deadline for doing that good deed. For example, if you're driving along the highway at night and you see a stranded motorist, you have the opportunity to help that motorist and thus to avoid losing the opportunity to get a little closer to heaven. But that opportunity has a deadline. You need to help the motorist now. If you come back next week to help the motorist, it will be too late—the motorist will be gone and you will have lost that opportunity to get a little closer to Heaven.

## EFFECTIVE ANALOG TO AVOIDANCE OF THE LOSS OF A THE OPPORTUNITY FOR A REINFORCER.



So moral rules control sins of commission (committing bad deeds), when they're stated as analogs to punishment. And they control sins of omission (omitting or failing to do good deeds), when they're stated as analogs to avoidance.

So, as near as we can tell, moral control that benefits the well-being of humanity is exclusively, or almost exclusively, aversive control. In the case of religion, that aversive control uses rule-governed analogs to punishment and avoidance. Hell (or something like it) is the aversive condition to be presented, and Heaven (or something like it) is the paradise to be lost.<sup>4</sup>

## WHAT ABOUT SECULAR HUMANISM?

Sid's Seminar

Joe: I'm into secular humanism.

<sup>4</sup> However, some argue that once you are saved, once you accept Jesus Christ into your heart, you will go to Heaven automatically. Perhaps, but surely, only if accepting Jesus Christ means that you stop sinning and dedicate yourself to a life of good deeds. In other words, how do we know a person has truly accepted Jesus? We know people not simply by their words but also by their deeds. To accept Jesus Christ into your heart means you walk the walk, you don't just talk the talk. If a person claims to accept Jesus but continues in extremely sinful ways, surely Heaven's gates would not open for that person. Heaven is so difficult to access that Jesus felt compelled to warn that the burden of a sack of gold across your back will keep you from passing through Heaven's gate more surely than the burden of the hump on the back of a camel will prevent it from passing through the eye of a needle. It seems as if Heaven is entered only by those who live a righteous life, not by those who merely say they have accepted Jesus Christ.

There is also the more predestinationist Christian view that states that Jesus died to save us from our sins, that whether or not we sin, it has been preordained that we either will or won't go to heaven. However, if you sin, in spite of what Jesus has done for you, you are a disappointment, even though you may have been predestined to sin and be a disappointment. And it might be that this knowledge that you will be a disappointment also sets up analog avoidance and punishment contingencies that are part of the predestinationist system that prevents you from sinning. On the other hand, it may be that some predestinationist Christians would prefer not to consider that behavioral processes may be involved in the predestination of moral behavior.

## Chapter 26. Moral and Legal Control

Tom: What's that?

Joe: Humanists care about the well-being of humanity. *Secular* means "not religious." So we say *secular humanism* to make it clear that we don't use the concepts of Heaven and hell. We believe in and care about only the well-being of human beings or maybe even the well-being of life in the universe, in the here and now.

Eve: Interesting.

Joe: Here's one of the best features of secular humanism: We get away from aversive control. No threats of hell. No threats of the loss of Heaven.

Sid: As I understand it, secular humanism supports pretty much the same sorts of moral rules as do most formal religions.

Joe: Yes, sir. Except the rules don't describe aversive contingencies. The rules describe analogs to contingencies of reinforcement.

Eve: How can that be? We were just reading that analogs to reinforcement don't work too well with moral control.

Joe: Well, I've never really thought about it before.

Eve: What's the reinforcer in your analogs to reinforcement?

Joe: The well-being of life in the universe, in the here and now.

Tom: For example?

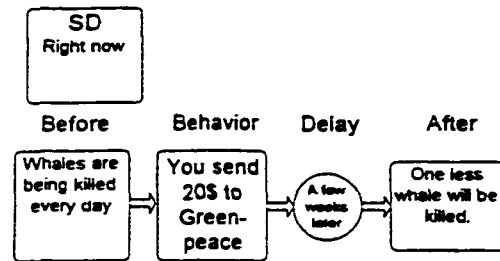
Joe: If you send \$20 to Greenpeace, you'll be helping to save the whales.

Tom: What happens if you don't contribute?

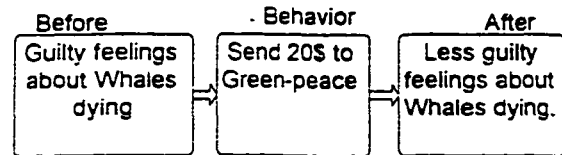
Joe: The whales aren't as well off.

Eve: Joe, that sounds like an analog to an avoidance contingency to me. Like sending the \$20 helps to avoid the aversive outcome of losing another whale to the whaling industry. The only problem with this contingency is that it may allow too much procrastination, because there's no clear deadline; so the humanist may set aside the solicitation letter and envelope, meaning to send in a check tomorrow, only to find that a year later the solicitation material still sits unanswered, buried under an accumulated stack of other procrastination papers. But the person might also say to himself or herself, if I don't send in the check right now, I may forget to, and so right now would be come an effective deadline.

#### EFFECTIVE ANALOG TO AVOIDANCE OF THE LOSS OF A REINFORCER



Joe: You may be right. Also, I'll have to admit that aversive control is involved in the theoretical direct-acting contingency that gets me to comply with the indirect-acting analog to an avoidance contingency—prevention of the loss of a reinforcer. In other words, aversive control is involved in the contingency that actually gets me to send in the 20 bucks. Giving my money to Greenpeace helps me escape a guilty conscience. I feel guilty if I don't make my humble contribution to saving the whales.



Tom: So you admit your secular humanism is as much involved with aversive control as is organized religion?

Joe: I'd have to work through a few more examples to be sure, but I'll admit it's beginning to look as if all moral control is based on aversive contingencies, regardless of whether the control is religious or secular.

#### WHAT ABOUT LEGAL CONTROL?

##### Sid's Seminar

Tom: I'm not sure about the value of Joe's secular humanism. What I am sure about is the value of law and order. Is that based on aversive control, too?

Joe: You've got to be kidding. Law and order bristles with aversive control.

Max: It sure does. That's why many behavior analysts have criticized traditional legal systems because they emphasize aversive control and downplay reinforcement by the presentation of reinforcers.

Tom: What else could they do?

## Chapter 26. Moral and Legal Control

Max: Instead of penalizing illegal behavior, they could reinforce legal behavior.

Tom: How?

Max: Instead of giving speeding tickets backed with fines, they could give safe-driving awards backed with cash prizes.

Tom: That's a great idea.

Joe: Except for a couple of problems: First, taxpayers are already revolting, and the budget of our overworked legal system is already straining. Can you imagine the state police agreeing to sell 10 patrol cars and lay off 20 traffic officers to finance cash prizes for safe driving?

Sue: And if you made reinforcement intermittent enough to be practical, it would be too intermittent to maintain safe driving.

Joe: That's related to my second point: It's not clear that would be a reinforcement procedure anyhow. It may be more like an analog to punishment by the prevention of the presentation of a reinforcer.

Tom: What do you mean?

Joe: Like speeding results in the prevention of a low probability event—the presentation of a cash prize. But the speeder can say, I probably won't get the award anyway, so I might as well speed because, for sure, speeding will get me home quicker.

Eve: So whenever you have laws to prevent behavior, like speeding or stealing, they're going to involve some sort of punishment contingency or its analog.

Tom: What about laws to encourage behavior—like laws to encourage citizens to pay their taxes on time? Couldn't you give a bonus to everyone who paid his or her taxes on time?

Joe: First, to pay for it you'd have to increase everyone's taxes; so that's sneaky from the start. And second, you've got a deadline—April 15. And deadlines mean aversive control. It's an analog to avoidance of the prevention of the presentation of a reinforcer.

Tom: Huh?

Joe: You'd beat the deadline to avoid preventing the tax man from presenting you with your bonus.

Sue: More aversive control.

Sid: Let me butt in with this summary, otherwise the transcript of this seminar will get too long.

## SID'S SUMMARY

1. Immoral behavior and illegal behavior don't differ fundamentally. Both usually interfere with achieving our ultimate goal—the well-being of life in the universe. In one way or another, both usually involve a failure to follow the rules for proper uses of resources needed for life's well-being.
2. Society must add both moral and legal contingencies to counteract the natural contingencies of reinforcement and punishment that support immoral and illegal behavior.
3. Both moral and legal contingencies are usually indirect-acting analog contingencies. So they control behavior only when they are expressed as moral and legal rules.
4. Though immoral and illegal behavior don't differ fundamentally, in practice it's harder to observe some behaviors than others.
5. Generally, society adds moral analog contingencies to control behavior that's harder to observe and legal analog contingencies to control behaviors that are easier to observe. So behavior we call *immoral* is usually harder to observe directly, and behavior we call *illegal* is usually easier to observe.
6. Sometimes we combine moral and legal contingencies, especially when we can sometimes observe and sometimes not observe the same class of behavior.
7. Moral analog contingencies usually have outcomes that don't materially affect the individual who is behaving. For moral analog contingencies based on religion, the outcomes are supernatural or spiritual, not material. For moral analog contingencies based on secular humanism, the outcomes for the behaving person are social—the well-being of others.
8. Legal analog contingencies usually have material outcomes (for example, penalties or imprisonment).
9. Moral and legal rules describe both behaviors that should occur and those that shouldn't.
10. Rules describing analogs to punishment and penalty contingencies suppress behaviors that shouldn't occur. Rules describing analogs to avoidance support behaviors that should occur.
11. In most cases it seems necessary that the moral and legal analog contingencies be based on aversive control.

## QUESTIONS

Note the contingencies in this section are there only as an explanatory aid. You do not need to memorize them to do well on this quiz.

1. *Legal rule control*—define it and give an example, including the contingency.
2. *Moral (ethical) rule control*—define it and give an example, including the contingency.
3. When do you need moral control? Give an example.
4. When do you need legal control? Give an example.

## Chapter 26. Moral and Legal Control

5. What is the function of Heaven and hell in supporting moral behavior?
  - a. What role does procrastination play? Give an example.
  - b. Some argue that promises of Heaven control moral behavior through analogs to reinforcement, with Heaven being the reinforcer. In terms of rule control, why is this an inadequate explanation? Give an example. Explain this in terms of establishing operations.
  - c. In terms of rule control, why do threats of hell work? What role do analogs to punishment play? Explain this in terms of establishing operations. Give an example.
  - d. What role do analogs to avoidance of hell play? Explain this in terms of establishing operations. Give an example.
6. According to the authors, what is the function of Heaven in terms of
  - a. reducing sins of commission (committing bad deeds)?
  - b. reducing sins of omission (omitting or failing to do good deeds)?
7. What's the relative role of aversive control versus reinforcement by the presentation of reinforcers in secular humanism?
8. What's the relative role of aversive control versus reinforcement by the presentation of reinforcers in the legal system?
  - a. Using examples, explain your answer for laws designed to decrease behavior.
  - b. Using examples, explain your answer for laws designed to increase behavior.

**WHY DO MORAL AND LEGAL CONTROL FAIL?**

Our world would be in an even bigger mess than it is now if we didn't have moral and legal control. But one reason we are now in such a mess is that moral and legal control often fail. Why? Why do moral and legal rules describing contingencies that are not directly acting sometimes fail to control our behavior? There are several reasons.

Often, for legal rules, the penalty for each act is too improbable (for example, you probably won't get caught speeding during the next minute). Often, with religious rules, the penalty for each act is too small. This could occur because the person rationalizes an exemption from the rule or doesn't believe it in the first place (for example, "It says you're not supposed to kill, but God didn't mean in times of national emergency," or "I'm not so sure a God exists anyway, so why shouldn't I steal a few dollars?").

(By failure of moral or religious control, we mean failure of moral rules, such as the Ten Commandments, to control our behavior. We don't mean failure to get people to profess a belief in religion. For example, there are many more people who claim to be Christians than who consistently practice the teachings of Christ.)...

<b>Why Do Legal and Moral Control Fail?</b>	
Moral Control	Penalty too small
Legal Control	Penalty too improbable

**QUESTION**

1. Give two reasons for why moral and legal control often fail.
  - a. Give an example for each reason.

*Example***APPLICATIONS OF ETHICAL (MORAL) AND LEGAL CONTROL**

One way to evaluate the health of a culture is in terms of the well-being of its most wealthy and powerful. But, of course, the well-being of the wealthy and powerful is assured in all cultures except those breathing their last breath. Even the well-being of the average members or of the middle-class members may not reflect our most strict standards for the health of a culture. Perhaps our most strict standards are found in measures of the well-being of the poorest and most powerless in a culture—those not in position to demand good treatment.

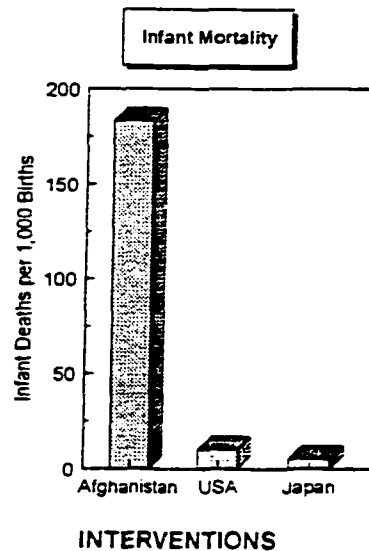
Who are the poorest and most powerless in almost any culture? The children, the mentally handicapped, those labeled mentally ill, and the prisoners. These people are often not in a position to demand their share of society's resources. And they are not often in a position to demand that we reduce the aversive conditions of their lives. So the culture that helps the helpless may meet our strictest standards of health.

Now who are these infants whose deaths add to the mortality statistics? The children of the rich and powerful or of the middle-class? Of course not. These horrible statistics come from the dying children of the poor and powerless. And, as we must care for the well-being of the children of the poor and powerless, so also must we care for the well-being of the mentally handicapped, those labeled mentally ill, and prisoners.

We're pleased to live in a society where so much good work is being done to protect and even improve the well-being of these poor and powerless. Such folks are much better off than they would have been in previous centuries. And they're much better off than they are in other countries. For example, in the United States the infant mortality rate is 10 per 1,000, as compared to 183 per 1,000 in Afghanistan. (Imagine what it must be like being a parent knowing your infant has only 1 chance in 6 of surviving.) But even in the United States, we still have room for improvement when compared to Japan, with its infant mortality rate of 5.2 per 1,000.



## Chapter 26. Moral and Legal Control



### INTERVENTIONS

#### THE RIGHT TO EFFECTIVE INTERVENTION (TREATMENT)

In Chapter 4, we discussed the right to effective interventions. Most people agree that everyone has a right to help with his or her problems—at least as long as we talk in generalities. But many people disagree when we get down to the nitty-gritty.

And the nitty-gritty has become especially nitty and gritty now that the powerless have not only a moral but also a legal right to effective interventions rather than just custodial maintenance. This is especially true now that for the first time in the history of human services, we have effective interventions that can at least help most of these unfortunate people, even if those interventions can't solve all their problems. And those interventions are generally behavioral interventions. Before behavior analysis, custodial care was often the best anyone could do. But that's not true anymore. Generally, a right to effective intervention now means a right to behavioral intervention, though many would argue the data are not all in on that one.

**Goal:** physically and behaviorally healthy life forms.

**Resources:** powerless people.

**Legal rule:** *Provide the powerless with effective repertoire-improving interventions or suffer legal penalties.*

#### NITTY-GRITTY #1: WHEN, IF EVER, SHOULD WE USE AVERSIVE CONTROL?

Perhaps the use of aversive control is the most debated moral and legal nitty-gritty in the field of behavior analysis. We have

reviewed much of that debate earlier, in Chapters 4, 6, and 7. Chapter 20 also contains a section comparing and contrasting various ways to reduce undesirable behavior.

A glance at humanity's history may suggest why people often resist the use of aversive control. We can almost view the history of humanity as the history of the misuse of aversive control. It's the history of the powerful using aversive control to redistribute the resources of the less powerful. And though the powerful may redistribute those resources in the name of the well-being of humanity, somehow a disproportionate share of those resources ends in the possession of the redistributors. In other words, it's easy to guess which portion of humanity has had its well-being improved. (If you don't think so, ask the original North Americans, or the indigenous peoples of the Brazilian Amazon, or the indigenous peoples of any currently developing country. They've all been ripped off and are continuing to be ripped off.)

So we shouldn't be surprised that many good people question the use of aversive control, especially in interventions with the most powerless—children, the mentally handicapped, those labeled mentally ill, and prisoners. Aversive control can be an effective technique, perhaps one that should even be demanded in the name of the right to effective intervention; but it is as subject to abuse in institutions for the powerless as it is on a national or international level.

This means that we need all sorts of moral and legal rules and enforcers of those rules to make sure that even people of goodwill use aversive behavioral interventions for the well-being of the client, and that they don't use aversive control for their convenience. Our use of aversive control must always truly be for effective intervention and the well-being of our clients.

#### NITTY-GRITTY #2: WHO GETS THE RESOURCES?

We never have enough resources; for example, we don't have enough behavior analysts. About half of us behavior analysts work with the developmentally disabled. But what about the undereducated poor folks? What about the high percentage of college dropouts? What about the thousands and thousands of people in the United States who are dying because of obesity-related problems?

**Nitty-gritty #2:, who gets the resources?**

#### NITTY-GRITTY #3: WHO SHOULD CHANGE, THE INDIVIDUAL OR SOCIETY?

Should Sid have helped Bobbie (the transsexual student) change to meet society's standards, or should he have helped society change to meet Bobbie's standards (Chapter 1)? Should behavior analysts work to make prisons more effective in their efforts to help the prisoners become productive, useful, law-abiding citizens? Or should behavior analysis recognize that poverty is the major correlate of street crime; and should they work toward changing a society so it will do what it takes to eliminate poverty? Or suppose the behavior analyst has an adult who argues that he or she prefers the love of little children to adults

## Chapter 26. Moral and Legal Control

and that this is normal and healthy for both parties. Does the behavior analyst work to change what society would call a child molester, or does the behavior analyst work toward changing what the accused would call a repressive society? How do you decide, other than in terms of your culturally programmed biases?

**NITTY-GRITTY #4: WHO DECIDES?**

Who decides the tricky issues—the behavior analyst, the client, the person paying the tab? How do we work for the well-being of the client or society rather than the well-being of those with their hands on the purse strings?

**RESEARCH**

Life is full of conflicting interests. In research, we have the interests of a society that can benefit from scientific knowledge, the scientists whose careers can benefit from their contributions to that knowledge, and the participants who may benefit, be unaffected, or be harmed by this quest for knowledge.

And no one is above the need for moral and legal guidance. We scientists are no better than candidates for the President of the United States (both successful and unsuccessful). When it comes to conflict between our interests and the interests of others, we

**INTERMEDIATE ENRICHMENT***Controversy***TRANSSEXUALITY: A CASE STUDY OF MORAL AND LEGAL CONTROL**

A few people were concerned about our treatment of transsexuality in the second edition of this book. So, we decided to eliminate it from subsequent editions. But almost all of my students thought it was too important to eliminate, as did most of the faculty I checked with. So then I asked an old friend of mine I've known since I was three years old. He is homosexual. I asked him what I should do. He described the isolation, agony, and suicide tendencies of gay men he had known and who had sought counseling from him — problems resulting from societies oppressiveness. Then he said these issues of sexuality are too important to ignore. He advised me to keep Bobbie's case in but to discuss its implications more fully and to face the issues directly. We're following his advice; this section consists of the fuller discussion of the issues and implications.

Regardless of your sexual orientation and your sophistication in these matters, you may find some parts of this particular behavioral interpretation challenging to your current views and perhaps upsetting. Our advice is to stay loose; don't get too defensive of your current, long-held, long-cherished views, or your recently acquired views. On the other hand, don't jump on this particular behavioral band wagon, without considerable thought (not all behaviorist would agree with all of our analysis).

all have the morality of a used-car salesperson. When our rear ends—our careers—are on the line, it's just too hard for us to make decisions that will consistently work toward the well-being of humanity.

Fortunately, in recent years, society has given us some help—human-subjects review boards and animal-welfare review boards. Such boards review human and animal research to ensure that the well-being of the participants is properly considered. Furthermore, most scientific groups look out for the well-being of society in that they monitor the accuracy of the data their members report. A scientist who commits the sin of cheating, of presenting false data, loses his or her credentials as a scientist and ends up selling used cars. This doesn't happen often; but when it does, the lightning bolts are unleashed.

**QUESTIONS**

1. Who are the poorest and most powerless in almost every culture?
2. What may suggest why people resist the use of aversive control?
  - a. Explain and illustrate.
3. List and illustrate four nitty-gritty concerns we must consider in pursuing the right to effective intervention.
4. Whose interests may be in conflict in scientific research?
  - a. What is done to protect the participants' interests?

Keep thinking about it, and see what you conclude by the end of the book.

Although sexual orientation is an important issue in its own right, it is only one of many important issues, though among the most controversial we will consider. But sexual orientation is also important because it's sort of a model issue, and our analysis of sexual orientation is sort of a model analysis that we might apply to many other issues, such as the nature of sex roles more generally, "intelligence," "personality," "mental illness," crime, poverty and society. In other words, an analysis of sexual orientation also gives us a chance to explore what we might consider a behavioral world view, though no doubt, not the only behavioral world view. So, we will discuss the implications of behavior analysis for sexual orientation, as we study the various relevant concepts throughout this book.

And now, let's begin...

Usually people talk about being heterosexual, gay, lesbian, transsexual, or bisexual, but that may be painting with too wide a brush. It may help if we analyze our sex roles into at least two components—our sex-style behavior and our sexual values (reinforcers and aversive conditions).

**Is style of sexual behavior learned or inherited?**

Generally, in behavior analysis, we find it most useful to consider the behavior that produces a reinforcer fairly arbitrary. It's the reinforcer that's inherently important. One of the best examples of this is imprinting. In the normal environment, the bird gets the imprinted reinforcer (a bigger or better or clearer sight of Mom) by making the response of approaching Mom. But laboratory demonstrations show that any old response will do, as long as it produces a closer Mom. The bird will peck a response key, if that peck will produce the reinforcer (a closer Mom). In one amazing experiment, using an especially contrived apparatus, the bird had to walk away from Mom in order to get nearer to her. And of course, walking away was learned, instead of the more natural and more typical learned response of walking toward her. But the birds learned this counterintuitive response without difficulty.

Similarly, we would argue that sex-role and sexual-orientation behavior are arbitrary and what behavior is learned depends on what behavior is reinforced. With regard to style of sex-role behavior, we've seen that Bobbie could learn to sit, walk, and even talk in a traditional male manner rather than in the traditional female manner he had previously learned. Just as Sid and Dawn taught him traditional male behaviors, his mother seems to have taught him traditional female behaviors. That's not to say that she taught him traditional female behaviors intentionally; it's just that you get what you reinforce, ready or not.

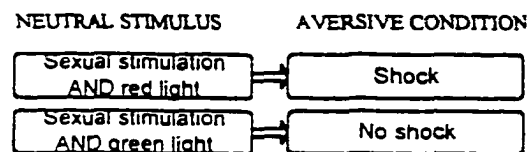
In addition, many people who consider themselves gay or lesbian behave in a style typical of their sex. And many others switch between a "female" or "male" style, depending on the contingencies of reinforcement and punishment operating at the moment. All of this suggests that style of behaving is arbitrary and learned, depending on the contingencies of reinforcement and punishment. Contrary to popular belief, there is nothing inherent in being male or female that determines much of our style.

However, most of us would find it impossible to change our behavior style from "female" to "male" or vice versa. Just as, for a long time, Bobbie found it impossible to behave like a female. And because of that difficulty, we assume our style is innate. But most of us would also find it impossible to speak Spanish without sounding like a gringo. And, yet, because of that difficulty, we would *not* assume our gringo accent is innate; instead, it was just learned so well while we were children that we can't get around it. The same goes for sex-role style.

**Is the reinforcing and punishing value of different sexual stimuli and sources of those stimuli learned or innate?**

What about direct physical stimulation of the erogenous zones? The physical stimulation itself is probably an unlearned reinforcer. But what about the source of that stimulation—whether it's a man, a woman, or an inanimate object? Well, in the dark, all cats look gray; if you don't know, it can't matter. However, in the light, when you do know, it's crucial. Sexual stimulation by the wrong person, a person of the wrong sex, or a disgusting object may have such a larger aversive component that it overwhelms the reinforcer component.

So what about this aversiveness of sexual stimuli when paired with certain visual stimuli? Surely this conditional aversiveness is learned. Though we know of no such experiment, suppose every time you were sexually stimulated in the presence of a red light, you were also shocked; and suppose sexual stimulation in the presence of the green light had no shock paired with it.



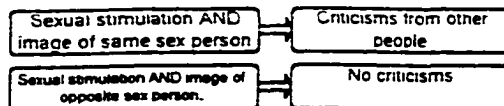
No doubt, the pairing of the conditional stimulus (sexual stimulation *and* the red light) with the aversive stimulus (shock) would cause that conditional stimulus to become aversive.

Now, for most of us such conditional aversiveness may not be acquired through direct pairings of this sort. Instead, like so many of our values, it is probably acquired through a verbal analog to pairing, for example other people's comments about how inappropriate (immoral, disgusting) certain sources of sexual stimulation are.

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## NEUTRAL STIMULUS

## AVERSIVE CONDITION



While there is no experiment just like the one we described, there is some relevant experimental research. A group of male rats were raised from birth without contact with females. These rats acquired the sexually reinforced behavior of mounting their male companions. And, as adults, they would then mount males more frequently than females. Again, this is not to say most of the sexual values of human beings result from such direct pairing. It is to say that the conditional reinforcing value can result from our learning history rather than our biological inheritance.

Here are some other data suggesting our innate sexual flexibility:

- The bonobos (pigmy chimps, of the equatorial forests of central and west Africa) are vigorously bisexual. They appear to be our closest relatives, sharing more than 98% of our genetic profile, making "it as close to a human as, say, a fox is to a dog."<sup>7</sup>
- Historically, homosexuality has commanded much interest and attention. Attitudes toward such preference have varied in different epochs and among diverse cultural and subcultural groups, ranging from acceptance (as among the ancient Greeks), to measured tolerance (in Roman times), to outright condemnation. During modern times ambivalent attitudes have prevailed.
- Of 76 societies studied by the American anthropologist Clellan Ford and the psychobiologist Frank A. Beach, two-thirds consider homosexual activities normal and socially acceptable.
- In some societies, such as the Arunta (Aranda) of central Australia, homosexuality is almost universal.
- Some nations, such as Great Britain and Germany, have legalized homosexual relations between consenting adults.
- One-third of the societies studied by Ford and Beach, including those of many industrialized countries, give little or no sanction to homosexuality, its practice often leading to long-term imprisonment. In many countries, it can at the very least result in job loss, housing discrimination, government blacklisting, and social ostracism.
- In recent years in the United States such organizations as the National Gay and Lesbian Task Force, the Human Rights Campaign Fund, the Legal Defense and Education Fund (LAMBDA), and numerous regional and church-related groups have worked to influence public opinion and legislation toward acceptance of homosexuals.<sup>8</sup>
- Koji: But these examples are not sufficient proof to disprove that biological determinism. These arguments support learning but we need other data to disprove biological determinism. But that may not be my job, explain logic.

All of this suggests to me that we are born bisexual or even multisexual. It is only through our behavioral history that we become more focused in our sexual behavior and our preferences for specific sources of sexual stimulation.

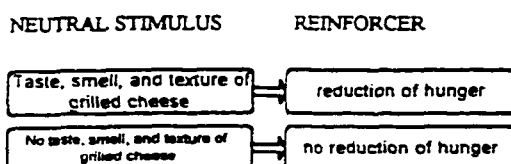
To further explain how deeply ingrained some of our learned reinforcers are, it helps to look at other sources of learned reinforcers. It's hard for most of us to imagine eating insects, even harder to imagine enjoying the taste and the experience. Food is an unlearned reinforcer, but the form of the food is a learned reinforcer. When Baby is hungry and Baby is given a

<sup>7</sup> de Waal, F. B. M. (1995, March). Bonobo sex and society. *Scientific American*, 82-88.

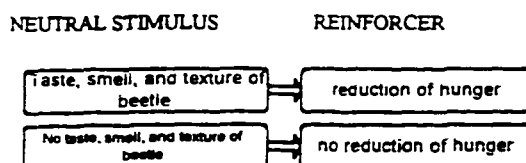
<sup>8</sup> Editors. (1994). Homosexuality. *Microsoft Encarta*. Redmond, WA: Microsoft Corporation.

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grilled cheese sandwich (or Big Mac, or hot dog), the taste, smell, and texture of the grilled cheese sandwich are paired with the reduction of hunger and the grilled cheese sandwich becomes a learned reinforcer.

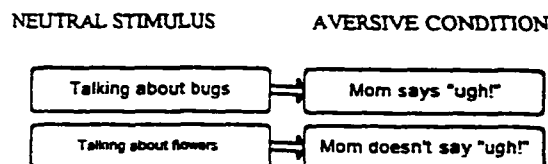


In a similar manner, insects become reinforcing to hungry children in other cultures, when they are given insects to eat. Now those of us who may not have acquired the learned reinforcing value of insects might think "ugh! Insects are disgusting and full of germs," but to those for whom the taste, smell and texture of insects have become learned reinforcers – those insects have become the equivalent to a grilled cheese sandwich.



The European and American rejection of insects as food has little to do with insects as disease carriers or their association with dirt and filth. The reason we don't eat them: is not that they are dirty and loathsome; rather, they seem dirty and loathsome because we don't eat them.

Why then, don't insects remain neutral stimuli when they don't become learned reinforcers. Why do they become learned aversive conditions? Because there are many verbal analogues to the pairing procedure that change the previously neutral insect into aversive stimuli. The words (such as "ugh", "gross", and "ick") that Mom says about insects are learned aversive conditions to Baby. Therefore, the bugs also become learned aversive conditions.



So not only are the stimuli produced from eating insects not established as learned reinforcers, but insects in general are learned aversive conditions.

There are many different foods around the world that become learned aversive conditions in some places but not in other places due to verbal analogues to pairing procedures. Horses, dogs, and cats are aversive to eat in America because of the verbal pairings that establishes these neutral stimuli as aversive to eat. No such verbal pairings exist in many Asian countries where these meats are enjoyed on a daily basis.

What's the point? Just because something seems like a powerful reinforcer (for example, sexual stimulation from an opposite sex partner, or a grilled cheese sandwich), and something else seems like a powerful aversive condition (for example, sexual stimulation from a same sex partner or the taste and texture of bugs) doesn't mean that the reinforcing or aversive properties of those things are unlearned.

But it's hard to imagine that our sexual values are learned; instead they seem so natural to us, they seem like something we were born with. This is because we're unaware of the subtle but ever-present social programming easing us into the sex roles we acquire, just as we're unaware of the subtle pairings and reinforcement contingencies teaching us to love the good 'ol American grilled cheese sandwich. And given that the large majority of us end up with heterosexual repertoires and values, it's even harder to imagine how a minority end up with gay and lesbian repertoires and values, let alone transsexual repertoires and values, just as it's harder to imagine how a minority of Americans would seek out the gourmet taste of a deep-fried grasshopper.. But few would argue that they inherited a craving for grasshoppers. And by the same logic, a behavioral world view suggests to us that we should not argue that our sexual values are inherited.

Whether sexual values are learned or biologically determined (i.e., inherited) is controversial and has political implications. Part of the problem is that people don't understand the power of our behavioral histories. They think that either you inherit your sexual values or you must choose them as you would choose which hat to wear to school. When we say "learned" we do not mean chosen. We do not suggest that Baby is choosing all of the multiple contingencies and pairing procedures that she experiences in her life. People don't understand the concept I call *preschool fatalism*: Some of the behaviors and values we learn before certain ages (e.g., preschool) interact with existing contingencies of reinforcement and punishment in such a way as to

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make them almost impossible to change when we become adults (e.g., our gringo accent or autistic behavior and values).

There has been some correlational research purporting to point to the inheritance of male homosexuality. But others have been unable to get the same results. So it's hard to say what the case is. No doubt the search for a biological basis for sexual "preference" will continue as it does for "criminal tendencies," "intelligence," and "mental illness." And no doubt the results will continue to be so ambiguous that people will be able to make whatever conclusion they wish, as in those other areas. And no doubt the research will continue to generate much heat and controversy.

One reason for the heat and controversy of the learned versus inherited debate is the political implications. Some advocates of gay and lesbian rights argue that society will be more tolerant if it believes their gay and lesbian sexual behavior and values are inherited and not their "fault." Other advocates think just the opposite.

#### Is homophobia learned or inherited?

A few years ago, President Bill Clinton was so brave, or so naive, as to suggest that the military should treat gay and lesbian military personnel as if they were normal human beings and not abnormal creatures of the night to be tarred and feathered and ridden out of military service on a rail. Now, what amazed me was the strong, negative reaction by the American citizens and their leaders. For example, Gen. Colin Powell, chairman of the Joint Chiefs of Staff, almost resigned in protest. And although he is a black American, he seemed unaffected by the fact that only a few years before, the American military services had resisted with equal strength and fury the requirement that they treat black Americans as if they too were normal human beings and not required to be segregated and restricted to menial tasks.

At first, I thought Powell and our political leaders were just cynically playing it for a few red-neck Neanderthals in the peanut gallery. But the more I checked it out, the more it seemed as if they were representing a genuine homophobia that permeates the very soul of our culture. Why?

Well, many who object to gay and lesbian citizens quote the Bible (and of course the Bible can be quoted back at them). But what is the Bible? For one thing, the Bible is an impressive, illustrated code of behavior the leaders of our culture, past and present, consider best for the well-being of our society.

But why would our leaders be concerned with sexual behavior? Because, in the biblical days on up to the recent past, the rate of infant mortality was high. And a large population was considered most viable, especially when competing with other warlike

societies. So our leaders claimed as taboo and immoral any alternative sexual behavior that did not lead to procreation, whether it be:

- *onanism* (masturbation and coitus interruptus — named after Onan, son of Judah [Genesis 38:9])
- *sodomy* (anal intercourse or copulation with an animal — named after Sodom of Sodom and Gomorrah fame, the two cities destroyed by fire from Heaven because of their unnatural carnal wickedness, according to the Bible; and so great a sin was sodomy that, while fleeing Sodom's coming destruction, Lot's wife disobeyed God's orders, looked back at the city and was turned into a pillar of salt for that voyeuristic sin)
- *homosexuality* (if a man also lie with mankind, as he lieth with a woman, both of them have committed an abomination: they shall surely be put to death; their blood shall be upon them [Hebrew Bible, Leviticus 20:13]; in European cultures, religious and secular laws against homosexuality began in the Middle Ages as prohibitions against any kind of sexual activity not aimed at procreation<sup>19</sup>).

Strong language. Traditionally, our religious and secular leaders have been pretty serious about straying from the tried-and-true path. But notice they don't have much to say about self-injurious behavior, other than an occasional injunction about harming the temple thy body. Why not? Why aren't there major religious and legal laws against gouging out your own eyes or pounding your head on the floor until it bleeds? Surely those acts are just as harmful to the individual and to society as are sexual variations. Imagine a whole culture full of people emitting a high rate of self-injurious behavior. But that does strain the imagination. Our religious and legal leaders have not spent much time addressing self-injury because it is so rare, because the behavior of few people has come under the control of the reinforcement contingencies associated with self-injury.

But the behavior of quite a few people has come under the control of the reinforcement contingencies associated with nonprocreative sexual reinforcers. And, historically, our leaders have been concerned that these concurrent contingencies of alternate sources of sexual reinforcers are so powerful and so handy that they will seriously decrease the rate of procreative sexual behavior and thus the rate of procreation. There will not be enough true begetting and begetting.

Here's my point: If we were biologically wired to find nonprocreative sex (including same-gender sexual stimulation) aversive rather than reinforcing, there would be no need for all these religious and legal sanctions. But we're

<sup>19</sup> *The Columbia Dictionary of Quotations* is licensed from Columbia University Press. Copyright © 1993 by Columbia University Press. All rights reserved.

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5. According to this book, if we were biologically wired to find nonprocreative sex (including same-gender sexual stimulation) aversive rather than reinforcing, there would be no need for the large number of religious and legal laws against nonprocreative sex.
- a. true
  - b. false

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not. Instead, we are biologically wired to find any physically pleasing source of sexual stimulation reinforcing. So, if our sexual behavior is to be restricted to procreative sex, stimulation from all nonprocreative sources must be made shameful, dirty, nasty, unnatural, learned, aversive stimuli. And this is done through direct pairing with aversive stimuli, such as physical punishment, and more often, through verbal analogs to such pairings, such as spoken and written social, religious, and legal sanctions. For example, many, if not most, preschool children discover the reinforcing stimulation arising from masturbation and will masturbate frequently and openly until their caretakers (parents, preschool teachers, etc.) effectively punish that behavior physically and/or socially. Freud called this the phallic stage, suggesting that young children naturally stop masturbating as they grow out of it. But perhaps they naturally stop masturbating after that act has received enough punishment.

What amazes me is the effectiveness of these relatively subtle pairings and analogs to pairings. So effective that by the time we are adults, many people seem to believe we are biologically wired to find same-gender sexual stimulation horribly aversive, so aversive that they can't stand the idea of being in the same military services with people who do not find same-gender sexual stimulation aversive.

But sometimes those relatively subtle pairings and analogs to pairings weren't done quite that way. Instead, because of slight differences in behavioral histories, those pairings of same-gender sexual stimulation and aversive stimulation were too subtle, so that same-gender sexual stimulation maintained its strong reinforcing value. And in some of those cases, opposite-gender sexual stimulation was paired with aversive stimulation, either directly or through verbal analogs; and thus opposite-gender sexual stimulation became a learned aversive stimulus.

So, from a behavior-analytic perspective (not necessarily the only behavior-analytic perspective), we inherit susceptibility for our behavior to be reinforced by sexual stimulation from almost any source, including same-gender and opposite-gender sources. It is only through aversive control that those sources are restricted. And our different behavioral histories cause different sexual stimulation from different sources to become learned aversive stimuli, some from same-gender sources, some from opposite-gender sources. And only with intense behavioral intervention, can those aversions be reversed, even with voluntary participation.

Before finishing our discussion of this issue, we should mention another political or social-systems concern: Cultural-materialistic reality has changed greatly since biblical times. Now we have more problems with overpopulation than with underpopulation. Yet society continues persecuting transsexual, gay, and lesbian citizens (social values usually lag painfully behind materialistic reality). So who should change — the citizens who are being persecuted or the persecuting society? Some concerned with the development of a more tolerant society might argue for fighting rather than switching, arguing that people with alternate lifestyles should not cave in to bigotry. We

argue for doing whatever is possible to help the individuals who find themselves with alternate sexual lifestyles (whether that be to help them acquire mainstream sexual lifestyles or to resist the oppression of the traditional majority); but, at the same time, all involved can work for a more tolerant society compatible with the material and social realities of the twentieth and twenty-first century.

Regardless of the political/social agenda, we can summarize our position by saying that people's biological inheritance has no more to do with their preference for the source of their sexual stimulation than it does with their preference for the source of their auditory stimulation. There is no gene that determines whether we prefer same-gender or opposite-gender sexual stimulation, just as there is no gene that determines whether we prefer heavy metal, new wave, or polkas — well, maybe there's a polka gene.

Karly is uncomfortable ruling out biological basis. What are the current data. We need to update this with stuff from my article and other research. Though the behaviors can be or are learned. The Minnesota twin studies.

Am I leaving anything out of my four categories.

Clarify the difference between sexual style and sources. Need clear definition of sex style etc. in the questionnaire.

## QUESTIONS

1. According to this book, sexual behavior is
  - a. learned
  - b. innate
2. According to this book, the reinforcing and punishing value of different sexual stimuli (for example, tactual [touch] stimuli) is
  - a. learned
  - b. innate
3. According to this book, the reinforcing and punishing value of the sources (not type) of different sexual stimuli (for example, a good-looking man or woman) is
  - a. learned
  - b. innate
4. According to this book, homophobia is
  - a. learned
  - b. innate



Jay Clore thinks we should expand on the our position that just because homosexuality is not innate, but is learned needs expanding upon, to show that it's OK to be learned though it's not chosen.

Karly: Becuase of her behavioral history she is uncomfortable with this topic.

## ADVANCED ENRICHMENT<sup>11</sup>

### Controversy: FIVE PHILOSOPHICAL VIEWS OF PSYCHOLOGY

Before you leave this book and enter the world of heavy-duty intellectual conflict, we'd like to introduce you to five alternative points of view you might encounter. These include the philosophies of:

- ☐ spiritualistic mentalism
- ☐ materialistic mentalism
- ☐ cognitive behavior modification
- ☐ methodological behaviorism
- ☐ radical behaviorism—the *EPB* point of view (i.e., the correct view)

Each of these five philosophies accepts or rejects four basic concepts. These include:

- ☐ mentalism
- ☐ materialism
- ☐ events are behavioral
- ☐ private events

To get a better understanding about how these concepts are woven into the five different philosophies, we have put together a mythical conversation between the representative philosophers. To illustrate the philosophies, we have analyzed a single event, in terms of each view. And the event we have chosen to analyze is none other than taking a dump. (Hey, to our way of thinking, bathroom humor can lighten up even the meatiest of subjects)

Please imagine five wise philosopher-psychologists. They are the Board of Philosophical Censors sitting in a castle, high above the land (maybe in Heaven), discussing a controversial textbook. Each philosopher-psychologist represents a different view. And just to help you navigate this dialogue we will recap the important points in this font.

#### MENTALISM

*The Materialistic Mentalist:* Have you read *Elementary Principles of Behavior*?

*The Spiritualistic Mentalist:* Yes, I have. And I'm really angry.

*The Materialistic Mentalist:* Me too. What's your beef?

*The Spiritualistic Mentalist:* That book ignores the most important concept in psychology—the *mind*.

*The Materialistic Mentalist:* I agree, *mind* is where it's at. I use it all the time.

#### Definition: Concepts

##### Mentalism

- the doctrine that the mind causes behavior to occur.<sup>12</sup>

##### Mind

- an entity or collection of entities
- assumed to cause behavior to occur.
- It may be either material or nonmaterial,
- but it is not the behavior itself.<sup>13</sup>

<sup>11</sup> Wowee, boy and girls, they've slipped another Advanced Enrichment section in on us. And we know what that means, don't we. It means it's time to hunker down and read this baby two or three times until we get it straight, or almost straight. Tough stuff, but important enough that many professors requested that we add it. So, grab that yellow highlighter and go for it.

<sup>12</sup> mentalism: n, the doctrine that there is a distinct group of conscious or mental phenomena not reducible without remainder to physical phenomena. English, H. B. & English, A. C. (1958) *A comprehensive dictionary of psychological and psychoanalytical terms*. New York: David McKay. The belief that some mental phenomena cannot be explained by physical laws. *The American Heritage® Dictionary of the English Language* (3rd ed.). Copyright © 1992 by Houghton Mifflin Company. Electronic version licensed from INSO Corporation.

<sup>13</sup> mind (mind) noun

The organized totality or system of all mental process or psychic activities, usually of an individual organism. The sum total of the enduring structures that are hypothesized to explain behavior or mental processes.

*A Comprehensive Dictionary of Psychological and Psychoanalytical Terms.*

The human consciousness that originates in the brain and is manifested especially in thought, perception, emotion, will, memory, and imagination.

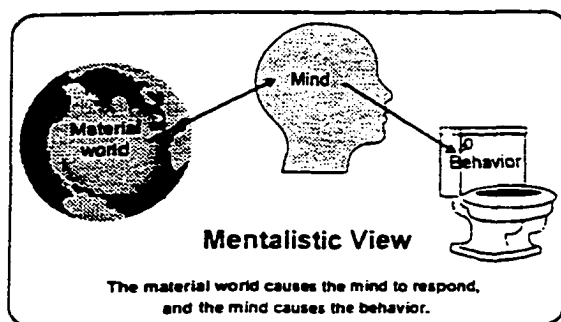
The collective conscious and unconscious processes in a sentient organism that direct and influence mental and physical behavior.

*The American Heritage® Dictionary*

## Chapter 26. Moral and Legal Control

*The Spiritualistic Mentalist:* Yes, you remember Todd—the constipated child? A good example of the limitations of behaviorism. Todd had closed his *mind* to the idea of bowel movements. Then he changed his *mind*; and his *mind* caused him to have bowel movements. His *mind* willed him to go to the bathroom or not. But Dawn completely ignored the poor little fellow's mind, when she instructed Todd's mother to give him a piece of bubble gum immediately after each bowel movement.

Note that the following diagrams are not contingency diagrams.



*The Materialistic Mentalist:* Our mind causes us to feel as we feel, to think as we think, to act as we act—in short, to be as we are. Ignore our mind and you ignore our most important structure. And that's my criticism of those behaviorists; they have no place for mind in their world view.

**Point - Mentalist believe in mentalism - in other words they believe the mind causes us to behave.**

So we've got mentalists and we've got behaviorists. But we philosophical psychologists split hairs a little finer than that. Now let's look at the two kinds of mentalism.

### SPIRITUALISTIC MENTALISM

*The Spiritualistic Mentalist:* That brings up the other thing that's bugging me. Todd's case study and the whole book too accurately reflect the materialistic nature of contemporary psychology and philosophy.

*The Materialistic Mentalist:* You think we're only in it for the money?

*The Spiritualistic Mentalist:* No, I mean materialistic in a different sense. I don't think you're mercenary money grubbers any more than I am. (The spiritualist smiled, showing she understood the ambiguity of her reply, yet still leaving it for her audience to decide whether they were all money grubbers or none were.) I mean you deal only with the material side of Todd; you ignore his nonmaterial dimension, his spiritual dimension.

*The Materialistic Mentalist:* Just what is this nonmaterial, spiritual dimension you claim we ignore?

*The Spiritualistic Mentalist:* When you talk about the mind as a structure, you reveal that you think of the mind as a physical entity.

*The Materialistic Mentalist:* Of course. What else is there?

*The Spiritualistic Mentalist:* There's the nonmaterial side of life. Early human beings conceived of the nonmaterial spirit to help them understand the world. Then the concept of nonmaterial spirit shifted into the concept of nonmaterial soul to help later human beings understand the world. And now the concept of nonmaterial soul has shifted into the concept of nonmaterial mind, still helping us understand our world.

*The Materialistic Mentalist:* Your history fascinates me. You say that all three terms, *spirit*, *soul*, and *mind*, originally referred to more or less the same nonmaterial dimension. You claim we shifted from spirit to soul to mind. But I always think of mind as a physical, material entity.

*The Spiritualistic Mentalist:* Of course you do. And the rest of my history says why: The nonmaterial mind shifted into the material mind because of the materialistic, scientific world view so popular now. You've forgotten the nonmaterial ancestors of the mind—the soul and the spirit.

#### Definition: Conceptual Materialism

- the doctrine that physical (material)
- is the only reality.<sup>13</sup>

#### Spiritualism

- the doctrine that the world is divided into two parts, material and spiritual.<sup>14</sup>

<sup>13</sup> materialism: in philosophy, a widely held system of thought that explains the nature of the world as entirely dependent on matter, the final reality. Early Greek teaching, e.g., that of Democritus, Epicurus, and the proponents of Stoicism, conceived of reality as material in nature. The theory was renewed and developed beginning in the 17th cent., especially by Hobbes, and in the 18th cent. Locke's investigations were adapted to the materialist position. The system was developed further from the middle of the 19th cent., particularly in the form of dialectical materialism and in the formulations of logical positivism. *The Concise Columbia Encyclopedia* is licensed from Columbia University Press. Copyright © 1995 by Columbia University Press. All rights reserved.

<sup>14</sup> spiritual: of, relating to, consisting of, or having the nature of spirit; not tangible or material, immaterial. Of, concerned with, or affecting the

## Chapter 26. Moral and Legal Control

*The Materialistic Mentalist:* Perhaps, but I don't even understand what it means for something to be spiritual, not to be physical or material or materialistic.

*The Spiritualistic Mentalist:* That's so sad. You scientific psychologists will never understand, because with science you can only study the material, not the nonmaterial, not the spiritual. You insist that ultimately everything is physical, that ultimately human beings consist of no more than a few cents worth of chemicals.

*The Materialistic Mentalist:* The price may have gone up a bit since the last time you checked with that old cliché. But don't you agree that "from dust thou art and to dust thou shall return"?

*The Spiritualistic Mentalist:* Our physical body, yes, but not our spirit, not our soul, not our mind. The spirit, the soul, the mind, whatever you want to call it, contains our essence, what we are. You can never bribe the human spirit with bubble gum, like Dawn tried with Todd.

**Definition: Concept Spiritualistic mentalism**

- o the doctrine that the mind is spiritual (nonphysical).

*The Materialistic Mentalist:* You're right, most of us modern psychologists don't buy into your view of a nonmaterial world. We're material creatures in a material world. Nothing exists other than that handful of chemicals, those molecules, those electrons, those subatomic particles, whirling around.

*The Spiritualistic Mentalist:* I pity you and your barren, materialistic philosophy.

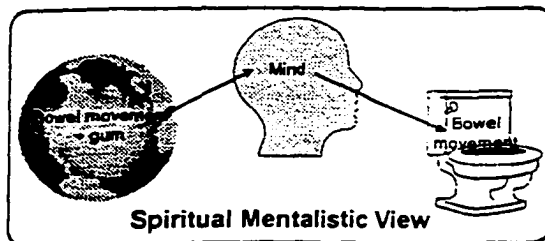
*The Materialistic Mentalist:* Please don't interrupt me with your condescending sympathy, I'm not done. What I wanted to say is that at least some of us contemporary psychologists still study the mind.

*The Spiritualistic Mentalist:* Yes, but a material mind, one that ultimately consists of only that handful of chemicals, not the immaterial mind. Not the true mind.

*The Materialistic Mentalist:* The universe contains material reality. Todd had material bowel movements. And his material mind caused him to do so.

**Definition: Concept Materialistic mentalism**

- o the doctrine that the mind is physical, not spiritual.



### MATERIALISTIC MENTALISM

*The Materialistic Mentalist:* Sorry, I just can't buy that. Dawn did a good job of getting Todd to have regular bowel movements, and she did this with bubble gum. The chance to get the materialistic bubble gum caused Todd to change his materialistic mind which decided to have a materialistic bowel movement. His changed mind caused his bowels to move.

*The Spiritualistic Mentalist:* You materialists really strain to deny the spiritual side of life.

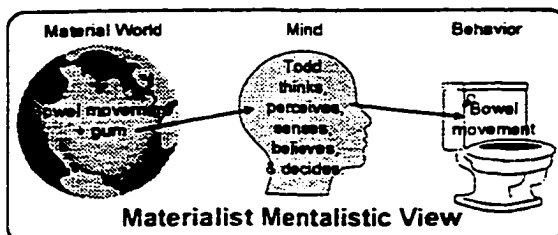
**Point** - there are two kinds of mentalism, spiritual mentalism and materialistic mentalism. They both believe that the mind causes us to behave, but the materialistic mentalist thinks that the mind is physical (the brain), while the spiritualistic mentalist thinks that the mind is spiritual (like the soul)

*The Cognitive Behavior Modifier:* Can I squeeze into this conversation? That immaterial nonsense is so far out in left field it's immaterial to everything. But I'd like to hear more about Todd's material mind.

*The Materialistic Mentalist:* Todd had a bowel movement when his mind told him to. He had a bowel movement when his mind thought it was the right time. He had a bowel movement when his mind perceived that it would benefit him, when his mind sensed the need to do so, when his mind believed it was reasonable, when his mind had the desire to do so. Todd's material mind made the decisions about when and how he should act.

soul. Relating to or having the nature of spirits or a spirit; supernatural. *The American Heritage Dictionary.* [Note that we're not using spiritualism in the modern sense of spiritualism, the belief that the dead manifest their presence to people, usually through a clairvoyant or medium.] Microsoft® Encarta® Encyclopedia 99. © 1993-1998 Microsoft Corporation.

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(Note that we could have filled in Todd's mind in the spiritual mentalistic view with much the same activities as in the materialist mentalistic view. The main difference between the two views is whether that mind is nonphysical or physical.)

**COGNITIVE BEHAVIOR MODIFICATION**

*The Cognitive Behavior Modifier:* I've got bad news for you materialistic mentalists. The mind you speak of is as much a fiction as the spiritualist's nonmaterial world—pure invention. Todd's mind doesn't tell Todd what to do. Todd tells himself what to do, based on his perceptions of reality—based on whether he attributes to himself or to others responsibility for control over his life, whether he expects the proper response will produce reinforcers, whether he believes he can effectively produce the desired response. He has hypotheses about what works; he has rules for effective action.

*The Materialistic Mentalist:* But those are all properties of Todd's mind.

*The Cognitive Behavior Modifier:* I think not. We no longer need the old-fashioned concept of *mind*. Instead we have the *cognitive structure*, with its cognitions—perceptions, attributions, expectations, beliefs, sense of efficacy or effectiveness, hypotheses, rules. Todd controls his actions through his cognitions. He attributes to himself the ability to control his life: He expects a bowel movement will get him some bubble gum. And he believes he can effectively produce the bowel movement when he has a sensation of bowel pressure. We needn't invent a mind to explain Todd's actions.

**Point** - the Cognitive Behaviorist doesn't believe in the mind. Instead he believes in the cognitive structure which he thinks is the cause of all behavior.

**Definition: Concepts**  
**Cognitive structure**

- an entity
- assumed to cause action;
- the way the organism sees the world,
- including the organism's beliefs and expectations.
- It is material, but not behavior.

**Cognitive behavior modification**

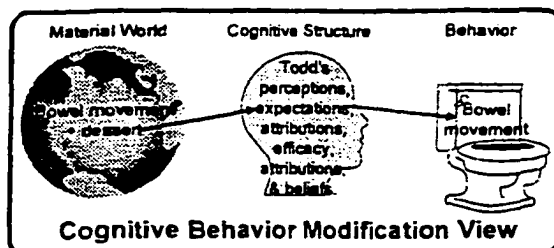
- an approach that attempts to modify behavior
- by modifying the cognitive structure.

*The Radical Behaviorist:* Now let me get in on this. The behavior analyst's concept, rule control, deals with most of these same issues. But, to make my point clearer, let's the bubble gum intervention and look at the dessert intervention Dawn and Todd's mother later used (Chapter 24). Remember, Todd's mother told him the following rule: *If you have a bowel movement anytime before dinner, I'll give you a dessert after dinner.* We could say Todd's behavior came under the control of that rule; it was rule governed.

*The Cognitive Behavior Modifier:* Perhaps, but rule-governed behavior is behavior. And I'm talking about more than behavior. You can't reinforce Todd's cognitions—his sensations, perceptions, attributions, expectations, beliefs, sense of efficacy, hypotheses, rules.<sup>17</sup> Instead, when Todd's bowel movements produce dessert, his perception of this helps him make a *hypothesis* that his bowel movements cause his mother to give him the desired gum. He then expects that gum from his mother will follow his bowel movements. He *believes* it. And he believes in his own *efficacy*, his effectiveness in getting the dessert. He attributes to himself the ability to get the dessert. All of this involves Todd's cognitive structure—his expectations, hypotheses, rules, and so on. However, his cognitive structure can also change the way he experiences what you behaviorists call reinforcement. I'm saying how he perceives the dessert's relation to his behavior can change the effects of the so-called reinforcement. In other words, the delivery of dessert following Todd's behavior influences his cognitions; but also his cognitions influence the way the dessert affects his behavior; if he doesn't perceive, believe, and attribute to that he can have a bowel movement and get dessert, your so-called reinforcement won't work.

<sup>17</sup> Not all cognitive behavior modifiers would take this position; some do attempt to reinforce thoughts or at least to reinforce the behavior of thinking.

*The Radical Behaviorist:* I think cognitive behavior modification is simply a special type of materialistic mentalism. And your cognitive structure is just the mentalist's mind.



**Point** - the Radical Behaviorist thinks that the mind and cognitive structure are essentially the same thing, invented explanatory fictions, even if they have different names. Both cognitive behaviorist and mentalists think that nonbehavioral, nonenvironmental structures cause the person to behave.

#### RADICAL BEHAVIORISM<sup>11</sup>

*The Radical Behaviorist:* But we're talking about the same thing; you've just added a few unneeded concepts, that's all.

*The Cognitive Behavior Modifier:* Such as?

*The Radical Behaviorist:* All the cognitions—the perceptions, attributions, hypotheses. We don't need these terms as special cognitive structures. We can explain the success of Dawn's second intervention simply by saying that Todd performed the behavior of stating a rule. He said to himself, *If I have a bowel movement today, I'll get dessert tonight.* And that rule controlled his having a bowel movement.

#### Definition: Concept

##### Radical behaviorism

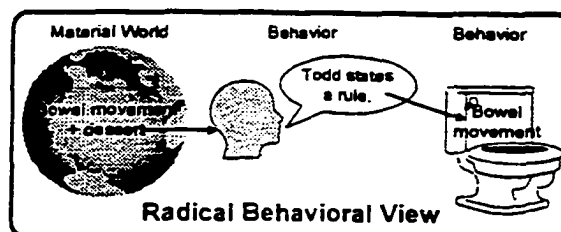
- o an approach that addresses all psychology
- o in terms of the principles of behavior.

Radical behaviorists are willing to consider all the data of psychology, including the data of such nonbehavioral psychologists as Freud and Piaget. And it means radical behaviorists are willing to consider private events such as thinking, dreaming, and feeling. But in all cases they consider such data and events in terms of the principles of behavior.

*The Cognitive Behavior Modifier:* Don't forget beliefs. Todd must believe in the rule.

*The Radical Behaviorist:* We don't need belief as a special cognition. We just appeal to Todd's behavioral history. The rule statement will govern his behavior if similar rules statements have proven accurate in the past. The simple concept of language-based, rule-governed behavior is all we need to deal with the complexities of your cognitions. And we need only the concept of *rule-governed behavior* when we're dealing with indirect-acting analogs to contingencies of reinforcement and punishment. (Of course, the analysis of how rule control works isn't simple.)

**Point** - Radical Behaviorist think that the behavior of stating a rule, if rules have accurately described a consequences in the past, can control behavior.



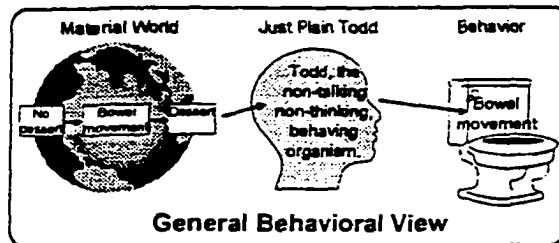
*The Cognitive Behavior Modifier:* Is that so? Then what about the first procedure Dawn tried with Todd, in which his mother gave him a piece of bubble gum immediately after a bowel movement? Did that involve rule-governed behavior?

*The Radical Behaviorist:* Not necessarily. That might have been a simple, direct-acting, reinforcement contingency, not an indirect-acting analog to reinforcement. Todd needed no rules, because the reinforcer followed the response immediately; that means the reinforcer was able to reinforce the response—the contingency was able to directly act on the bowel movement behavior without the aid of rule statements. But with the dessert, the reinforcer was too delayed to reinforce the bowel movement; so he needed a rule describing that contingency.

**Point** - Radical Behaviorists believe both rule statements and direct-acting contingencies control behavior in humans.

<sup>11</sup> There seem to be as many different varieties of behaviorism as behaviorists. (This is probably true of mentalism and cognitivism as well.) So we don't pretend to have defined the radical and methodological behaviorism views, rather just one variety of each. There's a good chance your professor will not find herself or himself fitting comfortably into either of our definitions and will want to provide a supplemental or even an alternate definition. That additional definition would be great, as no doubt it will point to important issues we have not addressed.

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*The Cognitive Behavior Modifier:* Well, from our view, Todd had cognitive rules (not your language-based rules) even with the immediate bubble gum. And because of the bubble-gum contingency, Todd modifies his cognitive structure—his cognitive rules, hypotheses, and expectations. He now expects bubble gum after a bowel movement. But that's not because the bubble gum reinforces anything.

*The Radical Behaviorist:* I'm afraid I don't see the need for all this cognitive structure.

*The Cognitive Behavior Modifier:* Let me take it further. What about nonverbal animals? Do rules govern their behavior?

*The Radical Behaviorist:* Of course not. An animal can't state a rule if it can't talk.

*The Cognitive Behavior Modifier:* Right, but we cognitive behavior modifiers contend that animals have cognitions; they have beliefs, expectations, rules, and hypotheses. And it is these cognitions that determine their actions. So you see that when we talk about people's beliefs, expectations, rules, and hypotheses, we mean more than you do with your simple rule-governed behavior. That's why we're more than behavioral; we're also cognitive. We believe cognition controls behavior.

*The Radical Behaviorist:* And that's where I think you go too far. You don't need to invent all those complex cognitive concepts to account for the learned behavior of animals. The direct-acting contingencies of reinforcement and punishment are all you need there. Why add extra baggage?

**Point - Radical behaviorists believe that direct acting contingencies control the behavior of animals. They do not think that indirect acting contingencies control the behavior of animals. In other words, animals do not have rule-governed behavior. Cognitivists believe that cognitions control the behavior of animals (as well as humans).**

#### METHODOLOGICAL BEHAVIORISM

*The Methodological Behaviorist:* I'm the only one who hasn't gotten into this debate, so I guess it's my turn. I'm afraid you, my radical-behaviorist friend, also have your extra

baggage—all that rule-governed-behavior business. You don't really need the concepts of rule-governed behavior and indirect-acting analog contingencies.

*The Radical Behaviorist:* I agree with you partway; I agree we don't need these more complex concepts when we're dealing with nonverbal animals, like the rat in the Skinner box. And often we don't need them when we're dealing with direct-acting contingencies, as when Todd's mother gives him some gum immediately after a bowel movement. Take another look at the last diagram we showed—the one involving direct reinforcement with gum. Look closely and you'll see the label at the bottom of that one is *General Behavioral View*, not *Radical Behavioral View*.

*The Methodological Behaviorist:* So?

*The Radical Behaviorist:* My point is that you and I agree there. Then the diagram explains the view of both the radical and the methodological behaviorist. We agree in our analysis of the processes governing behavior, when only direct-acting contingencies of reinforcement and punishment are involved.

*The Methodological Behaviorist:* OK, but we sure don't agree in the case where Todd gets his dessert sometime after the bowel movement. I don't like the idea of your guessing about private events, such as what people think or say to themselves. Seems like mentalism to me.

*The Radical Behaviorist:* True, mentalists make inferences about unobserved events, and so do I. Yet there's a difference in the inference. Mentalists infer causes of a type they've never observed (mental, nonbehavioral causes, often nonmaterial causes). But radical behaviorists of the sort I represent infer behavioral processes (people covertly stating rules to themselves) just like those we can often observe (others publicly stating rules to people). It just happens that we can't observe people covertly stating rules to themselves; but we've no reason to think covertly stating rules differs from someone else's overtly stating rules to a person. So even in this difficult, covert case, probably we've got nothing more than behavior to which our standard principles of behavior apply.

*The Methodological Behaviorist:* It seems to me that one inference is as bad as another. It doesn't matter whether you're inferring covert behavioral process, or covert cognitive process, or covert materialistic mental process, or covert spiritualistic mental process. They're all bad news and have no place in a true science. As far as I'm concerned, your inferred covert rules are made of the same materialistic, mentalistic stuff as the cognitive behavior modifier's cognitive structures.

*The Radical Behaviorist:* I think the nature of the inference does matter. For example, you might ask me why the screen door is rattling. And I might infer that it's the wind, or I

## Chapter 26. Moral and Legal Control

might infer that it's evil spirits trying to get into the house. The inference of wind fits more comfortably into an interpretation based on materialistic, natural science than does the inference of evil spirits.

*The Methodological Behaviorist:* Perhaps, but as an empirical scientist, I prefer to stay away from any kind of inferences. I prefer to include in our science only those events that two or more independent observers can directly observe.

**Point** - Methodological behaviorist don't believe in inferred, private events, not even in rule-governed behavior.

**Definition: Concept**

**Methodological behaviorism**

- an approach that restricts the science of psychology to
- only those independent and dependent variables
- that two independent people can directly observe.

*The Radical Behaviorist:* That's clearly the safest road, but as Skinner said many years ago, if we're going to tell the whole story, our natural science of behavior must deal with private events.

Because our radical behaviorist got the last word, you can correctly assume that her philosophy represents that of the authors of *EPB*.

**Compare and Contrast:  
FIVE VIEWS OF PSYCHOLOGY**

**Lets review the points:**

**Point** - Mentalists believe in mentalism; in other words, they believe the mind causes us to behave.

**Point** - there are two varieties of mentalism; spiritual mentalism and materialistic mentalism. They both believe that the mind causes us to behave, but the materialistic mentalist thinks the mind is physical (the brain), while the spiritualistic mentalist thinks that the mind is spiritual (like the soul)

**Point** - the Cognitive Behaviorist doesn't believe in the mind. Instead, he believes in the cognitive structure which he thinks is the cause of all behavior.

**Point** - the Radical Behaviorist thinks that the mind and the cognitive structure are the same thing, even if they have different names. This is because both cognitive behaviorist and mentalists think that some nonbehavioral, nonenvironmental structures *cause* the person to behave.

**Point** - Radical Behaviorist think that the behavior of stating a rule, can control behavior.

**Point** - Radical Behaviorists believe both rule control and direct acting contingencies control behavior in human beings.

**Point** - Radical behaviorists believe that direct acting contingencies control the behavior of animals. Cognitivist believe that cognitions control the behavior of animals.

**Point** - Methodological behaviorist don't believe in inferred, private events, not even in rule-governed behavior.

**THE CONCEPTS**

View	Mentalistic <sup>19</sup> (The mind causes behavior)	Materialistic (physical things cause us to behave)	All psychological events are behavioral <sup>20</sup>	Infers private events
Spiritualistic Mentalism	Y	N	N	Y
Materialistic Mentalism	Y	Y	N	Y
Cognitive Behavior Modification	Y <sup>20</sup>	Y	N	Y

<sup>19</sup> I think *mentalistic* and *behavioristic* are mutually exclusive and exhaustive. The psychological view is either mentalistic or behavioristic and it must be one or the other.

<sup>20</sup> We argue that the cognitivist's and the cognitive behavior modifier's cognitive structure is just a modern version of the mind, and thus cognitive behavior modification is essentially mentalistic.

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Radical Behaviorism	N	Y	Y	Y
Methodological Behaviorism	N	Y	Y	N



#### How common are each of these five views?

Spiritualistic mentalism is the oldest, and it has played a large role in the field of philosophy, especially in previous centuries. Though spiritualistic mentalism may still have some popularity outside psychology, it isn't too common among professional psychologists. Materialistic mentalism is probably the most common view in psychology. It seems to us to describe the common approach called *cognitive psychology*, including cognitive behavior modification. We also would classify most psychoanalysis (for example Freudian psychoanalysis) as materialistic mentalism.

Methodological behaviorism is the most popular view among behaviorists. Though, methodological behaviorist often erroneously call themselves *radical behaviorist* as we will explain in the next section. By the way, these sections on the five philosophical views of psychology are among the most difficult in our book. Serious students may find they need to read the sections at least twice to get a comfortable understanding of these views.<sup>21</sup> If you double dip, you may find that the second reading goes much more smoothly.<sup>22</sup>

#### THREE ERRORS

There are two basic philosophical errors that cognitive and methodological behaviorism contain, which radical behaviorism avoids.

##### Definition: Concepts

##### The simplistic cognitivist error

- Rats think.

##### The simplistic behaviorist error

- People don't think.

I believe the cognitivist error is fairly common. People often attribute the cause of behavior to a cognitive process. In other

words, the rat presses the lever because he "knows" (a cognitive process) he will get water. When you get right down to it, cognitivism is nothing more than the view of the everyday person on the street dressed up in the intellectual's clothing, with them big scientific, PhD-sounding words like *cognitive structure*.

The behaviorist error is restricted to methodological behaviorists; unfortunately, the majority of behaviorists seem to be methodological, even when they erroneously call themselves radical behaviorists.<sup>23</sup>

When dealing with the philosophical structures of psychology, our enemy should be simplistic<sup>24</sup> analyses, regardless of their sources.

From my view methodological behaviorism is simplistic in that it makes simplistic extrapolations from the contingencies of the Skinner box to all the complex contingencies controlling the lives of verbal human beings, thereby committing the behaviorist error of denying that people think.

And the cognitivism is simplistic in that it makes simplistic extrapolations from the thinking verbal human being to the nonverbal and therefore nonthinking rat in the Skinner box.

Cognitivism is also simplistic in that its concepts tend to be mere common-sense reifications<sup>25</sup> of behavioral processes.

**Biological Determinism.** Another major source of simplistic analyses is biological determinism—the theory that many of the important behavioral differences between people are genetic; just one set of many examples is sexual behavior and sexual values, as we discussed earlier.

Two common types of simplistic analysis flow from biological determinism: The first type of simplistic analysis is to assume that the same biological/behavioral processes directly underlying some form of complex human behavior are the same as those

<sup>21</sup> Serious students report needing to read this chapter three times!

<sup>22</sup> The history of mentalism: Originally there was the *spirit*, as in the *spirit world*. Everything was animated by a spirit. That was replaced by the *soul*. The soul was the great animator, the cause, the engine that ran everything. That has been replaced by the *mind*. The *mind* is just a modern word for *soul* or *spirit*. Originally, the mind was nonmaterialistic (i.e., spirit); but recently it has become materialistic, at least in some circles.

Incidentally, as we will see, most contemporary professional approaches to psychology explicitly reject the descendant of the soul, the spiritual mind; however, many contemporary professional psychologists do not reject the concept of soul itself and are active members of organized religion.

<sup>23</sup> A possible cause for the common misuse of the term *radical behaviorist* lies in the everyday connotation of the word radical. Most people see the term radical as meaning "to the extreme". A methodological behaviorist takes behaviorism to the extreme when they make the simplistic behaviorist error.

<sup>24</sup> *sim-plis'm*—*sim-plis'm* (sim'pliz'em) *noun*

The tendency to oversimplify an issue or a problem by ignoring complexities or complications.

— *sim-plis'tic* (sim-plis'tik) *adjective*

— *sim-plis'ti-cal-ly* *adverb*

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Our goal should be to keep it as simple as possible, while avoiding the simplistic.

<sup>25</sup> Remember reification? It's like saying "why does Helen lose her temper so easily—because she has an angry cognitive structure. How do you know she has an angry cognitive structure? Because she loses her temper."

underlying some relatively simpler form of animal behavior, especially when the two behaviors serve similar functions.

One example of this sort of simplistic analysis would be to say a person's building a home is based on a nest-building instinct, in more than a poetic sense, with the implication that instinctive reinforcers similar to those controlling an animal's nest building, before mating season or before winter, also control the behavior of the owner of Big Bart's Construction Company, or the behavior of Sid and Dawn when they hired Big Bart to build their house. Another example is the biological determinists' argument that a woman's putting on lipstick is genetically programmed to attract a mate, just as is the reddening of the rump of the receptive female baboon—no kidding!

The second type of simplistic analysis coming from biological determinism is the assumption that the genetic processes underlying some form of complex human behavior are the same as those that underlie the inheritance of our biochemical-chemical/anatomical functions and structures. So biological determinists argue that the difference between people in terms of their skills at complex matching to sample, skills at repeating long lists of numbers, and knowing who wrote *Faust* (such repertoires as are sampled on IQ tests) are inherited in the same way as are the differences in height and eye color.

Incidentally, the people in power rely heavily on biological determinism to defend the status quo and to defend their staying in power. For example, women are genetically programmed to be mothers/housewives, while men are genetically programmed to be executives. (Honey, I wish you had that mathematics gene, but seeing as you don't, would you mind doing the dishes, mopping the floor, and ironing my shirts after you nurse baby, while I go off to my office in the Mega-Buck Bank Building? And oh, yes, I am genetically programmed to chase that cute little secretary.)

Similarly, wealthy whites are genetically programmed to rule the world, while poor people and people of color unfortunately lack those crucial high-IQ/get-up-and-go genes. (Honey, I wish you had them high-IQ/get-up-and-go genes, but seeing as you don't, would you mind doing the dishes, mopping the floor, and ironing my shirts after you nurse baby, while the missus and I go off to the Mega-Buck Bank Building Banquet? And when we get back, you can take a couple hours off to visit your son who was genetically programmed to end up in his new home, Big State Prison; such a pity.)

You think I'm kidding? Then check out *The Bell Curve*,<sup>26</sup> a best-selling, scholarly book, written by a couple of guys with real high IQ/get-up-and-go genes.

Now the fact that the more powerful use biological determinism to justify their suppression of the less powerful doesn't necessarily mean biological determinism is wrong. But it might give a person pause to consider. The divine right of kings is alive and well in America today.

All of these examples of biological determinism illustrate what we call the simplistic biological-determinist error:

*Definition: Concept*

The simplistic biological-determinist error

- Analogous<sup>27</sup> behaviors are
- homologous<sup>28</sup> behaviors.

By analogous behaviors we mean behaviors that serve the same function (e.g., building a nest and building a house). And by homologous behaviors, we mean behaviors that have the same directly underlying behavioral causes (e.g., genetically determined, instinctive reinforcers). So an example of the simplistic biological-determinist error is that a bird's nest building and a human's house building are both instinctive because they both serve the same function.

To stretch this new concept slightly, the simplistic biological-determinist error also is to make an analogy between performance on an IQ test and eye color or height and then to assume they are homologous in that differences between individuals on IQ performance tests have genetic involvement, just as do differences in eye color and height.

We consider many of the arguments based on biological determinism to be simplistic; but this criticism is not to deny that we are biological animals nor that the principles of biology apply to us. It's just like another concern we have: we consider many of the extrapolations from Rudolph in the Skinner box to be simplistic; but this concern is not to deny that we are behavioral animals, that there is a little of the rodent in all of us (maybe quite a little); and this concern is not to deny that the basic principles of behavior underlie all our actions. It's just to say that we've got to be careful; be simple, not simplistic, whether we're talking about the application of biological principles or behavioral principles.

<sup>26</sup> Herrnstein, R. J. & Murray, C. (1994). *The Bell Curve: Intelligence and Class Structure in American Life*. New York: Free Press.

<sup>27</sup> as-a-logue also as-a-log noun

*Biology*. An organ or structure that is similar in function to one in another kind of organism but is of dissimilar evolutionary origin.

<sup>28</sup> ho-mol-o-gous—ho-mol-o-gous adjective

*Biology*. Similar in structure and evolutionary origin, though not necessarily in function, as the flippers of a seal and the hands of a human being.

**QUESTIONS**

1. What are three related terms that originally all referred to the nonmaterial dimension?
2. What seems to be the dominant view in contemporary psychology about the reality of a nonmaterial world?
3. According to the mentalistic view, what causes a person to behave? Give an example.
4. According to the cognitive-behavior-modification view, what causes a person to behave? Give an example.
5. According to the radical behaviorist view, what role do cognitive structures play?
6. According to the radical behaviorist view, what causes a person to behave? Give an example.
7. How do cognitive behavior modifiers and radical behaviorists differ in their view of animal behavior?
8. How do radical behaviorists and methodological behaviorists differ in their view of complex human behavior involving delayed reinforcers?
9. Draw a table showing the position the five views of psychology take concerning mentalism, materialism, behaviorism, and inferences of private events.
10. Give an example of each of these three errors:
  - a. the simplistic cognitivist error
  - b. the simplistic behaviorist error
  - c. the simplistic biological-determinist error

11. Define each of the following concepts (we normally recommend this question for graduate courses but not undergraduate courses):

- a. mentalism
- b. mind
- c. materialism
- d. materialistic mentalism
- e. spiritualistic mentalism
- f. cognitive structure
- g. cognitive behavior modification
- h. radical behaviorism
- i. methodological behaviorism
- j. the simplistic cognitivist error
- k. the simplistic behaviorist error
- l. the simplistic biological-determinist error

**CONCEPTUAL QUESTION**

1. What is your opinion of the merits of each of the five views of psychology? What do you see as the strengths and weaknesses of each?
2. Was god a behavior analyst? This looks like man must have made religious rules instead of god.

**Appendix M**  
**Chapter 26 Evaluation Form**

## Chapter 26. Moral and Legal Control Homework

Please don't sign. We don't ask; you don't tell. No name. No grade. Just do it. We will collect the assignments in such a way that you will get homework points for filling it out completely, but no one will know which one was yours. This assignment is designed to encourage you to think seriously about these difficult, complex, and controversial issues. It is also designed to help us learn how to present these issues in a way that will allow students to think about them without being offended. Thanks much, The Morality Police.

1. The whimsical case of the polluter is offensive.  
 a. No.  
 b. Yes. Explain \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

2. The idea that religion functions as a social control system is offensive.  
 a. No.  
 b. Yes. Explain \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

3. The section *Respect for Other People's Views*  
 a. Does the trick.  
 b. Is inadequate. Explain \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

4. The argument that we need hell to have moral control is offensive.  
 a. No.  
 b. Yes. Explain \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

5. The argument that we need hell to have moral control is correct.  
 A. Yes.  
 B. No. Explain \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

6. The argument about the role of heaven in moral control is offensive.  
 a. No.  
 b. Yes. Explain \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7. The argument about the role of heaven in moral control is correct.  
 a. Yes.  
 b. No. Explain \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

8. Keep these sections on moral and legal control.  
 A. Yes.  
 B. No. Explain \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

9. What did you like best about these sections on moral and legal control? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

10. What did you like least about these sections on moral and legal control? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

### SID'S SUMMARY

Do you agree with each of the following statements and why.

11. Immoral behavior and illegal behavior don't differ fundamentally. Both usually interfere with achieving

our ultimate goal—the well-being of life in the universe. In one way or another, both usually involve a failure to follow the rules for proper uses of resources (including human life) needed for life's well-being.

- a. Yes.  
b. No. Explain \_\_\_\_\_

12. Society must add both moral and legal contingencies to counteract the natural contingencies of reinforcement and punishment that support immoral and illegal behavior.

- a. Yes.  
b. No. Explain \_\_\_\_\_

13. Both moral and legal contingencies are usually indirect-acting analog contingencies. So they control behavior only when they are expressed as moral and legal rules.

- a. Yes.  
b. No. Explain \_\_\_\_\_

14. Though immoral and illegal behavior don't differ fundamentally, in practice, it's harder to observe some behaviors than others.

- a. Yes.  
b. No. Explain \_\_\_\_\_

15. Generally, society adds moral analog contingencies to control behavior that's harder to observe and legal analog contingencies to control behaviors that are easier to observe. So behavior we call *immoral* is usually harder to observe directly,

and behavior we call *illegal* is usually easier to observe.

- a. Yes.  
b. No. Explain \_\_\_\_\_

16. Often we combine moral and legal contingencies, especially when we can sometimes observe and sometimes not observe the same class of behavior.

- a. Yes.  
b. No. Explain \_\_\_\_\_

17. Moral analog contingencies usually have outcomes that don't materially affect the individual who is behaving. For moral analog contingencies based on religion, the outcomes are supernatural or spiritual, not material. For moral analog contingencies based on secular humanism, the outcomes for the behaving person are social—the well-being of others.

- a. Yes.  
b. No. Explain \_\_\_\_\_

18. Legal analog contingencies usually have material outcomes (for example, penalties or imprisonment).

- a. Yes.  
b. No. Explain \_\_\_\_\_

19. Moral and legal rules describe both behaviors that should occur and those that shouldn't.

- a. Yes.  
b. No. Explain \_\_\_\_\_

20. Rules describing analogs to punishment and penalty contingencies suppress behaviors that should not occur. Rules describing analogs

to avoidance support behaviors that should occur.

- A. Yes  
B. No. Explain \_\_\_\_\_

21. In most cases it seems necessary that the moral and legal analog contingencies are based on aversive control.

- a. Yes.  
b. No. Explain \_\_\_\_\_

22. Is this analysis compatible with a belief in God?

- a. Yes.  
b. No. Explain \_\_\_\_\_

23. Do you think religion is one of the most important aspects of people's lives?

- A. Yes.  
B. No

24. Do you think it's important to understand the role religion plays in people's lives?

- A. Yes  
B. No

25. Do you think it's important to understand the role religion plays in people's lives in terms of the principles of behavior?

- A. Yes  
B. No

26. Do you think most of the world's religions (or at least yours) contain rules of conduct that are important for the proper functioning and even the survival of society?

- A. Yes  
B. No

a. 27. Do you think those religions also contain some sort of contingencies to support the following of those rules?

- A. Yes  
B. No

28. Do you think our whimsical example of the polluter's struggle with her conscience is a good illustration of such a rule and such a contingency?

- A. Yes  
B. No

#### SEXUALITY

29. Sexual behavior is

- a. Innate.  
b. Learned. Explain \_\_\_\_\_

30. The reinforcing and punishing value of different sexual stimuli (for example, tactual [touch] stimuli) is

- a. Innate.  
b. Learned. Explain \_\_\_\_\_

31. The reinforcing and punishing value of the sources (for example, a good-looking man or woman) of different sexual stimuli is

- A. Learned.  
B. Innate. Explain \_\_\_\_\_

32. Homophobia is

- a. Learned.  
b. Innate. Explain \_\_\_\_\_

33. The quotes from the bible are

- a. Appropriate to include here.  
b. Not appropriate to include here. Explain \_\_\_\_\_

34. The argument in this section is

- a. Correct.  
b. Wrong. Explain \_\_\_\_\_

35. This section is

- A. Cool.  
B. Offensive. Explain \_\_\_\_\_

36. Is this analysis an example of gay bashing?

- a. No.  
b. Yes. Explain \_\_\_\_\_

37. Keep this section.

- A. Yes.  
B. No. Explain \_\_\_\_\_

38. What did you like best about this section on sexuality? \_\_\_\_\_

39. What did you like least about this section on sexuality? \_\_\_\_\_

#### THREE SIMPLISTIC ERRORS

40. Our critique of simplistic behaviorism seems

- A. Correct  
B. Wrong  
C. Wrong and Unfair

41. Our critique of simplistic cognitivism seems

- A. Correct  
B. Wrong  
C. Wrong and Unfair

42. Our critique of simplistic biological determinism seems

- A. Correct  
B. Wrong  
C. Wrong and Unfair

43. We argue that simplistic biological determinism is used to suppress women. This argument seems.

- A. Correct  
B. Wrong  
C. Wrong and Unfair

44. What did you like best about the section on The Five Philosophical Views of Psychology? \_\_\_\_\_

45. What did you like least about the section on The Five Philosophical Views of Psychology?

---



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46. What did you like best about the section on simplistic errors?

---



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47. What did you like least about the section on simplistic errors?

---



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#### PERSONAL INFO

This evaluation is completely confidential. We just ask that you answer some questions about your own religion so we know where you (the student and reader) are coming from. Thank You!!!!

48. What is your religion?

- A. Christian (Catholic)
- B. Christian (Lutheran)
- C. Christian (Orthodox)
- D. Christian (Methodist)
- E. Christian (Baptist)
- F. Christian (Reformed)
- G. Christian (Evangelical)
- H. Seventh Day Adventist
- I. Mormon
- J. Christian (other)

- 
- K. Jewish
  - L. Buddhist
  - M. Hindu
  - N. Muslim
  - O. Atheist
  - P. Agnostic
  - Q. Other
- 

49. How often do you attend religious services?

- A. Weekly
- B. 10-12 times per year
- C. Only for holidays and weddings, etc.
- D. Never
- E. Other \_\_\_\_\_

50. Do you intend to practice religion in your "grown-up" life?

- A. Yes
- B. No
- C. Maybe

51. Do you consider yourself to lean towards more liberal or conservative viewpoints of religion? i.e. Do you interpret the bible literally (conservative) or figuratively (liberal).

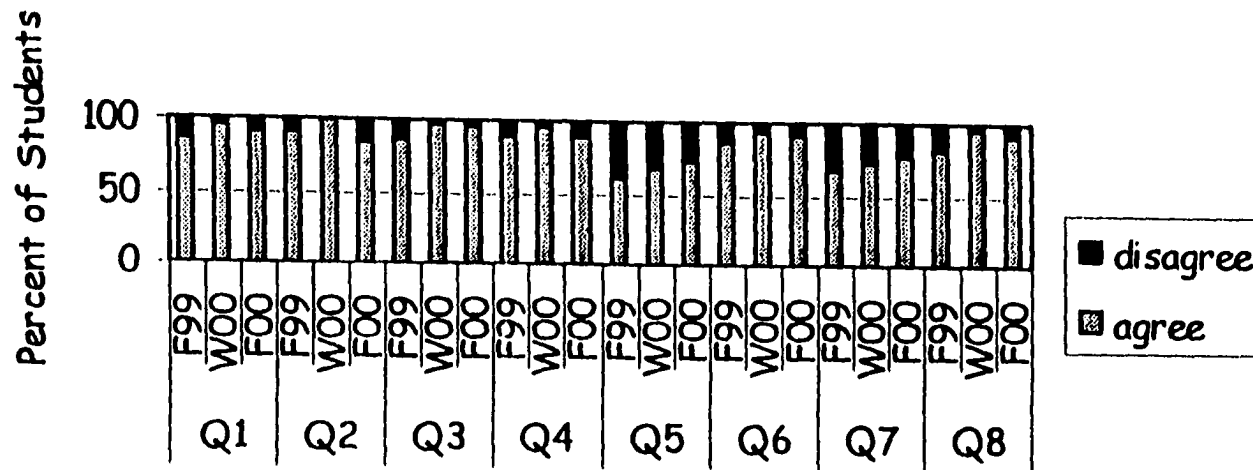
- A. Liberal
- B. Conservative
- C. In between

Please add any other questions, comments, or suggestions regarding this chapter. If anything was difficult to grasp, offensive, particularly interesting, etc. . . Let us know!!! Thanks.

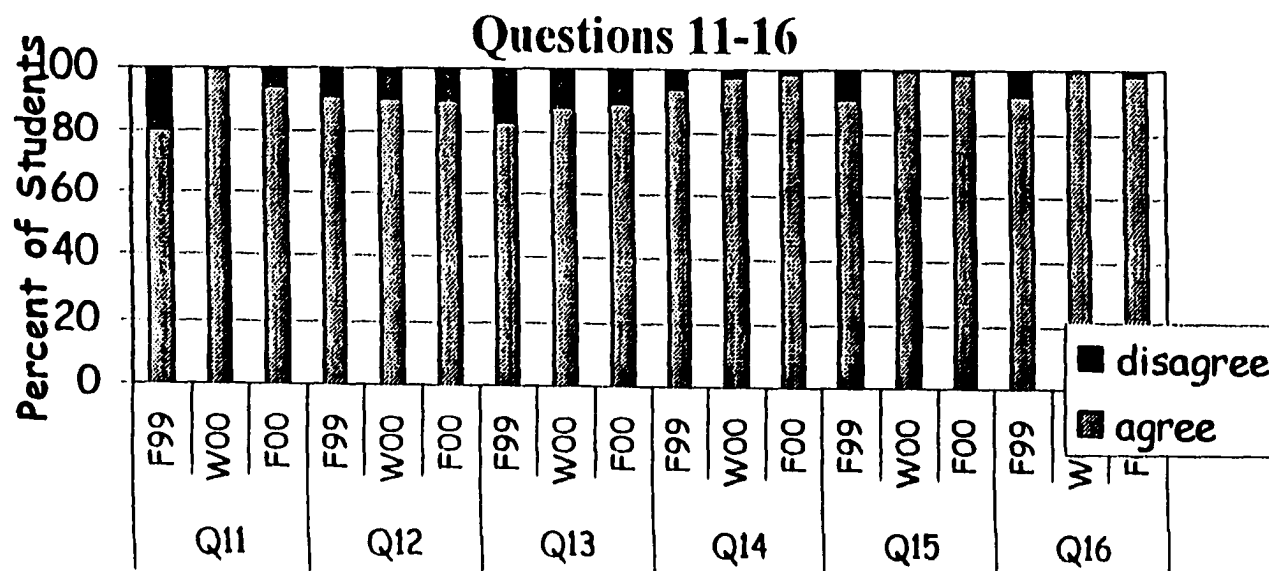


**Appendix N**  
**Graphs of Moral and Legal Control Responses**

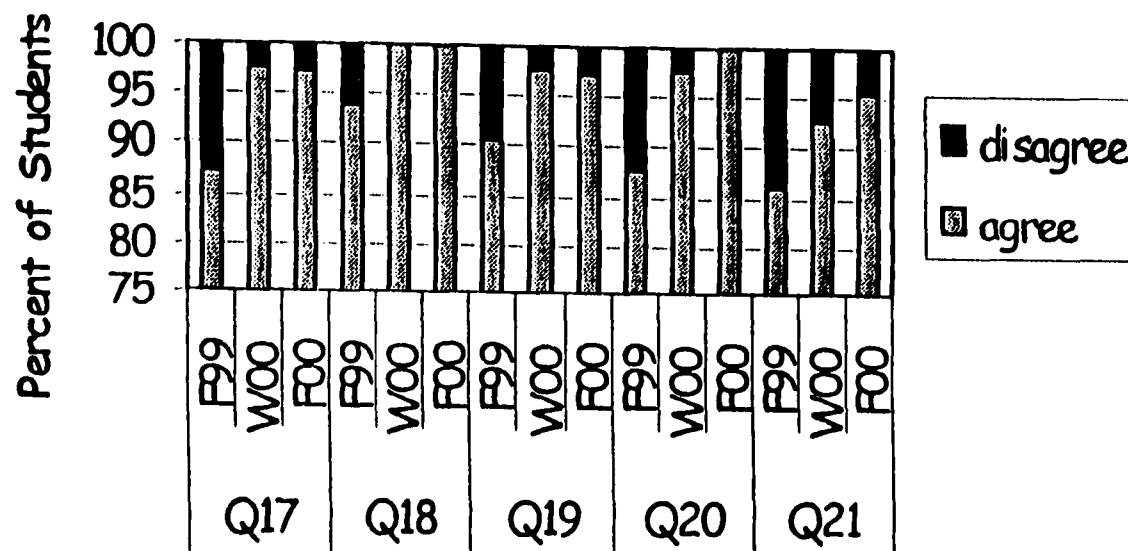
## Questions 1-8



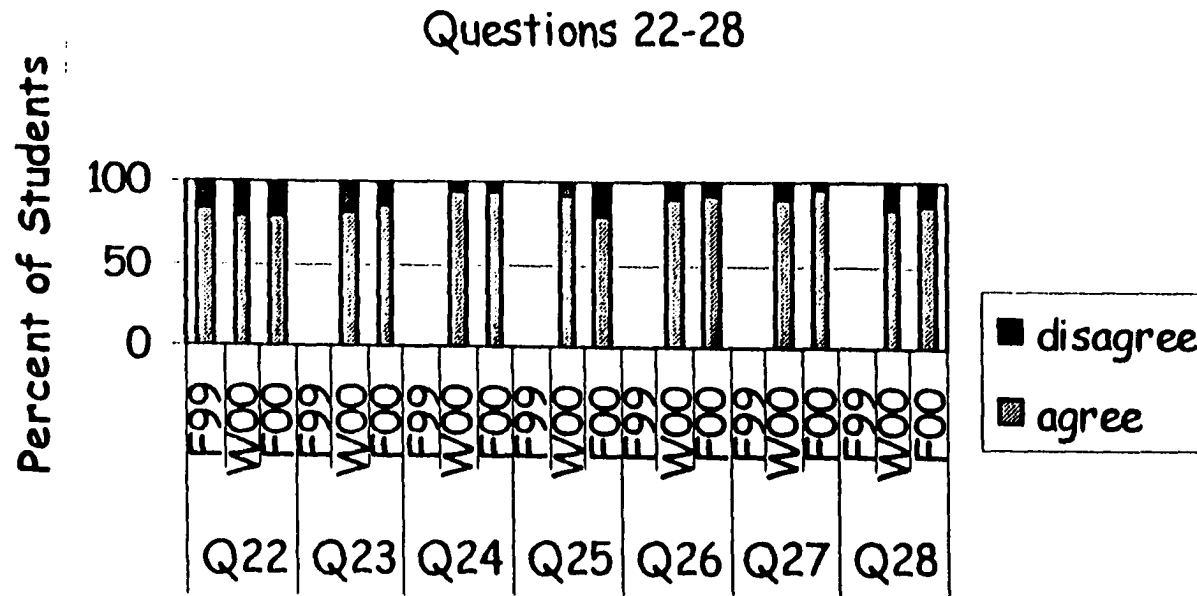
1. The whimsical case of the polluter is offensive (no=agree).
2. The idea that religion functions as a control system is offensive (no=agree)
3. The section *Respect for Other People's Views* does the trick.
4. The argument that we need hell to have moral control is correct.
5. The argument that we need hell to have moral control is offensive (no=agree)
6. The argument about the role of heaven in moral control is correct.
7. The argument about the role of heaven in moral control is offensive (no=agree).
8. Keep these sections on moral and legal control.



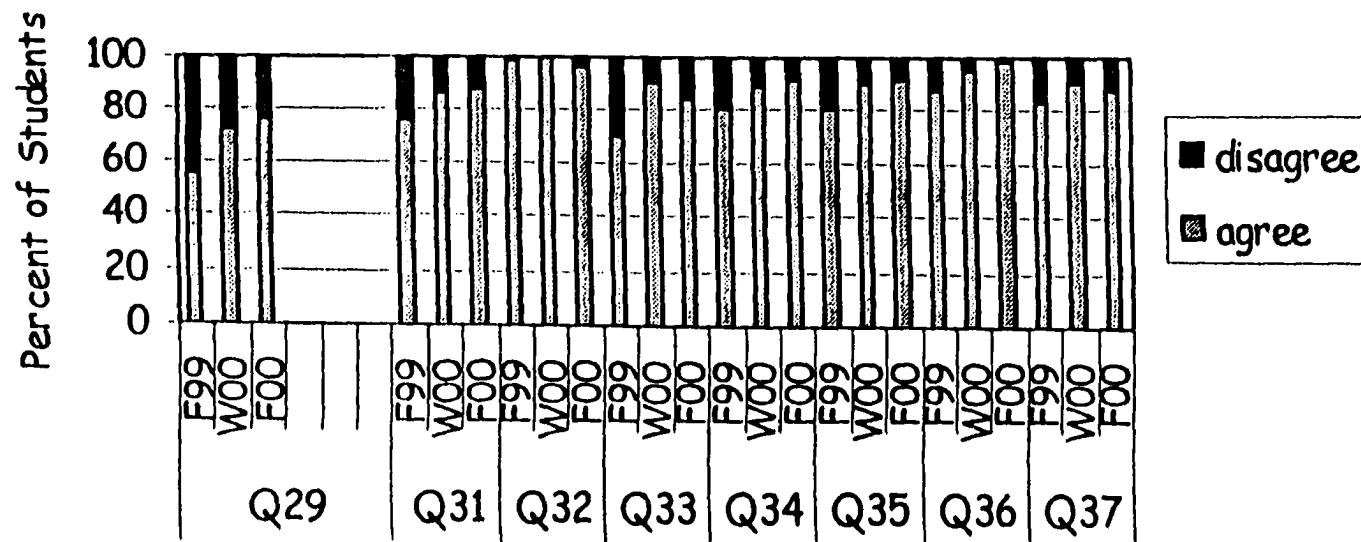
11. Immoral behavior and illegal behavior don't differ fundamentally. Both usually interfere with achieving our ultimate goal—the well-being of life in the universe. In one way or another, both usually involve a failure to follow the rules for proper uses of resources (including human life) needed for life's well-being.
12. Society must add both moral and legal contingencies to counteract the natural contingencies of reinforcement and punishment that support immoral and illegal behavior.
13. Both moral and legal contingencies are usually indirect-acting analog contingencies. So they control behavior only when they are expressed as moral and legal rules.
14. Though immoral and illegal behavior don't differ fundamentally, in practice, it's harder to observe some behaviors than others.
15. Generally, society adds moral analog contingencies to control behavior that's harder to observe and legal analog contingencies to control behavior that's easier to observe. So behavior we call *immoral* is usually harder to observe directly, and behavior we call *illegal* is usually easier to observe.
16. Often we combine moral and legal contingencies, especially when we can sometimes observe and sometimes not observe the same class of behavior.



17. Moral analog contingencies usually have outcomes that don't materially affect the individual who is behaving. For moral analog contingencies based on religion, the outcomes are supernatural or spiritual, not material. For moral analog contingencies based on secular humanism, the outcomes for the behaving person are social—the well-being of others.
18. Legal analog contingencies usually have material outcomes (for example, penalties or imprisonment).
19. Moral and legal rules describe both behaviors that should occur and behaviors that shouldn't.
20. Rules describing analogs to punishment and penalty contingencies describe behaviors that should not occur. Rules describing analogs to avoidance support behaviors that should occur.
21. In most cases, it seems necessary that moral and legal contingencies are based on aversive control.



22. Is this analysis compatible with a belief in God?
23. Do you think religion is one of the most important aspect of people's lives?
24. Do you think it's important to understand the role religion plays in people's lives?
25. Do you think it's important to understand the role religion plays in people's lives in terms of the principles of behavior?
26. Do you think most of the world's religions (or at least yours) contain rules of conduct that are important for the proper functioning and even survival of society?
27. Do you think those religions also contain some sort of contingencies to support the following of those rules?
28. Do you think the whimsical case of the polluter's struggle with her conscience is a good example of such a rule and such a contingency?



29. Sexual behavior is. . . (innate=agree/learned=disagree).
31. The reinforcing and punishing value of the sources (for example, a good-looking man or woman) of different sexual stimuli is. . . (learned=agree/innate=disagree).
32. Homophobia is. . . (learned=agree/innate=disagree).
33. The quotes from the bible are. . . (appropriate to include here=agree/not appropriate to include here=disagree).
34. The argument in this section is. . . (correct=agree/incorrect=disagree).
35. This section is (cool=agree/offensive=disagree).
36. Is this analysis an example of gay-bashing? (no=agree/yes=disagree).
37. Keep this section (yes=agree/no=disagree).

**Appendix O**  
**Student Comments From Chapter 26 Evaluation**

### Student Comments

**Please add any other questions, comments, or suggestions regarding this chapter.** If anything was difficult to grasp, offensive, particularly interesting, etc. . . Let us know!!! Thanks.

360 Classes 4/5/00

### Moral and Legal Control

The idea that religion functions as a social control system:

We are not mindless drones who go to church.

Religion is a personal choice, not a control system.

Not everyone has a religion to believe in or follow.

People should act morally because they want to and it feels good.

I have moral control because I have feelings.

It made sense.

Some people just don't care about doing immoral or illegal things.

I don't see how only heaven/hell give someone moral control when there are so many other factors in the world.

Too focused on Christian beliefs.

Not all religions embrace the concept of hell.

Maybe we all need the concept of hell, but that can take on different views.

I think it's offensive no matter how hard you try. I think people already know the difference between moral and legal control.

Don't have to believe in God to do moral or legal acts.

Religion should not be imposed on all of society.



It sucks for those who don't believe.

People are responsible for their own behavior right here, right now. How they believe they will be punished later is up to them.

You're only examining the idea of God/devil.

We don't need hell; any aversive condition would do.

Immoral behavior is very subjective and many illegal behaviors do not hurt society's well being, but instead are based on false assumptions of Puritanistic society.

It assumes people are inherently evil and need something to control "immoral" behavior and I do not agree.

I don't believe God punishes people with aversive control.

Good that religion was touched on.

Not everyone believes in heaven, yet is under moral control.

Some need hell, others do good just to do good.

What is immoral behavior exactly?

What did you like best about these sections on moral and legal control?

It proved a point!

Sounds good, but people don't really think that way.

They can be explained scientifically.

Made you think about moral and legal control.

The thought/possibility that heaven and hell serve as reinforcers and aversive conditions.

Didn't bash religion.

All views were taken, not just one.

It addresses behavior for every day dilemmas.

I never thought of it that way.

They attempted to look at it from all points of view.

Interesting/makes you think.

It gave a different way to look at things.

It was interesting. I actually enjoyed it.

I have mixed feelings.

Insightful, makes you realize what's going on.

It shows a really interesting interpretation of religion.

They brought into light something that most people haven't taken into consideration.

Honest and to the point! Keeping it real.

Whimsical case of the polluter:

Pollution is wrong but not a major problem.

It's not like you really won't go to heaven if you pollute.

Need to make the behavior a more "religious sin". Littering is, in my opinion, too small an offense. Doesn't effectively illustrate the concept.

Offensive that "her" was used instead of "him/her."

I think you should use a more generic crime like stealing, etc.

### Homosexuality

Sometimes opinions are better left alone when they might offend someone.

Just let people be and don't analyze everything so much.

Information was useful and interesting.

It broadened horizons and makes me feel as if all people are the same regardless of sexual preferences.

It explains it scientifically without implications or constructs.

Seemed to drag on.

I think you are born gay or straight but it is reinforced or punished.

Stood up for homosexuality and we don't need more people living in the world. Procreation can stop for a bit.

Sexual preference you are born with! (Unless you have been molested.) Check out the studies done on the size of the hypothalamus in gay men is the same size as in women.

Highly offensive. Takes back all that we have been working for to avoid discrimination against gays!

If society is against it, where do they learn it from?

Sexual preference you are born with. Don't you guys have any friends or relatives who are gay?

I don't know if it is a topic that needs to be published.

Talks about a "hush-hush" topic openly and respectfully.

Too short.

It's explained well-thought out and reasoned- it actually changed my opinion- I used to think sexuality was innate.

Interesting nature vs. nurture debate.

There was so much to say, it got a little confusing.

I feel it's an important issue and explained well.

It was honest and straightforward.

Bible quotes not totally needed.

Some of the analogies were kind of shaky (i.e. bugs and sex)

Didn't like the part about sodomy. Disgusting subject (probably learned).

Further explains the reasoning that goes into our choices about sexuality.

Not enough sex.

Sex is good, so anything about sex interests me.

The issue is addressed openly and respectfully.

People will get easily upset.

I could see where a homosexual would get negative vibes.

Liked the use of the Bible and Clinton's ideas.

Additional Comments:

The chapter sparked interesting conversation among my friends and myself. The ideas expressed have been sitting in front of our eyes for so long, though we never bothered to look at them. This chapter amazed and captivated me; it made me see the world in a completely different view and one that makes me more tolerant, I believe.

Sorry, but you can't save the world with behavior analysis, results would be temporary and humans would then resort to their ruthless, lazy, non-caring selves.

But what about helping someone out of the goodness of your heart with no ulterior motive on getting into heaven? Helping people could also be seen as reinforcing in this way—when you help someone it makes you feel good. Treat others as you would like to be treated.

I liked the excuse that red lipstick is "biological", like a baboon attracting a mate. (biological determinism)

Biological determinism: Correct, but not taking all aspects into consideration. A lot of Wright's The Moral Animal was as convincing as your argument.

What did you like best about the 5 Philosophical Views? --The fact that they all were tied to an example about bowel movements.

Too long of a chapter.

Liked the frankness of the chapter.

The use of monkeys from Africa being our closest relative genetically at 98% is wrong. Chimps are 99.7% genetically similar to us, gorillas 99% and orangutans 97%. Just a little FYI.

## **Appendix P**

### **Kent Johnson's Review of Sexuality Sections in EPB**

## **Review of sexual orientation in EPB, 4.0**

by Kent Johnson, Morningside Academy

Ok, so you propose a basic, simple behavior analytic model that one's sexual orientation is a function of one's particular social reinforcement history. Your belief about the ways things unfolded for Bobbie is close to the psychoanalytic accounts that were prevalent in the 50s and 60s about how early childhood experiences—perhaps a distant or hateful dad, or a doting mom—set the pattern in place. You don't specify precisely (“concretely” is your term) some examples of those contingencies, you just allude to them and say that it was Bobbie's mom who was responsible for his feelings toward men and neutrality toward women (e.g., “That was my mother's idea. She wanted a girl. Bobbie Brown's my name.”—EPB, p. 2). You call him a transsexual. Let me address the components at hand, one at a time. First, some definitions.

### Some definitions

TG vs. TS. Let's start with the transsexual label. Currently, the gay-lesbian-bisexual-transgender/transsexual (GLBT) community makes a distinction among transsexuals, transgender individuals, and transvestites. We might call Bobbie a budding transgender guy, at best, but he is probably none of these 3. Transsexuals (TS's) are people who have already had a sex change operation; transgender people (TG's) are those who engage in the repertoires of the gender opposite to their own sexual (physical) morphology: clothing, mannerisms and the like; they also have a physiological attractions and verbal repertoires consistent with these other repertoires. TG's are pre-operation stage (“pre-ops”) in their social evolution; however, many never have the operation and remain TG's. Transvestites are people who like to dress opposite to their sex or gender, but who are otherwise gender-conforming in their sexual attractions and other repertoires. So Bobbie is pre-transgender, not TG or TS.

It is not harder today to get a TS operation than it was in the 70s. You have to go to any one of about 15 or more metro areas to find them. There's even an old guy in Wyoming!

TG, TS, and sexual orientation. Further, TG's and TS's may have conforming or nonconforming sexual orientations. In Bobbie's case he is a pre-transgender homosexual. He could more comfortably be called “gay” if he was more “comfortable” with his “feminine” repertoires and private verbal behavior (fantasies and the like), and less disturbed by the reactions of the homophobic verbal communities in which he circulates. Transgender and transsexual individuals could also have a conforming sexual orientation. If Bobbie became a TS, he would be heterosexual. If he became TG, most of the GLBT community would say he was a

heterosexual too, although strictly speaking he would be gay. The GLBT community these days prefers to call TG's who are attracted to the gender opposite to the gender to which they conform "heterosexual," but there is no firm agreement on that, and almost always the conversation doesn't go here.

You distinguish between transsexuals and gays and lesbians in a couple places in your text, but you do not make the distinction clear either time. You need to nail these concepts down (gay, lesbian, TG, TS).

Homosexual and gay. The degree to which a homosexual becomes "gay" or a member of the GLBT community is certainly explained by social reinforcement and Skinner's concept of the verbal community. Being gay is an identity thing; lots of Americans are very identity-oriented in their politics and lifestyles. In most modern cultural circles, the notion of America as a "melting pot" has given way to the notion of a "salad bowl," filled with lots of distinctive subgroups intermingling with each other. As such, there is a gay lifestyle and identity that is socially reinforced behavior, and a homosexual may be more or less gay depending upon his history and circumstances. That is not to say that sexual orientation itself is learned behavior. I am saying that becoming gay or lesbian is a set of repertoires of acting, thinking, speaking, and so on that are learned.

Sexual orientation vs. gender (romantic) attraction. What's the sex of a vibrator? It's who's wielding it that counts. Our romantic, socially intimate, attractions are the key features of "sexual orientation," not sexual stimulation (that's universal and genetic). I prefer to talk about romantic attraction (orientation).

Finally, and perhaps most importantly, you need to distinguish between homosexuality/sexual orientation issues AND transgender/transsexual issues in your Bobbie example. You blur the two features together, which will be misleading to students who have not had much exposure to gays and lesbians.

### Nature or Nurture?

The psychoanalysts first put the position that sexual orientation is learned forward. Behaviorists tend to be among the severest critics of psychoanalytic theory, but that's usually about their overuse of metaphor and mentalistic concepts, and expansive view of the mind, as opposed to a parsimonious explanation derived from measurement experimentation. In fact, behaviorists agree with many of the basic phenomena noticed by psychoanalysts, they just describe them differently. It is easy to translate psychoanalytic concepts into behaviorese. When I taught Intro Psych I used to ask the students to write translations of Freud's defense mechanisms, and so on. It was easy because the overlap between psychoanalysis and behavior analysis is at least tri-fold:



they are motivation based, they do not require awareness to work, and they are experience-based. Your notion of “preschool fatality” is very psychoanalytic in this sense. However, enlightened behaviorists these days try very hard not to express their explanations in a pathological context, which is another way that behaviorists are very different from psychoanalysts. Your text does very well in this regard.

Simon LeVay, 1996, distills a lot of the research I review below, in a book, “Queer Science.” In some cases I have lifted whole sentences and phrases and put them in here, not in the interests of plagiarism, but to accelerate my writing this review.

The “scientific” (vs. psychoanalytic) position that sexual orientation is learned was first described in the 60s’s by Wainwright Churchill (1967) and others. The anthropology of Churchill’s theory was that a person’s sexual orientation depended on the sex of the first person with whom he or she first had sexual contact to orgasm. If that person was heterosexual, then heterosexuality was reinforced; if of the same sex, then homosexuality was reinforced. Conversely, an early sexual contact that was painful or frightening would be negatively reinforced. Of course, the sex of one’s initial partner must be the most salient characteristic; “otherwise one might end up always dating taxi drivers or never having sex with people in jeans.” (LeVay, 1996)

There are many problems with Churchill’s position, i.e., anthropology. For example, many gays and lesbians end up with a sexual orientation different from their first encounter. I had 10 years of mediocre sex with women before I got up the awareness and nerve that I would serve myself better by having sex with men. Many gay people my age had lots of sex with women before coming out, although this is far less likely today, given the rising level of tolerance for homosexuality, and awareness of the GLBT community. It is also quite common for gays and lesbians to know that they are homosexual prior to any homosexual experience or even prior to any sexual experiences of any kind. And there are many heterosexual men and women whose first sexual contacts, often pleasurable ones at that, have been with the same sex. For example, all teenage boys of the Sambia of New Guinea engage in culturally reinforced homosexual behavior but later they become predominantly heterosexual. And don’t forget the same-sex behavior among boys and girls at segregated boarding schools. Boarding school attendance does not increase the likelihood of a homosexual orientation in adulthood (Wellings, et al, 1994).

I could go on about one-trial learning not always working, competing repertoires whose eventual predominance is based upon relative proportions of reinforcement, and so on, as did many people who poked holes in these early behavioral anthropologies. In response to the criticisms of Churchill’s theory, McGuire and his colleagues (1965) said that although the initial encounter itself may not fix sexual orientation, the association is reinforced during subsequent solitary masturbation because the individual is likely to use the recollection as an aid to sexual arousal. They reported several case histories to support their theory. Their suggested treatment

plan for homosexuality was to begin masturbating with homosexual fantasies and switch to a heterosexual fantasy 5 seconds prior to orgasm, by which time climax is too close to be derailed. However, McGuire et al. never reported a successful case of this plan.

Your anthropology, the social reinforcement of Bobbie's sexual orientation began with his mother-child interactions and his mother's wishes is not specific, and I don't blame you for not being specific. I maintain that any anthropology will be refutable. The psychoanalyst's mumbo-jumbo about mother-child interactions is more specific and therefore full of holes. Different social learning anthropologies are a dime a dozen in the literature. Both psychoanalytical and behavioral theories can be manipulated to accommodate almost any case history. This is the first of 3 main problems I see with your using the Barlow, et al study to support the position that sexual orientation is learned.

My second main problem is that use of the study is misleading, since it misrepresents the vast majority of data on the inquiry: it is one of only 2 or 3 reportedly successful behavioral treatment plans for sexual orientation in the literature! In my reference section below I list more than a dozen studies that failed to produce long-term effects, including 5 by a prolific author who later refuted the methodology and long-term findings of his previous "successful" research (McConaghy). {I have taken the liberty of discounting "successful" research by Feldman, and also by Owensby, on prison "patients" who were "cured." I suspect the prisoners simply lied about becoming heterosexual, with the motivation of avoiding or leaving incarceration. (It takes a lot for me to be cynical.) This is corroborated by a second Owensby prison study that showed none of the treated men becoming heterosexual.}

I heard you speak of John Money at CalABA 2 years ago. Do you know that he thought gender was due to imprinting in the first 2 years of human life? He drew this inference from a study of intersexes babies—babies who had ambiguous genitalia because of hormone problems during fetal life. The babies adopted the gender of whatever sex they were treated as during the first 2 years of life, but became fixed thereafter. Differential social reinforcement seems a much better "learning" explanation than imprinting.

Money's student, Richard Green, wrote a book in 1974, "Sexual Identity Conflict in Children and Adults." In it he told parents how they encourage their sons' femininity and discourage their masculinity, and told mothers to get out of the way. Feminine kids don't need their mothers around, he said. It was Green who started the whole idea that feminine boys would become "transsexuals," something that happened to only one of them. Undoubtedly, Barlow was influenced by Green's idea. Green in fact referred one concerned parent to a behavioral treatment program at UCLA.

The program was run by a student of Ivar Lovaas's, George Rekers. He reported a study involving the boy that Green referred to in JABA in 1974. The boy in the study became the Skinner-behaviorists' poster boy in the treatment of femininity in boys; later the study became our nemesis. This study was part of the body of literature that includes your centerpiece Barlow et al. study.

Specifically, by age 2, "Kyle" was playing with dolls, and sometimes said he wanted to be a girl and become a mother when he grew up. "Kyle" was 4 years old when treatment began. Rekers & Lovaas used task analysis and differential reinforcement to teach masculine behavior, as Barlow did. They also put him in a token economy, which reinforced masculine behavior, provided response cost, time out, and/or punishment (spanking) for feminine behavior.

While we don't know "whatever happened to Bobbie," we do know what happened to "Kyle." About 13 years after the start of Kyle's treatment, Green interviewed Kyle, then 18 y.o. Here is a summary of what Green found out, reported in LeVay, 1996, p. 101:

"But when Green interviewed Kyle himself at age 18, a very different picture emerged. He complained that he was unable to make friends because of an overwhelming fear of appearing feminine. Under lengthy questioning, Kyle conceded that he was predominantly homosexual but was deeply conflicted about it. In his first and only homosexual experience, he fellated a stranger in a toilet, apparently through a "glory hole." Thus he was not required to reveal himself as gay even to his sex partner. Soon after his experience he attempted suicide. He believed homosexuality was sinful and attributed his own homosexuality mainly to a lack of affection from his father. "Because when you are a child," he said, "I think you copy what you see. And I didn't have any strong male influence." He expressed gratitude that Reker's treatment had at least saved him from becoming 100% homosexual. A less charitable interpretation would be that the treatment did nothing but instill Kyle with an incapacitating fear of revealing his femininity, a fear that remained with him through adolescence and also affected his emerging homosexuality.

In fact, according to Green's figures, 9 out of 12 gender-nonconformist boys who were subjected to behavior modification treatment became gay or bisexual adults—no different than what was seen in the (gender nonconformist) boys who were not subjected to the treatment."

No one—Rekers, Lovaas, Green—reported this follow-up in JABA or the Journal of Abnormal Child Psychiatry, the 2 places where this research was published. So how do we know that Bobbie didn't turn out similarly? I think the Barlow study—the centerpiece for your learning theory of sexual orientation—offers very questionable support for your position.

There is also a poster-girl story that John Money reports in his 1972 book with Anke Ehrhardt, *Man and Woman, Boy and Girl*. The illustration is as much a support of a hormonal theory as a learning theory, because as a baby the boy had a sex change operation to become a girl. And as in the poster-boy story, an interview much later reveals she had reverted to boy behavior (and anatomy!), married and had children. If you'd like me to detail this story, let me know. What it tells me is that even when anatomy, postnatal hormones, and social reinforcement try to buck prenatal events, they fail.

The whole area of learning and homosexuality research seems riddled with speculative anthropology and hardly any outcomes that are clearly due to social reinforcement and/or aversive control.

Green has since shifted to a more centrist position, as has Money, both claiming that homosexuality is "possibly genetic and hormonal, but juvenile sexual rehearsal play is particularly important."

Incidentally, I learned 2 other irritating things. First, Rekers was a homophobe who wrote a 1982 book, *Shaping Your Child's Sexual Identity*, in which he described homosexuality as a "promiscuous and perverted sexual behavior," and he bemoaned the fact that "homosexuality has been sold to the unwary public as a right between consenting adults." Second, the Mormon Church got involved in all this feminine boys research in the 70's at Brigham Young University. They used aversive control in their psychology clinic, treating terrorized students and doing dissertations (e.g., McBride, below). One student describes the terrorizing process and treatment plan, including a confession by one of the clinics professors who saw that the treatments were not working, but kept it quiet (lied) because he felt compelled to support the official church position (Harryman). Other unethical practices are reported in Katz, reference below, but let me not get too worked up about this or take us off the track of science and into immoral engineering.

My third main problem with using the Barlow study to justify the reinforcement basis of sexual orientation is that demonstration of behavior modification does not explain the origins of a behavior being modified, only that it can be modified. Although not in the category of no possibility, a la the Bailey's pigs, I believe the research I reviewed supports the view that "modification" is probably temporary, and "learning"—a relatively permanent change in behavior, does not occur. However, the failure of behavior treatments in adult homosexuality does not prove that sexual orientation is inborn either. As you might say, it just is.

Lastly, a personal problem, more with your storyline than with the Barlow study. I dislike doctor interventions such as the suggestion that Bobbie go through behavior modification (p.2, col.2). It is intrusive and in this case conservative, "safe" as you called it (p. 128), heterosexist or at least conventional establishment bound.

If Sid decided not to help Bobbie may have encountered a verbal community or 2 that positively reinforced his behavior. The solution to Bobbie's problems is a positively reinforcing verbal community, not behavior modification. To me, this is behavior modification "over the boundary." There's a time and a place and this ain't it.

Let's look at some other learning research. Probably the clearest body of research on sexual orientation concludes that gays and lesbians tend to be gender-nonconforming during their childhood. Bailey and Zucker reviewed 41 retrospective studies that surveyed gay and lesbian adults. In comparison to heterosexual controls, gays and lesbians as children reported that they engaged or did not engage in the following 7 areas of gender nonconforming behaviors: participation in rough-and-tumble play, competitive athletics, or aggression; toy and activity preference; imagined roles and careers (significant differences for men only); cross-dressing; preference for same or opposite sex playmates; social reputation as "sissy" or "tomboy;" and gender identity.

Richard Green, the student of John Money that I discussed above, followed gender nonconforming children into adulthood and found that 4/5 of the markedly effeminate boys became rather conventional homosexual or bisexual men, one boy became a transsexual, and the remainder became heterosexual. Since they were only 18 y.o. at the time of the final interview, it's possible that there was still more "coming out" around the corner. In the control group, none became homosexual, and one became bisexual. These data question any assertion that homosexuality is due to sexual experiences at puberty or later, or to other learning processes in adulthood.

In sum, adult homosexuality is indeed often preceded by childhood gender nonconformity, but it is not as causal chain in the way Money, Green and Rekers had thought. Rather, childhood gender nonconformity and adult homosexuality may independently develop from some common prior cause.

Behavior analysis can account for the particular repertoires that we develop to play out our sexual orientation. Our GLBT identity (a verbal repertoire), particular sexual behaviors, sexual behavior preferences, and the reinforcing values of stimuli in our lives that are correlated with our sexual practices are learned through social reinforcement {with limitations based upon our morphological characteristics (size, weight, sensory strengths and weaknesses, etc) duly noted}. However, I believe there is substantive research to suggest that prenatal influences, genes and hormones and their interactions in particular, largely account for our sexual orientation.

Now, brief synopses of research in biology and development, and some thoughts of Iz Goldiamond.

### Research on the brain

Different regions in the hypothalamus, which plays an important role in sexual life, play a role in male-typical and female-typical sexual behavior. The region that contributes to female-typical behavior, the ventro-medial nucleus, is developed to a lesser degree in homo than het men. One hypothalamus nucleus in particular, INAH3, is larger in men than women, and larger in hets than homo men. Researchers say that these findings strengthen the notion that the development of sexual orientation, at least in men, is closely tied with prenatal sexual differentiation. However, since these measurements were taken on adults who had already been sexually active for a number of years, there is the possibility that the structural differences are actually the **RESULT** of differences in sexual behavior. The use it or lose it principle. No data available on neuroanatomical differences at birth. Also differences in hypo, even at birth, might come from genetic differences. The anterior commissure is larger in women than men, and larger in gay men than hets. No conclusive evidence can be drawn from these correlations between morphological differences and sexual orientation.

### Research on repertoire correlations and development

homo, het part of a package of sex atypical or sex-typical repertoires. This line of research rests conceptually on a gender-shift theory of sexual orientation. Some sex-typical repertoires: men better than women on spatial tasks, mathematical reasoning, geometry; men more aggressive, criminally violent, and desire a greater number of different sex partners than women. Het/homo differences? Very inconclusive, one study shows het men better at throwing a ball at a target, even stat controlling for sports experience. 1 study shows gay men outperforming het men and women in verbal IQ, although, like reported handedness differences, results are inconsistent across studies. Gay men are less physically aggressive than het men, but similar in verbal aggressiveness and competitiveness. Gay men have more sex partners than het men but that's because, unlike het men, they are not constrained by the unwillingness of women to have sex with them. So, some data support the idea that homosexuality is part of a package of gender-likely repertoires, but there's a lot of sex-typical and sex-atypical behavioral mixing that give gays and lesbians some claim to be a third sex, or better, a third gender. This research does not distinguish between gender repertoires as a function of prenatal programs of brain differentiation, social reinforcement and learning, and the subtle interactions between the 2. Also, no cross-cultural validity in this research. Also, lumping all gay styles together (str8-acting to queeny) and all lesbian styles together ( butch to femme) is a bit absurd.

## Research on stress and homosexuality

Some evidence that prenatal stress in mom influences sexual receptivity and behavior in rats. No evidence in humans. Endocrinological responses to stress in rats and humans probably not homologous.

### Same sex behavior in nonhuman animals (ethology)

I have a book in my house, a sort of “coffee table” book that intrigues most of the people who pick it up while they are visiting. It is called “Biological Exuberance: Animal Homosexuality and Natural Diversity,” by Bruce Bagemihl. It is very thick, 750 pages long, and has lots of pictures and descriptions of sexual practices of a hundred or so species.

### Interactions between prenatal and social program contingencies (Goldiamond)

Do you define one’s “true nature” by the social program or the induction (physiological pattern) of the organism that enters the program?

Same social program could produce different outcomes depending upon entering organism:

2 different inductions given the same social program.

may result in different outcomes.

2 same inductions given different programs may result in different outcomes.

2 same inductions given same program result in same outcome.

2 different inductions given different programs may result in same outcomes.

See Iz Goldiamond’s paper, “Behavioral Approaches and Liason Psychiatry” in Psychiatric Clinics of North America, 2, 2, 1979. The reference is so obscure that I’ll send you the paper if you’d like it. It’s a terrific conceptual paper, including 4 types of behavior-organic relations, linear vs. nonlinear analysis and topical vs. systemic interventions.

## Who cares about research in homosexuality?

Research in homosexuality is needed to define the specific aspects of gender attraction (sexual orientation) that account for what gays and lesbians have generally believed about themselves: that their particular gender attraction is a central, defining aspect of their identity/class, a la race, ethnicity, sex, and so on. The research will also undoubtedly help make progress toward equality.

### Some Recommendations

1. Clear up the distinctions among TG, TS, transvestites, and the issue of orientation as relating to romantic or intimate attraction to a certain gender, not really sexual stimulation.
2. Present the main point: We are born with the capacity to be reinforced by sexual stimulation, and when all of our sensory system is at play, we are reinforced by sexual stimulation from a person of a specific gender or sex (heterosexuality and homosexuality), or from both sexes (bisexuality).
3. Keep the Barlow study, if you want, but
  - express the limitations: no long-term effects, and so on, as I describe above
  - use it in a discussion of the distinctions between engineering (applied behavior analysis) and etiology (origins and history)
4. Talk about the GLBT community and its values: a changed culture that reinforces, or at least does not either punish or poke aversives at, alternative gender attraction, orientation, and sexual behavior. This brief but important discussion will at least balance your presentation that one must change to fit the societal contingencies or certain doom and gloom will follow, i.e., suicidal-Bobbie's story.
5. Present a brief statement of the state of research knowledge on sexual orientation, including learning, hormones, and genes, and widespread occurrence in the animal kingdom.
6. Talk about prenatal and environmental influences in a 2 x 2 matrix, ala Goldiamond.
7. Distinguish between homosexuality/sexual orientation issues AND transgender/transsexual issues in your Bobbie example. You blur the two features together, which will be misleading to students who have not had much exposure to gays and lesbians.

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**Appendix Q**  
**Human Subjects Institutional Review**  
**Board Approval Form**

Human Subjects Institutional Review Board

Kalamazoo, Michigan 49008-3899  
616 387-8293

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## WESTERN MICHIGAN UNIVERSITY

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Date: 5 November 1999

To: Richard Malott, Principal Investigator  
Beth Trojan, Student Investigator for dissertation

From: Sylvia Culp, Chair *Sylvia Culp*

Re: HSIRB Project Number 99-08-05

This letter will serve as confirmation that your research project entitled "A Behavioral Systems Approach to Textbook Revision Quality Improvement" has been **approved** under the **exempt** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may **only** conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: 5 November 2000

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