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Behaviorology

Conductologia

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Gedragsologie

Behaviourology

100% NATURAL

ABOUT BEHAVIOROLOGY

BEHAVIOROLOGY IS AN INDEPENDENTLY ORGANIZED DISCIPLINE FEATURING THE NATURAL SCIENCE OF BEHAVIOR. BEHAVIOROLOGISTS STUDY THE FUNCTIONAL RELATIONS BETWEEN BEHAVIOR AND ITS INDEPENDENT VARIABLES IN THE BEHAVIOR-DETERMINING ENVIRONMENT. BEHAVIOROLOGICAL ACCOUNTS ARE BASED ON THE BEHAVIORAL CAPACITY OF THE SPECIES, THE PERSONAL HISTORY OF THE BEHAVING ORGANISM, AND THE CURRENT PHYSICAL AND SOCIAL ENVIRONMENT IN WHICH BEHAVIOR OCCURS. BEHAVIOROLOGISTS DISCOVER THE NATURAL LAWS GOVERNING BEHAVIOR. THEY THEN DEVELOP BENEFICIAL BEHAVIOR-ENGINEERING TECHNOLOGIES APPLICABLE TO BEHAVIOR RELATED CONCERNS IN ALL FIELDS INCLUDING CHILD REARING, EDUCATION, EMPLOYMENT, ENTERTAINMENT, GOVERNMENT, LAW, MARKETING, MEDICINE, AND SELF-MANAGEMENT.

BEHAVIOROLOGY FEATURES STRICTLY NATURAL ACCOUNTS FOR BEHAVIORAL EVENTS. IN THIS WAY BEHAVIOROLOGY DIFFERS FROM DISCIPLINES THAT ENTERTAIN FUNDAMENTALLY SUPERSTITIOUS ASSUMPTIONS ABOUT HUMANS AND THEIR BEHAVIOR. BEHAVIOROLOGY EXCLUDES THE MYSTICAL NOTION OF A RATHER SPONTANEOUS ORIGINATION OF BEHAVIOR BY THE WILLFUL ACTION OF ETHEREAL, BODY-DWELLING AGENTS CONNOTED BY SUCH TERMS AS *mind*, *psyche*, *self*, *muse*, OR EVEN PRONOUNS LIKE *I*, *me*, and *you*.

AMONG BEHAVIOR SCIENTISTS WHO RESPECT THE PHILOSOPHY OF NATURALISM, TWO MAJOR STRATEGIES HAVE EMERGED THROUGH WHICH THEIR RESPECTIVE PROPONENTS WOULD HAVE THE NATURAL SCIENCE OF BEHAVIOR CONTRIBUTE TO THE CULTURE. ONE STRATEGY IS TO WORK IN BASIC NON-NATURAL SCIENCE UNITS AND DEMONSTRATE TO THE OTHER MEMBERS THE KIND OF EFFECTIVE SCIENCE THAT NATURAL PHILOSOPHY CAN INFORM. IN CONTRAST, BEHAVIOROLOGISTS ARE ORGANIZING AN ENTIRELY INDEPENDENT DISCIPLINE FOR THE STUDY OF BEHAVIOR THAT CAN TAKE ITS PLACE AS ONE OF THE RECOGNIZED BASIC NATURAL SCIENCES.

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AS PART OF THE ORGANIZATIONAL STRUCTURE OF THE INDEPENDENT NATURAL SCIENCE OF BEHAVIOR, *The International Behaviorology Institute* (TIBI), A NON-PROFIT PROFESSIONAL ORGANIZATION, EXISTS TO FOCUS BEHAVIOROLOGICAL PHILOSOPHY AND SCIENCE ON A BROAD RANGE OF CULTURAL PROBLEMS. TIBI SPONSORS AN ASSOCIATION (THE TIBI ASSOCIATION, OR TIBIA) FOR INTERESTED PEOPLE TO JOIN, SUPPORTING THE MISSION OF TIBI AND PARTICIPATING IN ITS ACTIVITIES. AND *Behaviorology Today* IS THE MAGAZINE/NEWSLETTER OF THE INSTITUTE. THE GUEST AND STAFF WRITERS OF *Behaviorology Today* PROVIDE AT LEAST MINIMALLY PEER-REVIEWED ARTICLES AS WELL AS, ON OCCASION AND WITH EXPLICIT DESIGNATION, FULLY PEER-REVIEWED ARTICLES. THEY WRITE ON THE FULL RANGE OF DISCIPLINARY TOPICS INCLUDING HISTORICAL,

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Editor's Note

This issue contains two TIBI syllabi. Between them, on page 8, you will find a short article on the reappearance of behaviorology.org after its thorough revision. A longer article after the syllabi features a comprehensive analysis of *adjunctive behavior* by Lawrence E. Fraley. Then, the last article is an excerpt from *Coercion and Its Fallout* by Murray Sidman. After these you will find the usual organizational materials (as listed in the table of contents).

The next issue (Spring 2004) will also include two TIBI syllabi. These syllabi will be for . . . *Performance Management and Preventing Workplace Violence* (BEHG 420) and *Verbal Behavior II* (BEHG 475). For more information, look on page 29 where you will find the *Syllabus Directory*. This contains a full list of syllabi, and the issues in which they actually appear (or are to appear). ☺

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PHILOSOPHICAL, CONCEPTUAL, EDUCATIONAL, EXPERIMENTAL, AND TECHNOLOGICAL (APPLIED) CONSIDERATIONS. PLEASE JOIN US—IF YOU HAVE NOT ALREADY DONE SO—AND SUPPORT BRINGING THE BENEFITS OF BEHAVIOROLOGY TO HUMANITY. (CONTRIBUTIONS TO TIBI OR TIBIA ARE TAX-DEDUCTIBLE.) ☺

TIBI Online Syllabus for BEHG 415: The Behaviorology of Basic Autism Intervention Methods

Stephen F. Ledoux

SUNY-Canton

[This is another installment in the series of syllabi for TIBI's online courses. Each syllabus appears in *Behaviorology Today* basically in the same form as it appears online. The series continues whenever there are syllabi that have yet to be printed, or that require reprinting due to substantial revisions. Locate additional syllabi through the *Syllabus Directory* at the back of this issue.—Ed.]

Note #1: This syllabus contains some notes that supplement the more traditional syllabus parts. Each note is numbered for convenient reference. Some notes, like this one, have multiple paragraphs.

This syllabus is a long document. It is longer than a syllabus for a face-to-face course as it contains material that the professor would otherwise cover in person. *Hence it was designed to be printed out for reading!* Furthermore, it was designed to be used *as a task check-off list*. Please print it out and use it these ways.

Indeed, the only activity in this course for which you might need access to a computer (aside from a short *web-log* assignment) is to print this syllabus so that you can see how this course works and follow the directions to complete this course. This is a matter of access, student access to education, so that everyone who wants this course can take it regardless of whether they own several computers or only have access to one in their local library or in a friend's home.

Students can, if they wish, study the topics of this course free of charge, perhaps to fulfill their own interests. They would do so simply by completing the activities described in this syllabus.

Students can also study the topics of this course for TIBI (The International Behaviorology Institute) credit, perhaps toward a TIBI certificate. They would do so by paying the necessary fee to be assigned a professor to provide feedback on, and assessment of, their efforts. This course is part of several TIBI certificates, including the

Behavior Literacy Certificate and a Certificate in Effective Autism Intervention; contact TIBI for details.

Also, students can study the topics of this course for regular academic credit; they would do so by contacting any accredited institution of higher education that offers behaviorology courses accepted by TIBI, such as the State University of New York at Canton (SUNY-Canton) at www.canton.edu which is SUNY-Canton's web site. At SUNY-Canton this course is offered as *SSCI 375: Basic Autism ABA Methods*. TIBI automatically accepts A or B grades from the academic-credit version of this course as equivalent to its own course toward its certificates (and C and D academic-credit grades can be remediated through TIBI for TIBI credit; contact TIBI for details). Alternatively, the work done completing this course through TIBI may make taking the course for academic credit easier; ask the professor who teaches SUNY-Canton's equivalent course about this.

The parts of this syllabus cover many topics. While the headings may be different, these include (a) the course content and objectives, (b) the text, study, and assessment materials, (c) the grading policy, (d) the necessary work-submission methods and professor feedback, and (e) the study-activity sequence and completion timelines.

Note #2: The prerequisite (or corequisite) for this course is BEHG 101: Introduction to Behaviorology I. If you have not had this prerequisite course (or its academic-credit equivalent such as SSCI 245: Introduction to the Science and Technology of Behavior, from SUNY-Canton), then you need to take it either before taking the current course, or at the same time as you take the current course.

Course Description

BEHG 415: The Behaviorology of Basic Autism Intervention Methods. This course examines the application of the natural science and technology of behavior to the interventions for children with autism using fundamental applied behaviorology methods (known to some as ABA—Applied Behavior Analysis—methods). Exercising a systematic and data-based behaviorological orientation, the course topics include (a) the evaluation of different approaches for effectiveness, (b) the skills to be taught to children with autism, (c) the behavior engineering practices and skills needed to teach autistic children effectively, (d) the different roles of professionals and para-professionals involved in autism intervention efforts, (e) the organizational and legal supports available to autistic children and their families, (f) the roles of different autism treatment team members, (g) the organizational and legal interactions between families with autistic children and their local schools, and (h) the answers to the most common questions asked by parents of autistic children. Examination of actual autism training cur-

ricula, programs, practices, data sheets, settings, and case histories are also integral parts of the course.

In summary, this course introduces students to the basic application of scientific principles governing behavior, through the general behavior–engineering techniques derived from these principles, to the interventions appropriate to autism and related developmental disabilities. The application techniques are developed by the discipline of behaviorology which is the *natural* science of behavior. It was known originally as behavior analysis and now is known more precisely as behaviorology. This is the independent discipline of strictly *naturalistic* explanations of behavior and so should not be confused with psychology which is a discipline that accepts fundamentally *mystical* explanations of behavior (and which thus cannot be a natural science).

The history of these disciplinary developments is also considered. For example, as a name for the natural science of behavior, behavior analysis is older, and is still widely used. But it is a less accurate name than behaviorology because many psychologists claim it as a type of psychology, as this name came into use during the period when behavior analysis and psychology were sharing their history. During this 50-year period, the natural scientists of behavior, the behavior analysts, tried to get psychologists to shed their inherent mysticism and commit to a natural science. However, psychology *as a discipline* (and not necessarily as individual psychologists) did not (Could not?) do so, and *that* created the basis for today's separate and independent discipline of behaviorology...

Note #3: To check out other behaviorology courses offered by TIBI, visit their locations on the TIBI web site (www.behaviorology.org).

To check out other behaviorology courses offered by SUNY–Canton, see the list and descriptions—and in some cases, the syllabi for the online versions—on the faculty web page of the professor who teaches them (which currently is Dr. Stephen F. Ledoux; click Ledoux in the faculty directory at www.canton.edu).

Since SUNY–Canton's behaviorology—natural science of behavior—courses carry the SSCI (i.e., social science) designator for the course numbers, an accounting is in order: These courses are natural science of behavior courses because they are concerned with behavior solely from a strictly naturalistic perspective, thereby necessarily and automatically leaving out mystical perspectives, while using scientific methods with a subject matter focused on people. (For some details, see the article by S.F. Ledoux titled *Defining Natural Sciences in Behaviorology Today*, Volume 5, Number 1, Spring 2002, pp. 34–36.) Indeed, SUNY–Canton's first behaviorology courses were originally proposed and approved with the BEHG (i.e., behaviorology) designator for the course numbers (e.g., BEHG 135—

Parenting Knowledge and Skills). However administrators, out of concern to simplify student credit transfer, had the designator changed to SSCI because this designator is not only more common but it also is appropriate to the scientific–method–based people focus of these courses. So it would indeed simplify the transfer of credit for students. Hence, for administrative convenience, SUNY–Canton's natural science of behavior—behaviorology—courses carry the SSCI—social science—designator. For additional details, see the article by S.F. Ledoux titled *Developing Opportunities to Disseminate the Natural Science of Behavior in Behaviorology Today*, Volume 5, Number 1, Spring 2002, pp. 50–54. (Both articles can also be found on TIBI's web site.)

Course Objectives

The main objective of the course is to expand the student's behavior repertoire in relevant areas of behavioral course content. The student will:

- ✧ Compare autism intervention approaches and strategies, and evaluate their relative effectiveness;
- ✧ Analyze the range and depth of the behavior skills to be taught to children with autism by autism intervention personnel;
- ✧ Apply the behavior engineering practices and skills that autism intervention personnel develop to conduct autism intervention programs in the standard settings (i.e., center-based and home-based programs) in a professional and effective way;
- ✧ Compare the depth and range of the differing behavior engineering activities, roles, and qualifications of both professionals and para-professionals involved in effective autism intervention;
- ✧ Analyze the benefits of the variety and sources of organizational and legal supports available for families with autistic children;
- ✧ Evaluate the roles of the various professional members, such as speech–language pathologists, of autism intervention teams;
- ✧ Interpret the organizational and legal considerations relevant to the interactions between families with autistic children and their local schools;
- ✧ Synthesize comprehensive and professional answers to the common and difficult questions asked by parents of autistic children.

Additional Objectives

- ✧ Successful, A earning students will use (at an accuracy level of 90% or better) basic disciplinary terminology both when discussing behaviorological knowledge, and when applying behaviorological skills, relevant to autism interventions.
- ✧ Such successful students will also ask questions, seek answers, converse about, and act on the uses and

benefits of this discipline for humanity.

✧ Such successful students will also behave more effectively in other ways with respect to themselves and others.

Required Materials (in their order of use)

✧ Maurice, C., Green, G., & Luce, S.C. (Eds.). (1996). *Behavioral Intervention for Young Children with Autism*. Austin, TX: Pro-Ed. (ISBN 0-89079-683-1)

✧ Ledoux, S.F. (2003). *Study Questions for Maurice et al's "Behavioral Intervention for Young Children with Autism."* Canton, NY: ABCs. (ISBN 1-882508-18-1)

✧ Maurice, C. (1994). *Let Me Hear Your Voice*. New York: Ballantine Books. (ISBN 0-449-90664-7)

✧ New York State Department of Health Early Intervention Program. (1999 [Publication No. 4216]). *Clinical Practice Guideline Quick Reference Guide (for Parents and Professionals): Autism / Pervasive Developmental Disorders*. Albany, NY: New York State Department of Health.

Each resident of New York State can order a free single copy of this book by sending a request, *with their name and address*, to this address:

Publications
New York State Department of Health
PO Box 2000
Albany NY 12220

For a small fee for each copy, others can order a single copy, or anyone can order multiple copies, by calling 518-439-7286 to place a credit card order, or by contacting Health Education Services at this address:

Health Education Services
PO Box 7126
Albany NY 12224

In either case, include this information with your request for the book: "*Clinical Practice Guideline Quick Reference Guide: Autism / Pervasive Developmental Disorders, Assessment and Intervention for Young Children (Age 0-3 Years)*, 108 pages, 1999 Publication No. 4216.

Recommended Materials

These are references to materials that, while *not* required for the course, may also be of interest to those who wish to go deeper into the course topics and extensions:

✧ Latham, G.I. (2-part video program). *The Making of a Stable Family*. Logan, UT: P&T ink.

✧ Latham, G.I. (2-cassette, or 2-CD, program). *An Angel Out of Tune*. Logan, UT: P&T ink.

Note #4: The simplest way to order most of the required books and A/V items is through the publishers, including Pro-Ed at toll free—1-800-897-3202, ABCs at 315-

386-2684, and P&T ink at either 435-752-5749 or—toll free—(for credit-card orders only) at 1-888-750-4814. Other required and recommended materials can be ordered either through the online bookstore at www.behavior.org which is run by the Cambridge Center for Behavioral Studies, or through the College Association Bookstore at www.canton.edu (or call 1-315-386-7112 to speak directly with bookstore staff).

Also, this course is grounded in the Shaping Model of Education which is informed by behaviorological science (rather than the Presentation Model of Education which is informed by psychology). In the shaping model teaching is not seen as mostly talking (nor is learning seen as mostly listening). Instead, teaching is the scientifically grounded design, arrangement, and application of educational materials, methods, and contingencies in ways that generate and maintain small but continuously accumulating behaviors the short and long range consequences of which are successful in producing an ever wider range of effective responding (i.e., learning) on the part of the student.

Grades

Grading policy does not involve curves, for you are not in competition with anyone (except perhaps yourself). That is, all students are expected to produce the academic products demonstrating that they have, individually, achieved at least mastery of the subject matter, if not fluency. Therefore, all students are expected to earn an A or a B (although inadequate products will produce a lower result that requires remediation before it can become a passing grade). Also, all students will receive the grades they earn. This holds even if the expectation for which the course is designed—that all students earn As—is met: If all earn As, then all receive As.

Passing grades are limited to A and B, and are earned according to the amount of assigned work that is successfully completed:

Earning an A consists mainly of satisfactorily completing 90% or more of the work both on the assignments (the review and the web-log) and on the textbook and its study questions.

Earning a B consists mainly of satisfactorily completing more than 80% of the work both on the assignments (the review and the web-log) and on the textbook and its study questions (but not more than 90% on them).

For convenience a point-accumulation system is invoked to keep track of progress through the course. All but one of the 21 assignments (one on each of the 21 chapters) in the Maurice *et al* book are worth 10 points each, for a total of 200 points. The assignment on the teaching programs chapter, Chapter 5, is worth 20 points. The book review assignment on *Let Me Hear Your Voice* is worth 50 points. And the web-log assignment is worth 30 points. This provides a grand total of 300 possible

points. The percentage used to consider what grade you are earning is the percentage of these possible points that you actually earn.

However, point accumulation is not the grade determiner but is merely used as a convenient way to track progress *on the presumption that all course tasks are in progress*. This is because doing work on *all* of the tasks for the course is the more relevant determiner of grades than is the accumulation of points. (For example, a student who tries to accumulate just enough points, on some easier tasks, to get a B—while ignoring other course tasks—would not that way actually meet the criteria for a B and so would have to continue and complete all the required work satisfactorily to earn one of the passing grades.)

Also, students should expect to be asked occasionally to complete various test-like assessments. The level of success on these assessments helps gauge the extent to which the work on the course assignments is actually producing the learning implied by the completion of that work.

These practices are in place because the scientific research—data based Shaping Model of Education recognizes the student/professor relationship as a professional relationship in which coercive practices (i.e., aversive educational practices) are seen as inappropriate (so long as extreme conditions do not exist making such practices unavoidable). Instead, the more effective, efficient, and productive non-coercive practices of carefully designed and sequenced assignments emphasizing added reinforcement for timely work well done is generally seen as more appropriate. So, your effort and cooperation are expected and presumed; please do not disappoint either your professor or yourself.

About Using the Texts & Study Question Books

Unless specified otherwise, you need to write out your answers in longhand. The reason you are to write out your answers by hand is that this type of verbal response brings about more learning than merely saying—or even typing—the answer. This is because—as taught in another advanced behaviorology class (i.e., BEHG 355: Verbal Behavior I)—writing the answer in longhand involves both point-to-point correspondence and formal similarity between the stimuli and the response products of the answer.

The Maurice et al Book

The Maurice *et al* textbook introduces the basic practices and considerations derived from the natural science of behavior, behaviorology, and applied to autism interventions. (The authors have made this book look mostly like a behavior analysis book for historical reasons as discussed in the Intro Origins paper covered in the prerequisite course.) Read all sections of every chapter in the book according to the assigned schedule (answering all of the

study questions for each chapter). Assignments will be given in the *Course Contents Checklist* section.

The Maurice et al Study Question Book

The study questions were prepared to help you absorb the material from each of the chapters in the Maurice *et al* textbook. You are to complete each chapter's study questions in the sequence assigned. Learning occurs when responses are made (like writing question answers) and reinforced, especially responses that automatically provide their own reinforcing consequences (like being right) as does writing out study question answers correctly. You complete the assigned study questions, *after reading the chapter through*, by *writing out* the answer to each question when you come to it as you *reread* the chapter. You *write out* the answers right in the *Study Question* book. Write out your answers in full sentences that incorporate the questions.

The study question (SQ) booklet starts with a section titled To the Student and Teacher. *Read this section first!* It explains more on how to do the study questions successfully. (You will also find it helpful to mark the number of each SQ in the margins of the textbook at the location of the SQ's answer...) Assignments will be given in the *Course Contents Checklist* section.

To submit your work (if you are taking the course for TIBI credit), scan and fax to your professor the pages that have your answers for each assignment. Or (Preferred!) photocopy those pages and send them to your professor by regular postal mail. (Addresses and phone/fax numbers will be clarified upon enrollment.) You are to keep the original of your work both to insure against loss and to make it easier for you and your professor to communicate about your work (as you will then both have an identical copy). Email, and email attachments, are neither reliable enough for this purpose, nor identical enough for this purpose, so they are not to be used for this purpose.

Your answers will be perused, and points will be allocated according to the quality of your work. Should any inadequacies be apparent, you will be informed so that you can make improvements. While sometimes your professor will provide a metaphorical pat on the back for a job well done, if you do not hear of any inadequacies, then pat yourself on the back for a job well done even as you continue on to the next assignment.

Note #5: Since you are to write out your answers to the study questions directly in the SQ book, you need to have your own study question book. To assure that this is followed by everyone equally, you need to fill out and send in to your professor (by regular postal mail) the original ownership form in the rear of your study question book.

The Book Review Assignment

This assignment involves reading Maurice's *Let Me Hear Your Voice* and then writing a three to five page *typed* review of this book. You may begin this assignment any-time *after* completing Chapter 4 of the Maurice *et al* book. You should submit this assignment *before* you finish Chapter 17 of the Maurice *et al* book (a period of eight weeks at most).

To submit your work (if you are taking the course for TIBI credit), *you may email* (Preferred!) your book review to your professor. Or, you may scan and fax it to your professor. Or you may photocopy it and send it to your professor by regular postal mail. (Addresses and phone/fax numbers will be clarified upon enrollment.) You are to keep the original of your work both to insure against loss and to make it easier for you and your professor to communicate about your work (as you will then both have a copy). Email *attachments* are neither reliable enough for this purpose, nor identical enough for this purpose, so they are not to be used for this purpose.

Your book review will be perused, and points will be allocated according to the completeness of your work. Should any inadequacies be apparent, you will be informed so that you can make improvements. Otherwise, presume a pat on the back, and continue with the next assignment.

The Web-Log Assignment

This short, written assignment requires you to create a two to three page *typed* log of a two to three hour visit to autism-related parts of three specific web links that can be found on the faculty web page of Dr. Stephen F. Ledoux (click on Ledoux in the faculty directory at www.canton.edu). The three sites you are to visit are the Cambridge Center for Behavioral Studies site, the Education Consumers Clearinghouse site, and the Los Horcones site. Your log should include not only the times, locations, sequences, and durations of your visit, but also your account of the best things you learned at these sites, plus any interesting discoveries worthy of return visits. You may begin this assignment anytime *after* completing Chapter 4 of the Maurice *et al* book. You should submit this assignment *before* you finish Chapter 17 of the Maurice *et al* book (a period of eight weeks at most).

To submit your work (if you are taking the course for TIBI credit), *you may email* (Preferred!) your web-log to your professor. Or, you may scan and fax it to your professor. Or you may photocopy it and send it to your professor by regular postal mail. (Addresses and phone/fax numbers will be clarified upon enrollment.) You are to keep the original of your work both to insure against loss and to make it easier for you and your professor to communicate about your work (as you will then both have a copy). Email *attachments* are neither reliable

enough for this purpose, nor identical enough for this purpose, so they are not to be used for this purpose.

Your web-log will be perused, and points will be allocated according to the completeness of your work. Should any inadequacies be apparent, you will be informed so that you can make improvements. Otherwise, presume a pat on the back, and continue with the next assignment.

Course Contents Checklist

Students should work their way through the course by reading and studying the texts, answering the questions, and sending in their work for each assignment in this list (which can be used as a check off list):

- A. The Maurice *et al* book, Preface & Ch. 1.
- B. The Maurice *et al* book, Ch. 2.
- C. The Maurice *et al* book, Ch. 3.
- D. The Maurice *et al* book, Ch. 4.
- E. The Maurice *et al* book, Ch. 5.
- F. The Maurice *et al* book, Ch. 6.
- G. The Maurice *et al* book, Ch. 7.
- H. The Maurice *et al* book, Ch. 8.
- I. The Maurice *et al* book, Ch. 9.
- J. The Maurice *et al* book, Ch. 10.
- K. The Maurice *et al* book, Ch. 11.
- L. The Maurice *et al* book, Ch. 12.
- M. The Maurice *et al* book, Ch. 13.
- N. The Maurice *et al* book, Ch. 14.
- O. The Maurice *et al* book, Ch. 15.
- P. The Maurice *et al* book, Ch. 16.
- Q. The Maurice *et al* book, Ch. 17.
- R. The Maurice *et al* book, Ch. 18.
- S. The Maurice *et al* book, Ch. 19.
- T. The Maurice *et al* book, Ch. 20.
- U. The Maurice *et al* book, Ch. 21.
- V. The book review on *Let Me Hear Your Voice*.
- W. The web-log assignment.

That list is *not* the sequence in which you should do the assignments. Do them in the sequence presented in the self-pacing, weekly, *Time-Allocation Sequence* even if you do them at a faster pace than the pace presented there.

Note #6: The usual higher education workload expectation for a course is about 150 hours. This can be accomplished at rates ranging from about 50 hours per week over three weeks to about ten hours per week over the typical 15 weeks of a semester. Of course, some students may take a little less than 150 hours, while others may take more than 150 hours, to do the work to the same acceptable and expected standard.

You can—and are encouraged to—go through the assignments as rapidly as your schedule allows. This could mean spending a typical 15 weeks on the course. Or it could mean doing the whole course in as little as—but

not in less than—three weeks, as one would progress through the *single* allowed course in a three-week summer school term. That is, you could work on the course anywhere from minimum part-time (i.e., at the rate of about ten hours per week, as described in the *Time Allocation Sequence*) to maximum full-time (i.e., at the rate of about 50 hours per week).

If you are to be successful, you need to exercise some self-management skills by starting immediately and keeping up a reasonable and steady pace on the course work. You need to do this because your professor will *not* be reminding you that the products of your work are due; all the course work is set forth in this syllabus and so is automatically assigned. You are expected to follow through on your own. You need to set an appropriate pace for yourself (or accept the pace in the *Time Allocation Sequence* at the end of this syllabus) and adhere to that pace, and thereby get the sequence of assignments done and submitted to your professor. This will assist your success.

Time Allocation Sequence

The slowest reasonable self-pacing of the coursework (presuming a typical 15-week semester) would involve time allocations like these (using the assignment letter codes in the *Course Contents Checklist*):

Week 1: Assignment A: the Maurice *et al* book, Preface & Ch. 1.

Week 2: Assignment B: the Maurice *et al* book, Ch. 2.

Week 3: Assignment C: the Maurice *et al* book, Ch. 3.

Week 4: Assignment D, and begin v & w: the Maurice *et al* book, Ch. 4, and begin the book review assignment and the web-log assignment.

Week 5: Assignment E: the Maurice *et al* book, Ch. 5.

Week 6: Assignment F: the Maurice *et al* book, Ch. 6.

Week 7: Assignment G: the Maurice *et al* book, Ch. 7.

Week 8: Assignments H & I: the Maurice *et al* book, Chs. 8 & 9.

Week 9: Assignments J & K: the Maurice *et al* book, Chs. 10 & 11.

Week 10: Assignments L & M: the Maurice *et al* book, Chs. 12 & 13.

Week 11: Assignments N & O, and finish v & w: the Maurice *et al* book, Chs. 14 & 15, and finish the book review assignment and the web-log assignment.

Week 12: Assignments P & Q: the Maurice *et al* book, Chs. 16 & 17.

Week 13: Assignments R & S: the Maurice *et al* book, Chs. 18 & 19.

Week 14: Assignments T & U: the Maurice *et al* book, Chs. 20 & 21.

Week 15: (This is a spare week to complete any unfinished work.)

If you go slower than this schedule, assignments could easily back up on you to the point where insufficient time remains to complete them in a satisfactory manner.

Note #7: Be sure that everything you submit is readable and contains your name!

At various points in the course, you will be provided with feedback about your work. Upon completing all the coursework, you will be provided with your earned grade. (The grade is provided solely for the person whose work earned the grade.)☺



A Renewed “behaviorology.org”

For the last several months, Institute staff collaborated with a professional web-site designer to provide a completely new and updated web site as a resource for anyone interested in human behavior. After a welcome screen, visitors find a page of selections that provide a *Sample* of our *Behaviorology Community Resources*. These begin with a wide selection of useful *Behaviorology Today* articles organized under several topical categories (e.g., contributions to parenting, child care, and education, behaviorology around the world, book reviews). Some other selections feature links to related web sites or descriptions of TIBI’s certificate programs and course syllabi.

From the page of *Sample Behaviorology Community Resources*, visitors can select another page that contains more *Complete Behaviorology Community Resources*. This page includes not only additional materials under all of the previous page’s selections, but also more categories under the *Behaviorology Today* articles selection (e.g., contributions to autism, natural science, outreach, farewells, about behaviorology and TIBI), as well as several new selections (e.g., books and magazines, upcoming activities, contribution and membership information). Each of these new categories contains its own wide range of materials.

Our web site receives regular updates. Also, after each new issue of *Behaviorology Today*, we link the issue’s articles to the relevant categories on the web site.

So go to **behaviorology.org** and visit us. Explore what interests you. And tell us about your site-visit experience. Your input is welcome, and will help us make further improvements.☺

TIBI Online Syllabus for BEHG 355: Verbal Behavior I

Stephen F. Ledoux

SUNY-Canton

[This is another installment in the series of syllabi for TIBI's online courses. Each syllabus appears in *Behaviorology Today* basically in the same form as it appears online. The series continues whenever there are syllabi that have yet to be printed, or that require reprinting due to substantial revisions. Locate additional syllabi through the *Syllabus Directory* at the back of this issue.—Ed.]

Note #1: This syllabus contains some notes that supplement the more traditional syllabus parts. Each note is numbered for convenient reference. Some notes, like this one, have multiple paragraphs.

This syllabus is a long document. It is longer than a syllabus for a face-to-face course as it contains material that the professor would otherwise cover in person. *Hence it was designed to be printed out for reading!* Furthermore, it was designed to be used *as a task check-off list.* Please print it out and use it these ways.

Indeed, the only activity in this course for which you might need access to a computer is to print this syllabus so that you can see how this course works and follow the directions to complete this course (although you might want to email the *summary* and *description* assignments). This is a matter of access, student access to education, so that everyone who wants this course can take it regardless of whether they own several computers or only have access to one in their local library or in a friend's home.

Students can, if they wish, study the topics of this course free of charge, perhaps to fulfill their own interests. They would do so simply by completing the activities described in this syllabus.

Students can also study the topics of this course for TIBI (The International Behaviorology Institute) credit, perhaps toward a TIBI certificate. They would do so by paying the necessary fee to be assigned a professor to provide feedback on, and assessment of, their efforts. This course can be part of several TIBI certificates; contact TIBI for details.

Also, students can study the topics of this course for regular academic credit; they would do so by contacting any accredited institution of higher education that offers behaviorology courses accepted by TIBI, such as the State

University of New York at Canton (SUNY-Canton) at www.canton.edu which is SUNY-Canton's web site. At SUNY-Canton this course is offered as *SSCI 380: Introduction to Verbal Behavior Analysis and Applications*. TIBI automatically accepts A or B grades from the academic-credit version of this course as equivalent to its own course toward its certificates (and C and D academic-credit grades can be remediated through TIBI for TIBI credit; contact TIBI for details). Alternatively, the work done completing this course through TIBI may make taking the course for academic credit easier; ask the professor who teaches SUNY-Canton's equivalent course about this.

The parts of this syllabus cover many topics. While the headings may be different, these include (a) the course content and objectives, (b) the text, study, and assessment materials, (c) the grading policy, (d) the necessary work-submission methods and professor feedback, and (e) the study-activity sequence and completion timelines.

Note #2: The prerequisite for this course is BEHG 101: Introduction to Behaviorology I. If you have not had this prerequisite course (or its academic-credit equivalent such as SSCI 245: Introduction to the Science and Technology of Behavior, from SUNY-Canton), then you need to take it before taking the current course.

Course Description

BEHG 355: Verbal Behavior I. Based on natural science of behavior principles and practices, this course introduces students to (a) the behaviorological analysis of verbal behavior/language, (b) the historical context in which verbal behavior analysis arose, and (c) some applications of verbal behavior analysis especially as it is applied to enhance the acquisition of verbal behavior/language either by foreign language learners or by learners with language deficits perhaps from developmental disabilities. Covered analysis topics include such fundamental concepts as (a) differentiating verbal and non-verbal behavior, (b) the verbal community, (c) mediated reinforcement, (d) the basic verbal behaviors called mands, tacts, intraverbals, codics, and duplcs, (e) various extensions of these elementary verbal operants, (f) the most common variables of which verbal operants are a function, (g) some of the ways these variables combine in the multiple control of complex verbal behaviors, (h) response products, (i) point-to-point correspondence, (j) formal similarity, (k) thematic and formal controls over verbal behavior, and (l) the ways the verbal community teaches speakers appropriate verbal responses to their private experiences.

In summary, this course introduces students to the basic interpretation and application of scientific principles governing behavior, through the general behavior-engineering techniques derived from these principles, to verbal behavior. The interpretations and application tech-

niques are developed by the discipline of behaviorology which is the *natural* science of behavior. It was known originally as behavior analysis and now is known more precisely as behaviorology. This is the independent discipline of strictly *naturalistic* explanations of behavior and so should not be confused with psychology which is a discipline that accepts fundamentally *mystical* explanations of behavior (and which thus cannot be a natural science).

The history of these disciplinary developments is also considered. For example, as a name for the natural science of behavior, behavior analysis is older, and is still widely used. But it is a less accurate name than behaviorology because many psychologists claim it as a type of psychology, as this name came into use during the period when behavior analysis and psychology were sharing their history. During this 50-year period, the natural scientists of behavior, the behavior analysts, tried to get psychologists to shed their inherent mysticism and commit to a natural science. However, psychology *as a discipline* (and not necessarily as individual psychologists) did not (Could not?) do so, and *that* created the basis for today's separate and independent discipline of behaviorology...

Note #3: To check out other behaviorology courses offered by TIBI, visit their locations on the TIBI web site (www.behaviorology.org).

To check out other behaviorology courses offered by SUNY-Canton, see the list and descriptions—and in some cases, the syllabi for the online versions—on the faculty web page of the professor who teaches them (which currently is Dr. Stephen F. Ledoux; click Ledoux in the faculty directory at www.canton.edu).

Since SUNY-Canton's behaviorology—natural science of behavior—courses carry the SSCI (i.e., social science) designator for the course numbers, an accounting is in order: These courses are natural science of behavior courses because they are concerned with behavior solely from a strictly naturalistic perspective, thereby necessarily and automatically leaving out mystical perspectives, while using scientific methods with a subject matter focused on people. (For some details, see the article by S.F. Ledoux titled *Defining Natural Sciences* in *Behaviorology Today*, Volume 5, Number 1, Spring 2002, pp. 34–36.) Indeed, SUNY-Canton's first behaviorology courses were originally proposed and approved with the BEHG (i.e., behaviorology) designator for the course numbers (e.g., BEHG 135—Parenting Knowledge and Skills). However administrators, out of concern to simplify student credit transfer, had the designator changed to SSCI because this designator is not only more common but it also is appropriate to the scientific-method-based people focus of these courses. So it would indeed simplify the transfer of credit for students. Hence, for administrative convenience, SUNY-Canton's natural science of behavior—behaviorol-

ogy—courses carry the SSCI—social science—designator. For additional details, see the article by S.F. Ledoux titled *Developing Opportunities to Disseminate the Natural Science of Behavior* in *Behaviorology Today*, Volume 5, Number 1, Spring 2002, pp. 50–54. (Both articles can also be found on TIBI's web site.)

Course Objectives

The main objective of the course is to expand the student's behavior repertoire in relevant areas of behaviorological course content. The student will:

- ✧ Summarize each of the scientific principles and concepts upon which verbal behavior analysis is based;
- ✧ Summarize each of the additional fundamental concepts specifically relevant to verbal behavior analysis;
- ✧ Analyze verbal operant behaviors and the variables of which they are a function;
- ✧ Classify elementary verbal operants in terms of their evoking stimuli and their maintaining consequences;
- ✧ Systematize the variety of verbal operants;
- ✧ Interpret extensions of elementary verbal operants;
- ✧ Demonstrate the factors that enable the verbal community to teach speakers appropriate responses to private stimuli;
- ✧ Identify the ways variables combine in the multiple control of complex verbal behaviors;
- ✧ Describe the historical context in which verbal behavior analysis and applications arose;
- ✧ Compare some of the basic applications of verbal behavior analysis in various general settings;
- ✧ Formulate explicit examples of how he or she can apply verbal behavior analysis in her or his own work, present and future.

Additional Objectives

- ✧ Successful, A earning students will use (at an accuracy level of 90% or better) basic disciplinary terminology both when discussing behaviorological knowledge, and when applying behaviorological skills, relevant to verbal behavior analysis and applications.
- ✧ Such successful students will also ask questions, seek answers, converse about, and act on the uses and benefits of this discipline for humanity.
- ✧ Such successful students will also behave more effectively in other ways with respect to themselves and others.

Required Materials (in their order of use)

- ✧ Peterson, N. (1978). *An Introduction to Verbal Behavior*. Grand Rapids, MI: Behavior Associates. [This book may be available online. Contact TIBI regarding this and other options.]
- ✧ MacCorquodale, K. (1970). On Chomsky's review of Skinner's *Verbal Behavior*. *Journal of the Experimental Analysis of Behavior*, 13 (1), 83–99.

✧ Ledoux, S.F., Michael, J., & Miguel, C. (2002). *An Introduction to the Elementary Verbal Operant Relations in the Verbal Behavior Analysis Component of Behaviorology Plus Some Initial Implications and Applications for Foreign Language Teaching*. Canton, NY: Stephen F. Ledoux. [Contact TIBI for options on obtaining this booklet.]

✧ Chapter 14 of Maurice, C., Green, G., & Luce, S.C. (Eds.). (1996). *Behavioral Intervention for Young Children with Autism*. Austin, TX: Pro-Ed. (Only those *not* engaged in foreign language or ESL teaching need this material to complete the “area-focused” assignment.) [To read and study this chapter when scheduled, buy the book—the publisher’s phone number is in “Note #4”—or borrow it from your local library, or contact TIBI for other options on obtaining this material.]

✧ Chapter 14 of Ledoux, S.F. (2003). *Study Questions for Maurice et al’s “Behavioral Intervention for Young Children with Autism.”* Canton, NY: ABCs. (Only those *not* engaged in foreign language or ESL teaching need this material to complete the “area-focused” assignment.) [Contact TIBI for options on obtaining this material.]

Recommended Materials

These are references to materials that, while *not* required for the course, may also be of interest to those who wish to go deeper into the course topics and extensions:

✧ Cautela, J.R. (1994). General level of reinforcement II: Further elaborations. *Behaviorology*, 2 (1), 1-16.

✧ Chomsky, N. (1959). *Verbal Behavior* by B.F. Skinner. *Language*, 35, 26-58.

✧ Eshleman, J.W. & Vargas, E.A. (1988). Promoting the behaviorological analysis of verbal behavior. *The Analysis of Verbal Behavior*, 6, 23-32.

✧ Fraley, L.E. (1996). Verbal behavior in the measuring process. *The Analysis of Verbal Behavior*, 13, 123-126.

✧ Ledoux, S.F. (2002). Increasing tact control and student comprehension through such new postcedent terms as added and subtracted reinforcers and punishers. In S.F. Ledoux. *Origins and Components of Behaviorology—Second Edition*. Canton, NY: ABCs.

✧ MacCorquodale, K. (1969). B.F. Skinner’s *Verbal Behavior*: A retrospective appreciation. *Journal of the Experimental Analysis of Behavior*, 12 (5), 831-841.

✧ Michael, J.L. (1982). Distinguishing between discriminative and motivational functions of stimuli. *Journal of the Experimental Analysis of Behavior*, 37, 149-155.

✧ Premack, D. (1970). A functional analysis of language. *Journal of the Experimental Analysis of Behavior*, 14, 107-125.

✧ Schlinger, H. & Blakely, E. (1987). Function-altering effects of contingency-specifying stimuli. *The Behavior Analyst*, 10, 41-45.

✧ Sidman, M. (1986). Functional analysis of emergent verbal classes. In T. Thompson & M. Zeiler (Eds.).

Analysis and Integration of Behavioral Units (pp. 213-245). Hillsdale, NJ: Erlbaum.

✧ Sidman, M. (1994). *Equivalence Relations and Behavior: A Research Story*. Boston, MA: Authors Cooperative.

✧ Skinner, B.F. (1953). *Science and Human Behavior*. New York: Macmillan. (Paperback edition published by Free Press, 1965.)

✧ Skinner, B.F. (1957). *Verbal Behavior*. New York: Appleton-Century-Crofts. Reprinted, 1992, Cambridge, MA: The B.F. Skinner Foundation.

✧ Stromer, R. (1991). Stimulus equivalence: Implications for teaching. In W. Ishaq (Ed.). *Human Behavior in Today’s World* (pp. 109-122). New York: Praeger.

✧ Vargas, E.A. (1988). Verbally-governed and event-governed behavior. *The Analysis of Verbal Behavior*, 6, 11-22.

✧ Vargas, J.S. (1990). Cognitive analysis of language, and verbal behavior: Two separate fields. In L.J. Hayes & P.N. Chase (Eds.). *Dialogues on Verbal Behavior* (pp. 197-201). Reno, NV: Context Press.

Note #4: The simplest way to order required or recommended books is to order them through the publishers, including *Pro-Ed* at—toll free—1-800-897-3202, and *ABCs* at 315-386-2684. They may also be available through the online bookstore at www.behavior.org which is run by the Cambridge Center for Behavioral Studies, or through the College Association Bookstore at www.canton.edu (or call 1-315-386-7112 to speak directly with bookstore staff).

The simplest way to access required or recommended articles is to seek them through your local community or college library. Alternatively, the parent journals may have web sites on which they make the articles available online. Visit behaviorology.org for some relevant links.

Also, this course is grounded in the Shaping Model of Education which is informed by behaviorological science (rather than the Presentation Model of Education which is informed by psychology). In the shaping model teaching is not seen as mostly talking (nor is learning seen as mostly listening). Instead, teaching is the scientifically grounded design, arrangement, and application of educational materials, methods, and contingencies in ways that generate and maintain small but continuously accumulating behaviors the short and long range consequences of which are successful in producing an ever wider range of effective responding (i.e., learning) on the part of the student.

Grades

Grading policy does not involve curves, for you are not in competition with anyone (except perhaps yourself). That is, all students are expected to produce the academic products demonstrating that they have, individually, achieved at least mastery of the subject matter, if not fluency. Therefore, all students are expected to earn

an A or a B (although inadequate products will produce a lower result that requires remediation before it can become a passing grade). Also, all students will receive the grades they earn. This holds even if the expectation for which the course is designed—that all students earn *As*—is met: If all earn *As*, then all receive *As*.

Passing grades are limited to A and B, and are earned according to the amount of assigned work that is successfully completed:

Earning an A consists mainly of satisfactorily completing 90% or more of the work on all assignments.

Earning a B consists mainly of satisfactorily completing more than 80% of the work on all assignments (but not more than 90% on them).

For convenience a point-accumulation system is invoked to keep track of progress through the course. The assignments on the first four chapters of the Peterson book are all worth 40 points each, while the assignment on the shorter, fifth chapter is worth 20 points, for a total of 180 points. The read and summarize assignment on the MacCorquodale book-review, and the completion assignment on the Ledoux *et al* material, and completion of the “area-focused” assignment, are all worth 40 points each, for a total of 120 points. This provides a grand total of 300 possible points. The percentage used to consider what grade you are earning is the percentage of these possible points that you actually earn.

However, point accumulation is not the grade determiner but is merely used as a convenient way to track progress *on the presumption that all course tasks are in progress*. This is because doing work on *all* of the tasks for the course is the more relevant determiner of grades than is the accumulation of points. (For example, a student who tries to accumulate just enough points, on some easier tasks, to get a B—while ignoring other course tasks—would not that way actually meet the criteria for a B and so would have to continue and complete all the required work satisfactorily to earn one of the passing grades.)

Also, students should expect to be asked occasionally to complete various test-like assessments. The level of success on these assessments helps gauge the extent to which the work on the course assignments is actually producing the learning implied by the completion of that work.

These practices are in place because the scientific research—data based Shaping Model of Education recognizes the student/professor relationship as a professional relationship in which coercive practices (i.e., aversive educational practices) are seen as inappropriate (so long as extreme conditions do not exist making such practices unavoidable). Instead, the more effective, efficient, and productive non-coercive practices of carefully designed and sequenced assignments emphasizing added reinforcement for timely work well done is generally seen as more appropriate. So, your effort and cooperation are expected

and presumed; please do not disappoint either your professor or yourself.

Materials and Assignments

Assignment Method

Unless an assignment specifies otherwise, you need to write out your answer in longhand. The reason you are to write out your answers by hand is that this type of verbal response brings about more learning than merely saying—or even typing—the answer. This is because—as covered in this class—writing the answer in longhand involves both point-to-point correspondence and formal similarity between the stimuli and the response products of the answer.

The Intro to Verbal Behavior Book

Peterson’s textbook, *An Introduction to Verbal Behavior*, introduces all the basic concepts that B.F. Skinner covered in his substantive book, *Verbal Behavior*. (That book is covered in BEHG 475: Verbal Behavior II.) Thus, while Peterson’s book describes the elementary verbal operants and explores fundamental controlling relationships, it does *not* contain detailed explanations of exceptions, ambiguities, controversies, and many of the implication of the analysis. However, it effectively provides the necessary preparation for efficiently studying Skinner’s *Verbal Behavior*. Read and complete all sections of every chapter in the book according to the assigned schedule, which will be given in the *Course Contents Checklist* section.

To submit your work (if you are taking the course for TIBI credit), scan and fax to your professor the pages that have your answers for each assignment. Or (Preferred!) photocopy those pages and send them to your professor by regular postal mail. (Addresses and phone/fax numbers will be clarified upon enrollment.) You are to keep the original of your work both to insure against loss and to make it easier for you and your professor to communicate about your work (as you will then both have an identical copy). Email, and email attachments, are neither reliable enough for this purpose, nor identical enough for this purpose, so they are not to be used for this purpose.

Your answers will be perused, and points will be allocated according to the quality of your work. Should any inadequacies be apparent, you will be informed so that you can make improvements. While sometimes your professor will provide a metaphorical pat on the back for a job well done, if you do not hear of any inadequacies, then pat yourself on the back for a job well done even as you continue on to the next assignment.

The MacCorquodale Review

This assignment involves reading MacCorquodale's review of Chomsky's review of Skinner's *Verbal Behavior* and then writing a two to three page *typed* summary of the main points of this paper. Do this assignment according to the assigned schedule provided in the *Course Contents Checklist* section.

To submit your work (if you are taking the course for TIBI credit), *you may email* (Preferred!) your summary to your professor. Or, you may scan and fax it to your professor. Or you may photocopy it and send it to your professor by regular postal mail. (Addresses and phone/fax numbers will be clarified upon enrollment.) You are to keep the original of your work both to insure against loss and to make it easier for you and your professor to communicate about your work (as you will then both have a copy). Email *attachments* are neither reliable enough for this purpose, nor identical enough for this purpose, so they are not to be used for this purpose.

Your summary will be perused, and points will be allocated according to the completeness of your work. Should any inadequacies be apparent, you will be informed so that you can make improvements. Otherwise, presume a pat on the back, and continue with the next assignment.

The Ledoux et al Material

This assignment involves studying all the sections of the material by Ledoux *et al.* As you do so, complete the integrated exercises. *Then* make any needed corrections using the answer sheets provided. For each correction, state what makes your initial answer inaccurate and why the correct answer *is* correct. Do this assignment according to the assigned schedule provided in the *Course Contents Checklist* section.

To submit your work (if you are taking the course for TIBI credit), scan and fax to your professor the pages that have your answers (and any corrections, with comments). Or (Preferred!) photocopy those pages and send them to your professor by regular postal mail. (Addresses and phone/fax numbers will be clarified upon enrollment.) You are to keep the original of your work both to insure against loss and to make it easier for you and your professor to communicate about your work (as you will then both have an identical copy). Email, and email attachments, are neither reliable enough for this purpose, nor identical enough for this purpose, so they are not to be used for this purpose.

Your answers (and corrections and comments) will be perused, and points will be allocated according to the quality of your work. Should any inadequacies be apparent, you will be informed so that you can make improvements. Otherwise, presume a pat on the back, and continue with the next assignment.

The Area-Focused Assignment

This last assignment focuses each student on one of the two application areas that this first course on verbal behavior emphasizes. These two applications involve enhancing the acquisition of verbal behavior either by foreign language learners or by learners with language deficits perhaps from developmental disabilities. Locate the appropriate area and follow the instructions:

Foreign Language Area. If you teach foreign languages or ESL, then the assignment requires you to write a three to five page *typed* description of how you will incorporate applications of verbal behavior analysis into your teaching. *Your* applications may begin with, but should also go beyond, those included in the Ledoux *et al* material.

To submit your work (if you are taking the course for TIBI credit), *you may email* (Preferred!) your description to your professor. Or, you may scan and fax it to your professor. Or you may photocopy it and send it to your professor by regular postal mail. (Addresses and phone/fax numbers will be clarified upon enrollment.) You are to keep the original of your work both to insure against loss and to make it easier for you and your professor to communicate about your work (as you will then both have a copy). Email *attachments* are neither reliable enough for this purpose, nor identical enough for this purpose, so they are not to be used for this purpose.

Your description will be perused, and points will be allocated according to the completeness of your work. Should any inadequacies be apparent, you will be informed so that you can make improvements. Otherwise, presume a pat on the back as this was the last assignment.

Language Deficit Area. For all others (i.e., for all who are not actively engaged in teaching foreign languages or ESL) the assignment involves reading chapter 14 of the Maurice *et al* book, and answering the set of study questions for this chapter. This chapter is titled "Strategies for Promoting Language Acquisition in Children with Autism." Answering the study questions will help you absorb the material from the chapter. You complete the study questions, *after reading the chapter through*, by *writing out* the answer to each question when you come to it as you *reread* the chapter. You *write out* the answers right on the *Study Question* pages. Write out your answers in full sentences that incorporate the questions. Learning occurs when responses (like writing question answers) are made, and reinforced, especially responses that automatically provide their own reinforcing consequences (like being right) as does writing out study question answers correctly.

To submit your work (if you are taking the course for TIBI credit), scan and fax to your professor the pages that have your answers. Or (Preferred!) photocopy those pages and send them to your professor by regular postal mail. (Addresses and phone/fax numbers will be clarified

upon enrollment.) You are to keep the original of your work both to insure against loss and to make it easier for you and your professor to communicate about your work (as you will then both have an identical copy). Email, and email attachments, are neither reliable enough for this purpose, nor identical enough for this purpose, so they are not to be used for this purpose.

Your answers will be perused, and points will be allocated according to the completeness of your work. Should any inadequacies be apparent, you will be informed so that you can make improvements. Otherwise, presume a pat on the back as this was the last assignment.

Course Contents Checklist

Students should work their way through the course by reading, studying, and completing the texts and materials, and sending in their work for each assignment in this list (which can be used as a check off list):

- A. The Peterson book, Preface (with review of the “prerequisite terminology”) & Ch. 1.
- B. The Peterson book, Ch. 2.
- C. The Peterson book, Ch. 3.
- D. The Peterson book, Ch. 4.
- E. The Peterson book, Ch. 5.
- F. The summary of the MacCorquodale review.
- G. The completion of the Ledoux *et al* material.
- H. The description *or* study-question answers from the Area-Focused assignment.

Do these assignments in the sequence presented in the self-pacing, weekly, *Time-Allocation Sequence* even if you do them at a faster pace than the pace presented there.

Note #5: The usual higher education workload expectation for a course is about 150 hours. This can be accomplished at rates ranging from about 50 hours per week over three weeks to about ten hours per week over the typical 15 weeks of a semester. Of course, some students may take a little less than 150 hours, while others may take more than 150 hours, to do the work to the same acceptable and expected standard.

You can—and are encouraged to—go through the assignments as rapidly as your schedule allows. This could mean spending a typical 15 weeks on the course. Or it could mean doing the whole course in as little as—but not in less than—three weeks, as one would progress through the *single* allowed course in a three-week summer school term. That is, you could work on the course anywhere from minimum part-time (i.e., at the rate of about ten hours per week, as described in the *Time Allocation Sequence*) to maximum full-time (i.e., at the rate of about 50 hours per week).

If you are to be successful, you need to exercise some self-management skills by starting immediately and

keeping up a reasonable and steady pace on the course work. You need to do this because your professor will *not* be reminding you that the products of your work are due; all the course work is set forth in this syllabus and so is automatically assigned. You are expected to follow through on your own. You need to set an appropriate pace for yourself (or accept the pace in the *Time Allocation Sequence* at the end of this syllabus) and adhere to that pace, and thereby get the sequence of assignments done and submitted to your professor. This will assist your success.

Time Allocation Sequence

The slowest reasonable self-pacing of the coursework (presuming a typical 15-week semester) would involve time allocations like these (using the assignment letter codes in the *Course Contents Checklist*):

Weeks 1 & 2: Assignment A: the Peterson book, Preface (with review of the “prerequisite terminology”) & Ch. 1.

Weeks 3 & 4: Assignment B: the Peterson book, Ch. 2.

Weeks 5 & 6: Assignment C: the Peterson book, Ch. 3.

Weeks 7 & 8: Assignment D: the Peterson book, Ch. 4.

Week 9: Assignment E: the Peterson book, Ch. 5.

Weeks 10 & 11: Assignment F: the summary of the MacCorquodale review.

Weeks 12 & 13: Assignment G: the completion of the Ledoux *et al* material.

Weeks 14 & 15: Assignment H: the description of your applications, *or* your study-question answers, from the Area-Focused assignment.

If you go slower than this schedule, assignments could easily back up on you to the point where insufficient time remains to complete them in a satisfactory manner.

Note #6: Be sure that everything you submit is readable and contains your name!

At various points in the course, you will be provided with feedback about your work. Upon completing all the coursework, you will be provided with your earned grade. (The grade is provided solely for the person whose work earned the grade.)



A Behaviorological Analysis of Adjunctive Behavior^{1}*

Lawrence E. Fraley

West Virginia University

Adjunctive behavior is operant behavior that appears intermittently in the midst of other on-going behavior. It often appears to be an accidental intrusion that has little if any relevance to more important behavior that is already in progress and which it appears to interrupt, at least briefly. Adjunctive behavior is a *schedule effect*—that is, a pattern of behaving that occurs only if the prevailing schedules of reinforcement permit it to happen.

Review of Relevant Conceptual Foundations for the Analysis of Adjunctive Behavior

Adjunctive behavior is one of those real and frequently encountered behavioral phenomena that, although it manifests as common or at least familiar kinds of behavior, may nevertheless seem strange, because it often occurs amidst circumstances in which it seems irrelevant. The scientific recognition and explication of adjunctive behavior provide us with new and important analytical powers. Following John Falk's early work calling attention to this phenomenon (Falk, 1961), Stadden (1997) published a comprehensive review of the flurry of experimental activity that had been spurred by Falk's early work. Certain basic concepts within behaviorology, listed below, are relevant to the analysis of adjunctive behavior.

1. The behavior-controlling environment is defined by the antecedent stimuli that can effect control over behavior. At any given time, those stimuli can be ranked in their capacity to elicit or evoke a specific behavior.² Those rankings can and do change—in some cases over long periods of time, and in other cases momentarily.

2. Behaviorally functional units (or parts) of the body can be defined in terms of their independent capacities to come under antecedent stimulus control of behavior-controlling environmental events, and under that control, to exhibit behavior.

Such a functional part of the body, operating as a unit, can exhibit only one behavior at a time, but different behaviorally functional units of the body can behave con-

currently, and differently, under respective independent stimulus controls.

Consider for example, a piano player who is playing from printed music. The left hand and arm behave under stimulus control of the bass clef; the right hand and arm behave under stimulus control of the treble clef; the printed lines of music control the lateral back and forth tracking of the player's eyes and perhaps related slight turnings of the head, but with respect to the side-to-side head and eye movements, the base clef and treble clef function together as a single stimulus stream. Concurrently, the player's upper torso and head, as a unit, may "keep time" by bobbing rhythmically backward and forward under stimulus control of the rhythmic sound sequence being produced by the piano. If the person is also singing words to the song (not printed on the musical score), those vocal behaviors occur mainly under intraverbal stimulus control, an aspect of which involves each sung word evoking the next one.

Note that a body part that sometimes functions under independent antecedent controls can combine functionally with other body parts under a shared stimulus control. To cite another example, an arm and hand can work together to exhibit what is construed to be one behavior (e.g., a proffered handshake). An ultimate combination of this kind involves the entire body acting more or less as a unit, which may be approximated by the leap of a jumper over a small obstacle while maintaining balance, an action that we may then count as a single response (i.e., a "jump"). The same body parts that, acting together, respond to a single stimulus by executing a unitary handshake may also come simultaneously and independently under the respective control of different stimuli. An example of such independently controlled behaviors occurs when the fingers of a hand continue a sequence of finger presses on the keys of a small keypad while the elbow of the arm to which that hand is attached is lowered to tack down a fluttering piece of paper that is about to be blown off the desk top.

3. The behavioral interactions of organisms with the behavior-controlling environment occur in a continuous manner, at least across the range of the state connoted by the phrase "being conscious." Except in the organismic disorganization called death, or to a less extreme degree during coma or sleep—the operant behavior of an organism simply keeps occurring in one form or another. Even during coma or sleep the respondent behaviors that maintain bodily integrity continue in unbroken sequences. The antecedent controls on behavior can change, and with those changes in the antecedent controls, the form of the controlled behavior can change. However, those changes in control of the behavior, as well as any resulting changes in its form, occur without discontinuity in the general phenomenon called behavior.

* You will find the footnotes at the end of the paper, after the references, starting on page 28.

4. An important postulate, sometimes called the *postulate of behavior passivity*, prevails with respect to all behavior. Behavior happens only as an inevitable reaction. An organism has no capacity to behave initiatively or proactively. It does not *initiate* a behavior, nor can it *do* a behavior, nor does it even *choose* a behavior. At best, the organism only mediates behavioral effects that are determined both by the structure of the behaving body and by the environment. The environment of an organism consists of the universe of variables each of which can or does serve as an independent variable in the functions that control the behavior of that organism.³

Those aspects of “life” for which behavior is the evidence imply nothing more than the structural capacity of the body to perform that behavior–mediating function. At any instant, given both (a) the nature of the behavior–controlling environment and (b) the momentary structure of the body, the response that occurs is the only response that can occur. (B.F. Skinner included this observation in *Science and Human Behavior*, pp. 111–112. [Skinner, 1953]) The response that occurs is totally determined by the precise circumstances and relations prevailing at that moment, including the state of both the behaving body and its behavior–controlling environment. The *control* of a response, to the extent that that term means anything, resides with the environmental events that serve as the independent variables in the behavior–determining relations.

During analyses of operant behavior, the conceptual scheme afforded by the sciences of probability and chaos are conceptual devices for managing our ignorance about some of the controlling relations that share in determining the observed behavior. Those sciences do not impugn the basic assumption of determinism (Fraley, 1994).

5. Shifts in the capacity of antecedent stimuli to control behavior, both respondently and operantly, occur for many reasons. In cases of incompatible alternative behaviors, the inevitable appearance of the behavior controlled by the functionally strongest of those antecedents is called “prepotency” (Skinner, 1953, p. 220). The strength of such a functional relation, in which the dependent variable consists of behavior, depends on the conditioning history by which that relation was established. Only one of a set of incompatible responses can occur, and the stronger response occurs. It is said to be the *prepotent* response. In the adverbial expression, that response may be said to emerge *prepotently*.

One important principle holds that when the antecedent control on an occurring behavior weakens relative to other available events in the environment, one (or a set) of those other antecedent events will displace the former set in the behavior–controlling relation. Such a shift can be produced by any process that weakens the prevailing behavior–controlling relation. As soon as the

on–going controlling relation is weakened beyond a threshold defined by the capacity of another stimulus array to acquire control over behavior, the body of the organism will come under the behavioral control of that alternative array.

Observers of such a shift in the antecedent controls usually notice a corresponding shift in the behavior being exhibited by the organism, although in some cases the transfer can seemingly pertain only to the environmental antecedents and not to the behavioral manifestations (as when an actor’s recitation transitions smoothly from control by printed text on a cue card to intraverbal control).⁴

Behaviorologists have routinely studied procedures for effecting changes in stimulus controls: The term “conditioning” has long been applied to two major classes of such procedures. They are respondent conditioning, which operates through a pairing process, and operant conditioning, which operates through consequence processes. Through operant and respondent conditioning, elements of the environment have gained or lost the capacity to evoke or elicit behavior. For purposes of this section, the important aspect is that when an antecedent control on a behavior weakens, another antecedent will supersede it, that is, will take its place as a behavior–controlling stimulus. Furthermore, the new antecedent stimulus will usually produce its own kind of new behavior (which is sometimes said to “emerge” prepotently, although it does not really *emerge* from a latent existence elsewhere, but merely begins occurring).

Consider, for example, what happens operantly during an episode of gradual interference with the access to a currently functional antecedent stimulus. Suppose, at the sea shore, a volleyball game, in progress far down the beach, is evoking the visual attention behaviors of a person (who is said to be watching the game, although it is the game that is evoking the watching). Two kinds of behaviors are involved: First is attending, in which the body, and especially its eye–related parts, move under stimulus control of the distant players so that the eyes remain oriented toward the remote game. The second behavior is the private behavior of visual awareness (or visual comprehension), often described as “actually recognizing what one is looking at.” The former looking–behavior, which consists of the physical orientation of certain body parts, facilitates the latter private behavior of conscious seeing.

Now, further suppose that a fog slowly but steadily drifts ashore with increasing thickness. Slowly, the observer’s view of the distant game is progressively obscured. Seeing the volleyball players becomes more difficult in the sense that the distant players are rendered less and less capable of generating reinforcing visions (interpretive seeing responses) in the observer. As the fog continues to stretch the variable reinforcement ratio on

the person's attending behavior, the attending behavior is gradually being put on extinction. The functional shift, though gradual in its transition, is from a nearly continuous reinforcement schedule (when the air is clear) to a much more intermittent schedule (when the fog largely obscures the view). The reinforcement ratio can soon stretch to the absolute extinction mode in which no looking response can again be reinforced.

As the stimulus control on the on-going looking behavior that is being exerted by the volleyball players continues to weaken due to insufficient reinforcement and the resultant visions progressively disorganize, the reinforcing capacity of the ill-defined responses of visual awareness continues to diminish. Even when glimpses of the vaguely distinguished players do occur, some other features in the more proximal environment will, at some point, abruptly gain control of the attending behavior and, in turn, of the private visual awareness behaviors occurring to the observer. It may later be said that something else (more easily seen) captured the person's attention.⁵

Thus, the change in these looking and seeing behaviors is not something that the person *does*, but rather is something that *happens to* that organism. The body at all times remains only the passive mediator of its own behavioral manifestations. In this context, a body is merely a device that renders the remainder of the environment capable of producing a behavior, and a *person*, distinguished from the body, is nothing more than the abstracted concept of the behavioral repertoire that accumulates over time. However, note that a behavioral *repertoire* connotes the potential to exhibit behavior but lacks ontological status and thus is not an existing entity. Thus, a *person* reduces to a transient sequence of behavioral manifestations that are controlled exclusively by the environment. It may be said that a person is a natural phenomenon in the class denoted by the term *function*.

Intra-schedule Adjunctive Behavior

We have seen how the prevailing antecedent controls over behavior can weaken, as in the preceding fog-at-beach example, which allows a new antecedent stimulus abruptly to gain control of the body or of a subset of the body's functioning parts. One behavior stops and another begins. This occurs on the occasion of a change in the relative evocative capacities of the competing stimuli. The weaker stimulus may intensify, or the stronger stimulus may weaken. In the current example at the beach, the stimulus that is said to "take over" was originally weaker in its behavior-controlling capacity than the stimuli controlling the initial behavior and could only gain control after the initial controlling relation was sufficiently weakened.

This can happen briefly *within* each cycle of behavior produced by a prevailing schedule of reinforcement. That

is, if a behavior is occurring in repeated cycles according to some schedule of reinforcement, a new and different behavior can begin to appear briefly *within each cycle* of the primary behavior. The new behavior that suddenly appears there and briefly preempts the primary behavior has been called *adjunctive behavior*. This new behavior, appearing briefly within each cycle of the primary behavior and therefore intermittently across many cycles, is said to be "schedule-induced."⁶

However, the manner in which adjunctive behavior occurs can be discriminated from a process in which one schedule of reinforcement completely replaces another for an indefinite time. We have such a complete replacement, for example, when a person, who has been playing a slot machine, completely stops playing and instead proceeds to read a long series of printed messages scrolling on a nearby television monitor. That person does not necessarily resume play on the slot machine. The total and potentially permanent shift in behavior follows from a total and potentially permanent change in the evocative stimuli that are controlling the behavior of the person.

On the contrary, adjunctive behavior of the kind being discussed here instead appears as a temporary but re-occurring *intra-schedule* effect—starting and stopping within each cycle of a different behavior that is occurring on its own schedule of reinforcement. This intruding adjunctive behavior arises primarily in connection with interval schedules and fixed ratio schedules. The new *adjunctive* behavior can intrude into the on-going behavior during a part of each cycle when the rate of the primary behavior is low.

For example, suppose that you have gone blind and are reduced to begging on a street that is frequented by tourists. To beg, you extend your hand, palm up, and move it slowly back and forth. People walking past your location often put coins in your hand, but people pass by your location only in small tour groups that are spaced about five minutes apart. Continuous loud vehicular noise prevents your hearing when people are approaching, but immediately following the passage of each small group there is a short interval during which begging behavior cannot be reinforced, because no one is there who could put money in your hand.

After sufficient exposure to these conditions, you are said to have *adapted* to them. Following that preparatory conditioning, during those brief intervals in the early part of each cycle following the passage of a tour group, you may shuffle a deck of cards. Your behavior of shuffling those cards is an adjunctive behavior that appears briefly *within each cycle of your hand-extension behavior*. With the imminent arrival of the next tour group the card shuffling stops, and the begging behavior resumes. The extension and waving of your hand to beg is said to be the *primary behavior*, and the card shuffling is the *adjunctive behavior*.

It may seem that adjunctive behavior could have been predicted through a conceptual analysis, but that did not happen. An experimentalist, John L. Falk, working with lab rats, serendipitously discovered the effect, which he first reported in 1961. Falk (1961) found that under certain schedule conditions in which rats were acquiring reinforcing food pellets, the rats drank water excessively during the intervals between reinforcements. The food pellets were made important by depriving the rats of food until the rats lost twenty percent of their body weight. The food was made available on an intermittent (interval) schedule, and eating the food pellets according to their availability on that schedule had no planned or anticipated relation to water or to the behavior of drinking water. The water had simply remained available in the setting.

With adjustments in the schedule on which the rats acquired their food pellets, amounts of water far in excess of normal ranges were consumed along with the pellets. After each reinforcer (food pellet) was contacted on an interval schedule,⁷ food would not again be available for a brief period (a requirement of the interval schedule). During that brief interval when food-producing responses would not be reinforced, a rat would drink water. That drinking behavior, occurring within each cycle, resulted in the cumulative consumption of far more water than would normally be drunk.⁸ At that time, a ready explanation for that kind of drinking pattern seemed lacking, and that mystery led to a long sequence of investigations of the phenomenon that continued over many years.

The schedule-induced (or adjunctive) behavior was drinking water (to excess), and the rats became waterlogged. The critical aspects of the arrangement were (a) that the pellet-eating responses were spaced apart over time (which is precisely how responding occurs under certain interval schedules) and (b) that pellet-eating was a strong response. In this case, food deprivation effectively strengthened food pellets as reinforcers, which kept the rats "on task" to acquire food under whatever prevailing schedule food became available. A decade after his seminal article on adjunctive behavior, Falk (1971) summarized his interpretation of that phenomenon.

A number of additional studies soon appeared in which different kinds of adjunctive behavior were observed in rats. These included attack, pica, air licking, and running in an exercise wheel (Falk, 1981, 1984, 1986). In other early studies, human experimental subjects were reported to exhibit various adjunctive behaviors including extraneous movements of body parts, excessive smoking, and game playing (see the extensive survey of such studies that are cited in Falk, 1984; see also Falk, 1993). Falk also suggested that some of the frenetic social behavior characteristic of business lunches and cocktail parties is schedule-induced adjunctive behavior (Falk, 1981). In 1995 Falk, during a talk to The International Be-

haviorology Association, (Falk, 1995), summarized the work on adjunctive behavior, to which a multitude of researchers had contributed over the past three decades.

Adjunctive behavior is an apparently independent class of often irrelevant behavior that can emerge within the cycles of a different primary behavior that is occurring under an intermittent schedule (Falk, 1969). The initial schedule is called the *primary* schedule; it is often said to govern the *primary* behavior (pellet eating, in the case of Falk's rats). The intruding adjunctive behavior is sometimes called the *secondary* behavior. Adjunctive behavior was found to arise within interval schedules featuring either contingent responding or non-contingent responding. That is, whether the reinforcer is delivered non-contingently on an interval *time* schedule or on a *behavior-contingent* interval schedule is not important. Within any schedule that spaces out important (primary) responding, adjunctive behavior typically occurs in the immediate post-reinforcement period when the primary behavior is temporarily at frequencies as low as zero (Falk, 1971, p. 582).

In explaining the appearance of adjunctive behavior, one principle seems to have special relevance: When a principal antecedent stimulus that is controlling an ongoing behavior weakens sufficiently, another antecedent will supersede it. That is, a weaker stimulus that has been present in the environment but behaviorally non-functional will preemptively gain control of the body and thus establish a new behavior-controlling relation. Furthermore, that new antecedent event will probably evoke its own kind of new behavior.

We have only to take note of the fact that intermittent schedules are characterized by a temporarily weakening of the evocative capacity of the primary antecedent stimuli within each cycle. That repeated weakening occurs in the intra-cycle time zone immediately following the delivery of a reinforcer (see Figure 1). This temporary reduction in the evocative capacity of the antecedent stimuli occurs reliably within each cycle just after the reinforcer is contacted, and in *fixed* interval schedules (or in *fixed* time schedules) the effect is not only reliable but occurs with a uniform periodicity as well.

Any weakening of the evocative capacity of a currently functional antecedent is precisely the prescription for inducing a prepotency shift—one in which we would expect to see the behavior change. If any current but behaviorally non-functional feature of the environment is available potentially to capture functional control of the body, its greatest likelihood of doing that as a schedule-effect comes in that intra-cycle interval immediately following the reinforcer. Those are intervals when, strong as the primary scheduled reinforcer may be, another contact with it is not going to occur for awhile, and the evocative stimulus for the primary behavior is temporarily less effective than during other parts of the cycle.⁹

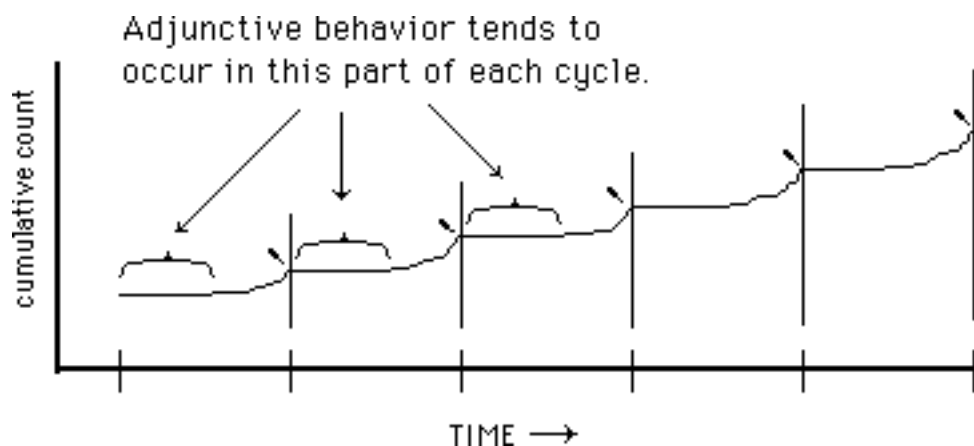


Figure 1. The repeated appearances of an adjunctive behavior during an interval schedule.

When organisms are said to be “adapting” to an interval schedule, the evidence for adaptation is the intra-cycle redistribution of responding that results in the scalloped cumulative curve when the cumulative responses are plotted graphically. Figure 1 illustrates where adjunctive behavior may appear. It tends to happen whenever behavior on the primary schedule is weakly evoked and infrequently occurring, and the immediate post-reinforcement period in each cycle represents such an opportunity.

Because, during the early part of each cycle, little or no further responding of the primary kind occurs even though its evocative stimuli remain present, people tend to say that during those early parts of each cycle, the antecedent stimuli have lost, temporarily, all or much of their evocative strength. When later in each cycle the rate of primary responding increases, we can say that the antecedent stimuli are temporarily reacquiring their evocative strength. It is as if contact with the primary reinforcer at the end of each cycle temporarily changes the S^D into an S^A for the primary behavior. This waxing and waning in functional evocative strength is a schedule-induced effect.

If adjunctive behavior appears, we account for its occurrence by assuming that contingencies are in place to support it, proceeding to discover such contingencies, and describing them in satisfying detail. Those contingencies may be entirely independent of those that govern the primary behavior.

The evocative stimuli for both the primary behavior and the adjunctive behavior remain available in the environment at all times. While the reinforcer of the adjunctive behavior is, in general, relatively weak compared with the reinforcer of the primary behavior, an interval schedule results in the stronger primary reinforcer being unavailable during a part of each cycle. If the waning in

evocative capacity of the S^D s for the primary behavior carries below the evocative capacity of an available alternative stimulus, that alternative stimulus will temporarily acquire control of the body, stimulating its own, and usually different, kind of behavior (i.e., the adjunctive behavior). The adjunctive behavior, when it happens, results in contact with its own kind of reinforcer (weak though that reinforcer may be relative to the temporarily unavailable reinforcer of the primary behavior). Thus, during the early part of each cycle, an adjunctive behavior may temporarily attain prepotency. That adjunctive behavior briefly intrudes, preempting the primary behavior. However, in the latter part of each cycle the behavior controlled by the primary interval schedule regains prepotency. That is, any on-going adjunctive behavior stops, and the primary behavior resumes.

Regardless of contact with the relatively weak reinforcers that result directly from the adjunctive behavior, an instance or sequence of adjunctive behavior is always followed first by the primary behavior and then by contact with the stronger reinforcer that is contingent on the primary behavior. The primary reinforcer not only reinforces the primary behavioral response, but also, to a progressively lesser degree, it reinforces the respective preliminary behaviors that led to that primary kind of response. In the case of interval schedules, those preliminary behaviors are the adjunctive behaviors that precede each instance of the primary behavior. Thus, the ultimate primary reinforcer has an additional reinforcing effect on the adjunctive behavior in addition to any secondary reinforcers that are produced directly by the adjunctive behavior per se.

To those human subjects that interpret their own behavior in agential terms, it may seem to them like “they must engage in the adjunctive behavior to insure contact with the primary reinforcer” for which a full account can

actually be completed with consideration only of the primary behavior. Such subjects may come to think that they are hastening the next contact with the primary reinforcer by deliberately and necessarily engaging in the adjunctive behavior. In such cases, observers tend to classify that adjunctive behavior as *superstitious*, because it is mistakenly being assigned a functional role that it does not actually play.

Consider organisms that are nearing perfect adaptation to a fixed interval schedule, and recall that only one response per cycle is necessary for maximal contact with the primary reinforcer. This leaves most of each cycle free for the intrusion of an adjunctive behavior. The result can be lots of adjunctive behavior interrupted at regular intervals for a single instance of the primary behavior (which is sufficient to maintain maximized contact with the primary reinforcer across any number of cycles).

For example, suppose that you are standing along the sideline at the 50-yard marker of a football field. A person marching at a steady cadence is carrying the national flag back and forth across the length of the field between the goal posts. You salute the flag each time that it passes directly in front of you. (Assume that these saluting responses are strongly reinforced by the admiring reactions of an audience, provided that the flag is in front of you when you salute). Following each salute, the flag will not again be in front of you until it has been carried 100 yards.

Now consider a second behavior that may intrude when salutes will not be reinforced, namely, a hand wave. Assume that you have been conditioned to wave at people who are looking at you from a remote vantage point. Suppose, in this case, that some of the passengers in the many vehicles that are streaming continuously past on a nearby highway will return your hand wave. Assume that those returned hand waving responses are relatively weak reinforcers. While the flag is away from the area directly in front of you, the passengers in those passing vehicles evoke your adjunctive hand-wave behavior.

If, over a period of time spanning many saluting cycles, we compare counts of the primary and adjunctive behaviors, we find that far more adjunctive responses (waves) have occurred than primary responses (salutes). Note, too, that the primary behavior (saluting) occurred on a fixed interval schedule, while the adjunctive behavior (waving), while it was occurring, occurred on a variable ratio schedule.¹⁰

The adjunctive behavior that appears prepotently during the early part of a cycle is under its own kind of stimulus control by one or more features of the ambient environment that can be, and usually are, unrelated to the events governing the primary intermittent schedule and its featured behavior. The adjunctive behavior is typically a new and different behavior. It occurs preemptively and under its own natural contingencies. Although usu-

ally of brief duration (because it is occurring within one cycle of another prevailing interval schedule), while it lasts, *it is under its own schedule of reinforcement* (often called the secondary schedule), and that schedule is usually unrelated to, and different from, the primary schedule within which this adjunctive behavior has arisen prepotently (as in the previous example that featured salutes and hand waves).

For the intruding behavior to occur adjunctively, the reinforcer acquired under the primary schedule must generally be stronger (in isolated direct comparisons) than that acquired following the adjunctive behavior. If the primary reinforcer did not have the greater evocative capacity in general, the adjunctive behavior, once it began, would not stop (in which case, we would not describe it as *adjunctive*). That is, if the intruding behavior were at *all times* more strongly reinforced than the primary behavior, including those intervals when the primary schedule allowed that secondary behavior to occur, the antecedent stimuli in the primary schedule could not again re-acquire control and thus evoke the primary behavior. The organism would just continue to exhibit the intruding behavior, because that behavior would always produce contacts with the stronger kind of reinforcer. In that case, observers may say simply that the exhibition of one behavior had superseded the exhibition of another behavior.

While adjunctive behavior is in progress (however briefly), an organism's behavior will adjust to maximize contact with the reinforcers that are available under the secondary schedule. For example, suppose that during the intervals between the occasional arrival of paying customers who purchase tickets to my show, I drum my fingers on the ticket counter (an adjunctive behavior). My fingers may come under stimulus control of the rhythmic sounds that they are producing, and as more reinforcing rhythms are selected by this prevailing natural shaping procedure, the finger-drumming becomes more strongly reinforced and accordingly will intensify and evolve in form.

If the sounds from this adjunctive drumming were to become more reinforcing than a ticket sale, the next customer arriving to buy a ticket would fail to acquire control of my behaving while the drumming proceeded. (In agential language, the prospective customer would be ignored.) However, if making a ticket sale remains a stronger reinforcer, even than the improved rhythmic sounds shaped adjunctively under the secondary schedule, the arriving customer will re-acquire behavioral control of my body, and ticket selling behavior will reappear as the primary schedule re-establishes.

The literature commonly refers to intra-schedule adjunctive behavior as *schedule-induced behavior*, but it is perhaps more correct to call it *schedule permitted behavior*. That is because the adjunctive behavior will occur naturally or automatically under its own operant potentiation

if the controlling relation governing the primary behavior weakens sufficiently for whatever reason. A weakening of the controlling relation between an environmental antecedent and the primary behavior during the early part of each cycle of an interval schedule is just an unusual way for that to occur. Thus, although the appearance of this kind of adjunctive behavior represents a behavior change occurring because of a common kind of event (a reversal in the relative evocative strengths of two stimuli), it initially attracted attention because it was happening repeatedly under unusual circumstances (i.e., as an intra-schedule phenomenon within each cycle of an interval schedule).

We can safely infer that during the “dead intervals” within intermittent schedules, adjunctive behavior of some unnoticed and undescribed kind has in all cases always been occurring. That conclusion rests on the assumption that some operant behavior will always be occurring while an organism is in a generally responsive mode, and within the cycles of any schedule, if the primary behavior is not occurring, an adjunctive behavior will be in progress. We need only look carefully for what is often the mundane, trivial, or unimportant behavior occurring during intervals when the primary behavior is not happening (during the flat part of each scallop, if we are plotting the primary behavior counts on cumulative count graphs). Only occasionally has that adjunctive behavior been so unusual or interesting that it has captured the attention of observers who are usually preoccupied with monitoring the primary behavior and therefore tend to ignore the uninteresting adjunctive behavior.

For example, the excessive drinking behavior in Falk's rats was easily noticed. The rats were on an interval schedule that produced reliable “dead times” at the start of each cycle of the primary schedule. At the same time, the rats were in the continuous presence of a strongly compelling antecedent stimulus (a drinking tube) with respect to which a lot of reinforcement history had taken place. After eating the pellet, the reinforcing moment on the primary schedule was past, and the rat came at once under stimulus control of the salient drinking tube. A brief episode of drinking behavior was evoked. When this sequence repeated within each cycle of the primary schedule, the result was excessive total water consumption. If, at first, that excess drinking goes unnoticed, the increasingly water-logged condition of the rats would eventually tend to attract attention, and in Falk's case it did so.

Note that even when seemingly satiated, most mammals can take yet another sip of liquid without that event resulting in an excessively aversive consequence. If such an adjunctive response can be evoked without an immediate and acutely aversive consequence, even though the drinking response may not be repeated at that time (because the net reinforcing effect is insufficient and the primary schedule is re-establishing its alternative control),

the cyclic nature of the primary schedule will shortly provide yet another compelling opportunity—and will continue to do so periodically.

A mere single adjunctive response during each such cyclic opportunity will, over time, produce cumulative totals that can be excessive in various ways. As we have seen, water accumulating from the adjunctive drinking behavior may waterlog a body. In other examples, a repeatedly used body part may become sore from excess use, as when finger tips, adjunctively drummed repeatedly if intermittently on a sandstone surface, become painfully abraded.

People often do something similar with a big glass of a preferred beverage when sitting in front of the television. The primary schedule of reinforcing visual and aural events that are presented by the television controls a person's attending behaviors on a modified variable interval schedule. That schedule features a variable dead time following each reinforcing event (i.e., some variable time interval is required for the “stage to be set” for the next humorous or thematically interestingly moment).

The nearby glass full of beverage is often a strongly conditioned discriminative stimulus, and it can effectively evoke the behavior of picking it up and taking a sip. However, the here adjunctive behavior of sipping the beverage is *less* strongly evoked by the drinking glass than is attending to the television set evoked during the latter part of each cycle on the primary TV-watching schedule.

While the person is held in the limited environment by the primary schedule, the glass remains a salient feature of that environment where it can become evocatively effective at any time that antecedent events evoking the primary behavior temporarily lose their relative evocative advantage. Every time the program hits a “dry” post-reinforcement stretch, the beverage evokes a sip or two by the drinker. Over a few hours under those circumstances (with the glass being continually refilled) the drinker will consume substantially more beverage than would be drunk were the television set absent and the drinking behavior was primary instead of adjunctive.

In pubs and other kinds of drinking establishments, where conversations with drinking companions often take the place of a television set, a person will sometimes be found sitting before an array of many empty bottles or mugs. How anyone could sit down and drink that much of any beverage may seem perplexing, because those “empties” represent more liquid than even a thirsty heavy drinker would consume if given the opportunity to sit down alone and drink his or her fill. However, under the primary schedule arrangements featuring the social stimuli that prevail in such establishments, the person will take an adjunctive swig from the current mug or bottle each time there is a momentary lag in the conversation. Excessive adjunctive drinking can sustain a whole

beverage industry. Schedule-permitted adjunctive drinking behavior has also been linked to the social problem of alcoholism (Falk & Tang, 1988).

Similarly, individuals who spend long hours in coffee houses may suffer the adverse effects of excessive caffeine ingestion. That outcome is facilitated if they adjunctively engage in more coffee drinking than the taste and aroma of the coffee could otherwise sustain.

Explanation versus Description

In its most common expression *schedule* is a concept of *procedure* and pertains to the behavior of those who arrange the conditions under which another organism is to behave (although we can speak of *natural* schedules if the behavior-controlling circumstances have occurred naturally and were never contrived). The behavior of the organism in question, occurring under those special conditions, whether natural or arranged, may exhibit behavior patterns that observers *interpret* as alternating adjunctive and primary behaviors.

However, an organism, from its private perspective, simply behaves in accordance with its bodily behavior-producing capacities in response to events in its immediate environment. Bodies work behaviorally only with respect to the here and now, and do not exhibit the behavior patterns called schedule effects because they find themselves behaving under certain schedule arrangements. What we may identify as the schedule-induced effects simply manifest as sequential accumulations of responses that have occurred individually for much simpler reasons. The on-going behavior is indiscriminate with respect to historical motives that might have influenced both the present configuration of the environment in which that behavior is occurring and any contemporary variance in that environment.

Thus, when adjunctive behavior appears, it does not occur "because the organism finds itself in a particular intracycle period on some procedurally or naturally defined primary schedule." As far as the behaving organism is concerned, what a schedule-aware observer calls "adjunctive behavior" occurs simply because circumstances have arisen under which one behavior stops and another starts. And that is equally true of the reversal back to the primary behavior. The start and cessation of an adjunctive behavior is shrouded in no more mystery than is implicit in that simple circumstance. Change of the behavior that is currently exhibiting prepotency depends on current stimulus conditions (i.e., opportunities for change) and the relative strength of the reinforcers that are contacted following each of the behavioral alternatives.

The body of an organism is not really schedule-sensitive. Rather, the body is only *stimulus*-sensitive. Behaviors simply start and stop as a function of changes either in the environment or in the body, or both. That simple

behavioral start-and-stop is what bodies and environments together can do, and that is about all that together they can do.

We may recognize or arrange the circumstances that we call schedules of reinforcement, but the patterns of behavior that are then exhibited consist of responses that have accumulated so as to define those patterns. However, each individual response has occurred because, at the instant of its occurrence, that response was the inevitable outcome of the momentary relation of the behaving body to its environment.

Put another way, bodies do not know anything about schedules, nor is that necessary for the occurrence of responses that comport with schedules and cumulatively define the patterns of behaving that we call schedule effects. When an adjunctive behavior occurs in the early part of a cycle on an interval or ratio schedule, the body is functionally oblivious to that schedule and is at that instant merely exhibiting whatever behavior the immediate body-environment circumstances will inevitably produce.

The complexity of the verbal behavior in the analytical conceptual devices by which we explain behavior often exceeds the complexity of the elemental functions that lead to the phenomenon that is being studied. In such cases, that verbal complexity tends to serve the procedural operations through which we may exert a precise control over the behavior, while the behavior-related manifestation per se is an accumulation of responses that, individually, occur in accordance with the less elaborate behavior-producing mechanism.

By analogy, if 100,000 people stand close together on a hillside, and each of them simultaneously raises a single hand-held card, a viewer standing a mile away may see a relatively high resolution image of the Mona Lisa. The arrangements that are necessary to produce that pictorial effect are quite complex, as are descriptions of the elaborate procedure by which it can be made to happen, but each person merely raised a colored card. The manifestation of the Mona Lisa is the product of simultaneous responses by many individuals, while schedule effects represent the accumulating sequence of responses by one individual. However, in both cases an account of an elemental response is far simpler than an account of their combined effects.

Sequential Adjunctive Behaviors

More than one kind of adjunctive behavior can occur within each cycle of the primary schedule. For example, two adjunctive behaviors, appearing in a fixed sequence within each primary cycle, can be produced within a primary fixed-time schedule. In one such demonstration, food-deprived rats are given food as the primary reinforcer. Suppose that we also place a conveniently accessible drinking tube and a running wheel in the chamber so that they are continuously available as salient features

of the proximal environment. When this has been arranged, the rats typically adapt to a primary FT-30 sec. schedule by engaging in “food anticipation” behaviors toward the end of each 30-second cycle. That is, as the end of each 30-second interval approaches, the rats draw near to the food dispenser where they can quickly grab the bits of food that it regularly expels.

Within each cycle of that primary schedule, after a rat had gotten its food (which then remained unavailable through the next 30 seconds), the rat typically then drinks some water, after which it may run briefly on the wheel before returning to hover near the food dispenser. In each cycle of the FT-30 sec. schedule the adjunctive drinking and wheel running will ordinarily be repeated in the same order.

As in the previous paragraph, the schedule that is arranged in this demonstration is often described as a fixed-time schedule (here an FT-30 sec. schedule), because the behavior of hovering near the dispenser does not functionally produce the dispensing of food. Note however, that the schedule designator by which we classify a set of circumstances depends, in part, on the behavior of scientific interest.

For example, with respect to the hovering behavior (called, in general, “food anticipation behavior”), the schedule is an FT-30 sec. schedule. However, note that with respect to the actual food-eating behavior, the same arrangements, or circumstances, closely approximate the definition of an FI-30 sec. schedule. Note that with respect to the eating behavior (getting the food into the mouth and in contact with taste and odor receptors) the gustatory reinforcer is not contacted until that eating response has occurred. Contact with the gustatory reinforcer is obviously contingent on that eating behavior. With this interpretation, the drinking and wheel running would be classed as *adjunctive*, the hovering near the food dispenser would be classed as *enabling*, and the eating would be classed as the *primary* behavior.

In this kind of demonstration, the requirements for the adjunctive behavior to occur are that (a) the primary schedule feature intervals of sufficient length for more than one adjunctive behavior to occur (here, 30 sec.), (b) antecedent controls (evocatives) for the two adjunctive behaviors remain present in the environment, (c) the reinforcers acquired through both kinds of adjunctive behavior always remain weaker than the reinforcer (food) acquired under the primary schedule, and (d) the evocative strengths of the antecedent controls on the two adjunctive behaviors (drinking and running) begin each cycle with the same relative magnitudes, which then reverse in mid cycle before all adjunctive behavior is again preempted as the primary behavior re-establishes.

We can speculate about why drinking was evoked first. Normal drinking tends to follow eating, and we

may expect that sequence to be maintained in the case of this adjunctive drinking. Also, in the past, drinking has often been strongly reinforced (negatively) at the conclusion of episodes of water deprivation. The drinking tube has thus had many opportunities to become a somewhat strongly conditioned evocative stimulus.

However, in general, adjunctive drinking tends to water-log a body, and although a drinking response may be evoked on each cyclic occasion, it will be less and less reinforced as the cycles pass. For similar reasons in the demonstration being discussed here, a drinking response, although adjunctively evoked by the salient drinking tube, is also less and less likely to be *repeated* in any given cycle of the primary schedule. If time remained within a cycle for some additional adjunctive behavior, and the drinking tube was quickly losing its initial evocative capacity (rapid satiation), the salient running wheel, with its initially weaker evocative capacity, would then gain control of the rat’s behavior. However, while rapid running is reinforced (perhaps in various ways), it is also punished with increasing intensity by aversive fatigue. This behavior-suppressing punishment results in a net weakening of the evocative capacity of the antecedents that evoke the running. This facilitates a return to the primary behavior. As the 30-second interval draws to an end, the rat again comes under the control of the features of the feeding area. That is, the wheel is abandoned as the food dispenser once again evokes the rat’s behavior of hovering near it.

Why the rat would stop running and move to the food dispenser as the interval nears its end has been the object of much theoretical speculation. The following two paragraphs provide an example differing somewhat from the explanation proffered in the preceding paragraph (though perhaps supplementing it more than displacing it).

We cannot entertain an explanatory reliance on the next portion of food that has not yet arrived (a teleological fallacy). Nor can we indulge in assumptions about mystical internal agents that develop “anticipations” and keep time with magical internal clocks. However, there is a natural kind of clock at work to which we can appeal.

Remember that (a) time is defined only by the events that are said to fill it and (b) an organism is always behaving in *some* way. Each 30-second cycle of the schedule begins with some adjunctive behavior (of whatever kinds), and those adjunctive behaviors define somewhat consistent time intervals. Although the adjunctive behaviors were reinforced immediately in their own ways on their respective adjunctive schedules, those behaviors were not immediately reinforced in the stronger primary way (in the present example, by food). However, like the moving hands of a clock, they were reliably reoccurring periodic events of relatively consistent duration.

We could speculate that the passage of a somewhat fixed amount of any kind of behavior that fails directly to

yield the primary reinforcer can nevertheless function as a conditioned composite stimulus that, like shifted clock hands, re-capacitates the food dispenser as an evocative stimulus for the behaviors characteristic of the primary schedule (food anticipation behaviors, in the present case). After all, organisms can be conditioned to discriminate events of longer and shorter duration, regardless of the nature of those events. Following the cyclic and relatively consistent bout of adjunctive behavior, "it is time for another contact with the food," as we may say.

Put another way, an adjunctive behavior, occurring on its own schedule with respect to the secondary reinforcer, can always be said to be on extinction with respect to the primary reinforcer, which it cannot produce. While it does yield the relatively weak secondary reinforcer, it does not produce the stronger primary reinforcer, even during the part of a cycle when the primary reinforcer is available. As we know in general, ineffective behavior tends to stop occurring. In this curious twist on the extinction procedure, the adjunctive behavior, while yielding a weak reinforcer, always fails to yield a stronger one although it is available intermittently in the setting. That is, while the adjunctive behavior is occurring, the primary behavior is precluded, and the organism is thus prevented from contacting the strong reinforcer that the primary behavior would yield during latter part of each primary cycle. During each cycle of the primary schedule, when the strong primary reinforcer again becomes available, it is the on-going adjunctive behavior that is then precluding access to that stronger reinforcer by competitively pre-empting the primary behavior that would produce it. (This observation may contribute to a theoretical conceptualization of prepotency.¹¹)

Adjunctive Behavior under Conflicting Contingencies

Having examined how adjunctive behavior can arise within a single primary schedule, we can also look for similar shifts in prepotency, not within the cycles of an intermittent schedule, but on occasions when the net antecedent control of a behavior that is occurring under *opposing* contingencies becomes sufficiently weak. For instance consider a behavior that is both punished and reinforced. Such situations are often described as *conflict*. Suppose that that behavior has continued to occur because the contingent reinforcers are stronger than the contingent punishers. However, if the relative strengths of those consequences reverse, that behavior will decrease in frequency under what is then a net suppression.

However, if a person withdraws from a conflict situation, any chance for ultimate contact with potentially big reinforcers is forfeited. If strong reinforcers are potentially available, one may behave to remain in the conflict situation while acting to protect oneself against potential

harm inherent in that conflict. From common lore comes the old advice: *Stay involved but keep a low profile, or hang in there, but watch your back.*

Conflict represents circumstances perhaps more recognizable as typical punishment episodes. The organism enters the episode under one or more reinforcing contingencies that strengthen a behavior of interest and render it frequent. At some point, while those reinforcing contingencies remain in effect, one or more punishing contingencies are imposed on that same behavior. The net effect on the rate of that behavior is a reduction in its frequency. The behavior, perhaps stabilizing at a new lower frequency level (i.e., it may re-equilibrate), is said to be "suppressed" to that new lower frequency. That new level of equilibrium is a net effect of the reinforcing and punishing contingencies both of which remain in effect. A behavior can re-equilibrate near or at a rate of zero if the stringency of the punishment is sufficiently increased relative to the strength of the reinforcers.

Here, again, is precisely the kind of circumstance during which a previously uncompetitive feature of the ambient environment may capture functional control of the body in a way that yields new and different behavior. Although that intruding behavior produces a relatively weak reinforcer, its evocative stimuli can gain control of the body during an interval in which the primary contingency of reinforcement is largely or entirely neutralized by the imposed punishment. When that happens, a new behavior is exhibited. It is often incompatible with the primary behavior and hence precludes the primary behavior, which must cease if the new behavior is to occur.¹² The new intruding behavior occurs on its own schedule of reinforcement.

That intruding secondary behavior, like its intra-schedule counterpart (discussed previously), if it exhibits a pattern of intermittent occurrences, can be classed as adjunctive behavior. Once the adjunctive behavior has intruded and has temporarily displaced the excessively punished primary behavior, the neutralizing balance between the reinforcing and punishing contingencies on the primary behavior may be destabilized by changing circumstances in the situational background, perhaps (and hopefully) by a weakening of the punishing contingencies. It may also be that a stronger reinforcer of the primary behavior becomes available. Should such a destabilization happen while the primary behavior is being precluded by the intruding adjunctive behavior, a reoccurrence of the primary behavior, if it were to happen, would then be more strongly reinforced than punished.¹³ The primary behavior would then tend increasingly to be repeated. That is, a relaxation of the punitive contingency, or an increase in the capacity of the reinforcing contingency would allow the equilibrium to shift to a higher rate level for the primary behavior if it were to reoccur and thus be

susceptible to the new and more favorable mix of consequences. The *relatively* stronger reinforcers featured in the primary contingencies of reinforcement would then continue to facilitate the recovery of that primary behavior, any occurrence of which marks the termination of the temporarily intruded adjunctive behavior.

In this process, the more strongly reinforced primary behavior returns to displace the adjunctive behavior. That is, the adjunctive behavior (of little *prima facie* importance although perhaps serving a socially important function) stops, and the behavior of interest resumes under its own schedule of relatively stronger and now relatively less punishment-counteracted reinforcement.

Consider, for example, a person who is engaged in an important conversation with an attractive stranger at a social event. Suppose that the speaker is under strong contingencies to maintain reinforcing social relations with the attractive party, but the only line of conversation that occurs to the vocalizer appears to offend the listener, whose responds punitively. The speaker's potential contact with strong reinforcers would be protected if the offending speech stopped until it could resume with the theme continuing in a less offensive form. However, if during that interval, contact with the listener is broken, that contact may not be restorable when the speaker is prepared to resume the conversation in a less offensive way. Given the currently opposing contingencies of reinforcement and punishment, the controls on the on-going line of offending talk are weakened. When that control becomes weaker than the antecedent control on some potential irrelevant small-talk, the small-talk will tend to displace the on-going line of conversation.

That kind of shift in prepotency is so common and familiar that it can sustain a clichéd mimic as humor—for instance, this classic self-interruption: "*How 'bout them Celtics?!!*" Celtics is the name of a professional basketball team. The italicized rhetorical question pertains to a familiar topic with which all parties are presumably familiar. Such a common kind of adjunctive interjection temporarily replaces conversation that has been suppressed by social punishment. A resort to popular local sports, as featured in this example, is typical. Comedians whose humor of the moment requires making conspicuous the plight of their character in finding it necessary to engage in such a ploy, will render the ploy conspicuous through the careful mistiming and exaggeration of the injection of the new topic. It is a contrived simulation of a naturally arising kind of adjunctive behavior, carefully adjusted to exploit its comedic potential.

This kind of intruding adjunctive behavior in real conflict situations can be reinforced both positively and negatively. The adjunctive behavior usually produces mild positive reinforcers such as the social reinforcers implicit in the above episode of small talk.

The punishment of the primary verbal behavior in a conflict situation is often increasingly aversive and can become relatively severe. Escape from those aversive stimuli is effected through the onset of an adjunctive behavior. Thus, such adjunctive behavior, while it may yield its own kind of relatively weak positive reinforcers, can also occur as a negatively reinforced escape behavior resulting in the avoidance of further contact with the punishers contingent on the primary behavior. In that case, to put it agentially, the person may care little about the nature of the small talk; it just defuses the threatening situation.

As John Falk, who first described adjunctive behavior in the literature, observed many years ago, one is usually in a conflict situation because a strong reinforcer is potentially available. However, one must prevail or at least survive during the conflict, or the potential to contact that primary reinforcer can be lost. That is especially true if the primary behavior is reinforced only intermittently, as in the case of stretched ratio schedules or long-interval schedules.

The adjunctive behavior serves in a protective way, because it maintains the status quo for a time both by temporarily preventing (a) what may be either an inappropriate continuance of an otherwise generally useful primary behavior or (b) an inappropriate withdrawal from the primary situation. In such cases the adjunctive behavior holds the person in the general setting until the normal situational dynamics can reduce or resolve the conflict. Thus, this kind of adjunctive behavior represents a diversification of behavior in a tense or dangerous situation, which can allow the organism to remain uncommitted in the predicament and give unstable situational vectors time to reach what may prove to be an advantageous resolution. That is, the intruding of the adjunctive behavior maintains the kind of contact that is necessary to the reoccurrence of the primary behavior while allowing time for natural shifts in some of the prevailing contingencies that have been determining the ineffective forms of the primary behavior.

Predicting Adjunctive Behavior

Once adjunctive behavior and the essential features surrounding its occurrences can be described accurately, we can test the adequacy of our analyses by predicting adjunctive behavior in new kinds of situations. For example, suppose that an organism is put in continuous contact with a reinforcing food. The taste and aroma of the food reinforces the behavior of putting pieces of that food into the mouth and chewing it. Under these conditions, and prior to the onset of satiation effects, that eating behavior would tend to increase and/or stabilize in rate as is characteristic of the process of positive reinforcement, which these facts define.

Assume that we are talking about a person eating a big and very delicious apple. The apple is held in the

hand and is periodically moved to the mouth where a bite of the crisp apple flesh is taken. However, when eating a crisp food of this kind, a bite cannot be swallowed whole. First it must be thoroughly chewed, and it is precisely that chewing behavior that results in contact with the principal reinforcing stimuli (the taste and aroma).

Let us also note that, in the case of eating an apple, the reinforcing flavor and aroma diminish substantially with the first several chewing motions, but the crisp flesh of the apple is typically not ready to be swallowed until many more chewing motions take place. During the latter part of that extended interval of pre-swallow chewing, the primary reinforcers (flavor, and aroma) are increasingly reduced in strength from their peak initial level during the first few chewing responses following a bite from the apple.

We predict the appearance of adjunctive behavior, in this case *during the latter part of each bite-chew-swallow cycle*. Let us assume that the person is supposed to be practicing the piano, which is not much fun, and that the person is eating the ripe and delicious apple while seated before the piano. Given the relative strengths of the reinforcers respectively contacted by those two behaviors, apple eating is primary and piano playing is secondary. Taking a bite from the apple can be construed as an enabling operation with respect to the primary chewing behavior.

As a bite of apple pulp becomes increasingly insipid during the prolonged interval of necessary mastication, the person puts down the apple and starts to play some practice music. The sounds of the piano are reinforcing, but less so than the flavor, aroma, and texture of the freshly bitten apple. During the next intra-cycle interval, the continuing chewing behavior yields a much weakened gustatory reinforcer, while, concurrently, the piano playing behavior yields a relatively stronger auditory reinforcer. When the swallow occurs, thus freeing the mouth parts to take another bite of fresh apple, the piano playing stops, and the apple is again brought to the mouth for a bite. If we define a cycle from bite to bite, then across repeating cycles, at first blush we observe a sequence of primary chewing behaviors being periodically *accompanied* by some adjunctive piano playing.

In this example, we recognize the piano playing as a kind of intra-schedule adjunctive behavior. The primary schedule appears to be some sort of modified ratio schedule in which an approximate number of chewing motions are required following each bite, the latter instances of which are progressively less reinforced. There are two adjunctive behaviors, which occur as a sequential pair: (a) putting down the apple and (b) playing the piano. Putting down the apple occurs under the secondary schedule as an enabling operation that makes possible the second adjunctive behavior (piano playing) by freeing an otherwise preoccupied hand.¹⁴

The independent schedule of reinforcement under which the adjunctive piano playing then occurs is actually a complex combination of several schedules operating at the same time. Every press of a key yields a reinforcing audible tone (a CR schedule). Every several key presses results in a reinforcing musical phrase (either a FR or a VR schedule modified by musical pacing requirements). Combinations of such phrases yield the reinforcing strains of the melody (apparently another modified FR or VR schedule, but with a larger ratio). The cyclic repetition of similar short sequences of these key presses yields a reinforcing rhythmic pattern (in many cases, respecting an FR schedule modified by certain musical pacing requirements). ...And this analysis could probably continue.

Note, in this example of adjunctive behavior, unlike earlier examples, the primary behavior actually continues through almost all of each cycle, while the adjunctive behavior arises, continues, and abates *concurrently* rather than alternatively. That is possible because different independently controlled body parts respectively execute the primary and adjunctive behaviors, and the primary behavior (chewing) does not have to stop to free the body parts that are necessary for execution of the adjunctive behaviors. (When discussed in the general scientific literature, concurrent and independently controlled operant behaviors are often categorized as *multiple operants*.)

The primary behavior is chewing, but its positive reinforcement becomes progressively less strong during each cycle. Although a partially chewed bit of apple will soon have lost most of its flavor and aroma, the chewing must continue until its texture has been refined sufficiently for swallowing. An increasingly flavorless and unaromatic wad of coarse apple flesh progressively can become a mild aversive stimulus, the escape from which is effected by continued chewing until the next swallow can occur. Thus, the chewing continues unabated through each cycle, but the controls on that chewing may change from positive to negative reinforcement. In that case, the associated concurrent adjunctive behavior arises during the latter part of each cycle when the control of the primary chewing behavior has shifted from mostly-strong-positive to mostly-mild-negative reinforcement.

In such a case, the concurrent adjunctive behavior occurs during an interval when the strong primary reinforcer is not available, although the behavior by which that primary reinforcer is accessed continues under a different contingency (i.e., for a different reason). The primary behavior and the intermittent adjunctive behavior occur concurrently during the part of each cycle in which the adjunctive behavior occurs. Thus, the attempt to predict adjunctive behavior in this new kind of situation has brought out attention to a new class of adjunctive behavior—namely, *concurrent adjunctive behavior*. The adjunctive piano playing did not displace the apple chewing.

Instead, its reinforcing effect was added to the temporarily diminished reinforcing effect of the primary chewing.

The Selection of Adjunctive Behavior

Notice has been taken of the potentially advantageous “holding” function of adjunctive behavior in conflict situations. That has implied to some people that those situations afford some sort of selection mechanism that may be responsible for the biological capacity for shifts to an adjunctive behavior on such occasions. Organisms that could more readily do that would presumably enjoy a survival advantage. The emergence of a relatively harmless adjunctive behavior displaces any impending retreat from the perhaps temporary conflict, and keeps the organism positioned in the situation where potentially important benefits may subsequently be realized when eventually the conflict subsides or is resolved. If the avoided implications are lethal, a contingency of survival is defined, and the kind of selection required for biological evolution is implicit.

However, adjunctive behavior, discovered as an intra-schedule effect and subsequently pursued to conflicts and other kinds of situations, represents a common kind of behavior change that is occurring under previously unrecognized circumstances. The biological selection responsible for the *capacity* to exhibit such changes in behavior traces back to the ancient history of organisms. It is the same evolutionary history that produced the capacity for operant behavior in general and for shifts in the prepotency of a specific operant behavior.

The argument for a special selection, based on the subtle utility of the implications of adjunctive behavior in conflict situations, seems somewhat redundant. All operantly capable organisms enter into those kinds of conflict situations already endowed with the capacity for adjunctive behavior—beneficiaries of an evolutionary history that long ago put that in place during the original emergence of operant capabilities. It therefore seems unlikely that adjunctive behavior, which results from a simple shift in prepotency, is a product of the selection mechanism operating only within the limited range of circumstances that have brought just one class of prepotency manifestations, described as “adjunctive,” to the attention of the experimental community.

While the capacity for adjunctive behavior may be further selected through such contingencies of survival in conflict situations, it would seem that that selection would serve mainly as a maintenance function, because bodies already work that way for reasons more general than those prevailing only within interval schedules or in conflict situations. The adjunctive behavior is, in general, already going to occur, because when one operant behavior weakens, another becomes prepotent. The kind of selection that, in evolutionary antiquity, produced the

general phenomenon of behavior change in response to change in the behavior-controlling environment, has bestowed the capacity for prepotency as a major and universal aspect of the contemporary endowment of operant capacity. For the most part, operantly behaving organisms all work that way in general, and shifts in the prepotent behavior will occur on *any* kind of occasion that affects the relative evocative strengths of environmental elements—and certain behaviors are called “adjunctive” when they occur prepotently during a special subset of that more general family of occasions.

Conclusions

The nature and occurrences of adjunctive behavior do not endow it with the fundamental status of a separate behavioral category in parallel with operant and respondent behavior. Nevertheless, its recognition is scientifically useful. The phrase *adjunctive behavior* is a tact of operant behavior that is occurring under a particular set of circumstances that, in some cases, render it (or its products) strange in a contextual sort of way.

Recognizing and analyzing adjunctive behavior provides some welcome scientific relief. For example, we can now describe and explain with better scientific precision such events as (a) the often feeble efforts of a privately terrified person to defuse a threatening situation, (b) the nonsensical diversions of a momentarily bored companion, (c) certain apparently unconscious ingestive excesses portending adverse although oddly ignored implications, or (d) perfunctorily getting one’s uninteresting work done while under the distractions of a favored diversion. With adjunctive behavioral phenomena included in our science, we are generally better prepared to deal analytically with a variety of curious behavior-related obtrusions that used to tease us with peripheral threats to the adequacy of our understandings.✻

References

- Falk, J.L. (1961). Production of polydipsia in normal rats by an intermittent food schedule. *Science*, 133, pp. 195–196.
- Falk, J.L. (1971). Theoretical review: The nature and determinants of adjunctive behavior. *Physiology and Behavior*, 6, 577–588.
- Falk, J.L. (1981). The environmental generation of excessive behavior. In S.J. Mule (Ed.), *Behavior in Excess* (pp. 313–337). New York: Free Press.
- Falk, J.L. (1984). Excessive behavior and drug-taking: Environmental generation and self-control. In P.K. Levinson (Ed.), *Substance Abuse, Habitual Behavior, and Self-Control*. Boulder, CO: Westview Press.
- Falk, J.L. (1986). The formation and function of ritual behavior. In T. Thompson & M.D. Zeiler (Eds.),

Analysis and Integration of Behavioral Units. Hillsdale, NJ: Lawrence Erlbaum Associates.

Falk, J.L. (1993, March). *Schedule-induced behavior occurs in humans: A reply to Overskied*. Paper presented at the fifth annual convention of The International Behaviorology Association, Little Compton, RI.

Falk, J.L. (1995, March). *On the origin and function of ritual behavior*. Paper presented at the seventh annual convention of The International Behaviorology Association, Gainesville, FL.

Falk, J.L. & Tang, M. (1998). What schedule-induced polydipsia can tell us about alcoholism. *Alcoholism: Clinical and Experimental Research*, 12 (5), pp. 577-585.

Fraley, L.E. (1994). Uncertainty about determinism: A critical review of challenges to the determinism of modern science. *Behavior and Philosophy*, 22 (2), 71-83.

Skinner, B.F. (1953). *Science and Human Behavior*. New York: The Free Press.

Staddon, J.E.R. (1977). Schedule induced behavior. In W.K. Honig & J.E.R. Staddon (Eds.), *Handbook of Operant Behavior* (pp. 125-152). Englewood Cliffs, NJ: Prentice Hall.

Footnotes

¹ A version of this article appears in Chapter 16 of *General Behaviorology: The Natural Science of Human Behavior*, a book now under development by the author.

² This ranking of the relative evocative capacities of environmental elements, if is not already available, can be discovered experimentally.

³ Implicit in this statement is a theoretical question about how to define *environment*, which is either (a) all stimuli to which the organism *could* be conditioned to respond, (b) all stimuli to which the organism has *ever* responded, or (c) all stimuli to which the organism is *currently* responding. These three definitions denote different behaviorological concepts of *environment*.

⁴ Some theorists argue that two such behaviors, similar in form but controlled by different antecedents, cannot be identical in form and may therefore be distinguished, one from another, by sufficiently sensitive comparisons. According to that view, even though, under casual observation, those differently evoked responses may appear to represent the *same* behavior, normal interresponse variance aside, they are just not examples of the same behavior, and instead can be separated into two response classes, each representing its own behavior.

⁵ Note that the common phrase “captures the person’s attention” is behaviorologically valid, a rarity among common references to how behavior works.

⁶ Note that adjunctive behaviors differ from those that result from what are called secondary contingencies that may arise within the cycles on an interval schedule. Such secondary contingencies pertain to the primary behavior and introduce changes in how it is being controlled across different parts of each cycle. Here, we are talking about the temporary intrusion of entirely different behaviors that are controlled by stimuli that do not directly affect the primary behavior.

⁷ An interval schedule features an interval of time during which the reinforcer of the behavior of interest is not available, after which it becomes available and remains so until the next response occurs. That response is reinforced, and then a new cycle begins as the reinforcer again becomes unavailable for another interval of time. If those time intervals are fixed, the schedule is called a *fixed-interval schedule* (FI schedule). If those time intervals vary from cycle to cycle, the schedule is called a *variable-interval schedule*.

⁸ The excessive consumption of water, often to the point of damage to the organism, has been called *polydipsia*, but that term has in some cases been used to suggest an unspecified internal cause for the excessive drinking behavior. That implicit internal cause may be a fictional construct (e.g., a psychological causal trait) or perhaps an implicit physiological defect of some kind. However, in this case, the excessive drinking, though it has been called polydipsia, is entirely schedule-induced, a fact recognized by John Falk in his early descriptions of the phenomenon.

⁹ In operant conditioning, apparent changes in the evocative capacity of an antecedent stimulus, the intrinsic properties of which remain fixed, are actually due to changes that occur within the behaving body. That is, the evocative strength of the antecedent stimulus may appear to wax and wane although that stimulus has not been changed. The temporary weakening of the evocative capacity of the antecedent stimulus that is illustrated in Fig. 1 actually occurs as a result of changes that happen within the body of the behaving organism. Remember that the conditioned evocative capacity of a stimulus is not one of its intrinsic properties. The real variables that define that capacity actually inhere in the behaving organism.

¹⁰ In a variable ratio schedule, every Nth response gets reinforced, while N varies from cycle to cycle around some mean. If every response gets reinforced, the schedule is called a *continuous schedule of reinforcement*.

¹¹ When these details were mentioned to a person who explains behavior as operations conducted by an ethereal body-managing self-agent, that person observed that only a fool would continue in a trivial activity that yields little gain while neglecting opportunities to behave in more important ways that would pay off

handsomely. Furthermore, that person had no difficulty applying that explanation to each cycle within a schedule when each cycle features initial adjunctive behavior along with later behavior that intermittently can produce the strong primary reinforcer.

¹²An alternative possibility is that the punished behavior continues while the intruding behavior, which in this case occurs concurrently, distracts the punitive agent (assuming that the aversive source is a distractible organism). The punishment then weakens or abates, and the primary behavior re-equilibrates at a new higher level that is determined by the strength of the primary reinforcer. An example occurs when a companion, who has been punitively reacting to your remarks to a third party, is distracted when you, while continuing to talk to that party, extend your arm and hand to point to an interesting event that is occurring nearby. If your companion looks away and begins to attend to those events and that companion's punitive remarks therefore stop, your remarks to the third party can then increase in frequency under the control of the social reinforcers being provided by that party.

¹³In cases where a strongly reinforced behavior is suppressed by punishment, a low net rate implies that at least an occasional response will occur. Even if the suppression has the rate stabilized at zero, most organisms are nevertheless separately conditioned to exhibit the behavior occasionally as a probe, because in the past such "probes" have occasionally revealed that the suppressive conditions have changed.

¹⁴In each cycle, at the time that the apple is put down, it has temporarily lost most of its capacity to evoke another biting response. Carefully putting the apple down to begin the piano playing would represent the first of the two kinds of adjunctive behavior in the adjunctive sequence within each cycle. The deposit of the apple would be a negatively reinforced adjunctive behavior, because a loaded (preoccupied) hand becomes a conditioned aversive stimulus to the extent that it precludes access to the reinforcers acquired by playing the piano. The negatively reinforced escape behavior is "putting the apple down." The second adjunctive behavior, piano playing, is then positively reinforced by the resulting musical sounds under a combination of schedules. These facts reveal how the temporarily intruding adjunctive behaviors occur under their own respective kind of reinforcement. ☪

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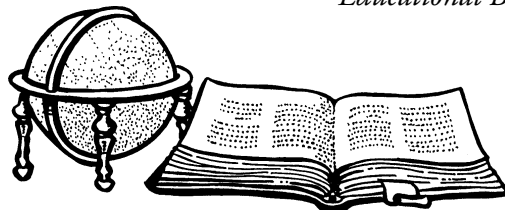
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Reinforcement in Diplomacy: More Effective than Coercion

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Editor's Notes

To paraphrase a relevant expression, *since we have sown the wind* (in the invasive international events that started in March 2003) *and so will reap the whirlwind*, we should know something about why, as well as something about what we can still do about it. This article can help us. It is an excerpt (pp. 276–287, the second half of Chapter 19; reprinted with permission) from the last chapter of Murray Sidman's book *Coercion and Its Fallout* (published in 2001 by Authors Cooperative of Boston, MA).

Recalling that *reinforcers* are stimulus events which strengthen behaviors that they follow, some behaviorologists refer to reinforcers *that are presented* as “added” reinforcers, and to reinforcers *that are withdrawn* as “subtracted” reinforcers, rather than use the more traditional terms “positive” and “negative” reinforcers. They find that this reduces the confusion that stems from the more general meaning of “positive” and “negative” as “good” and “bad.” However, since the author originally used the terms “positive” and “negative” reinforcers in his book, which first appeared in 1989, before this terminology change, his usage is unchanged in this excerpt. (For a more detailed discussion of the use of “added” and “subtracted” in place of “positive” and “negative,” see Ledoux, 2002.)—Ed.

Positive Reinforcement in Diplomacy

We on the sidelines know little about what actually goes on during diplomatic negotiations. Military and economic resources—potential reinforcers—are enlisted in the service of foreign policy through mysterious routes. The secrecy makes the diplomatic process hard to analyze. But there is no mystery about the results. By maintaining that war is a viable alternative to peace, standard diplomacy has spawned a system of intimidation, belligerence, and murderous aggression that functions to satisfy economic greed and lust for power.

Doves and Hawks

Because power, resources, and prestige are potent reinforcers, nations will probably always have to keep mili-

tary forces to forestall those who would take everything for themselves. “Hawks” advocate an increasingly aggressive posture, backed up by an irresistible military establishment. They argue that readiness to attack is self-protective and insist that only superior force can protect a nation against attack. “Doves,” who advocate international friendship, argue that threatened aggression generates counteraggression and insist that only disarmament will guarantee peace. The doves accuse the hawks of causing rather than preventing wars, and the hawks accuse the doves of unrealism, of just asking for self-destruction.

Certainly, no country can close its eyes to the possibility of attack by another and yet, the notion of superior force has itself become unrealistic; several nations now have enough nuclear explosives to destroy everyone. Is it really impractical to attempt to influence other nations noncoercively? The dove-and-hawk analogy has a curious twist. To be either kind of bird is equally natural and both have value, but doves appears to be survivors while hawks have become an endangered species.

Positive reinforcement, although it does not generate the enmity and counteraggression that comes in the wake of coercion, is nevertheless a contingency. It does not mean giving everything away for nothing. To be effective, positive reinforcers must be contingent on conduct and on the circumstances in which the conduct takes place. Although not coercive unless misuse transforms it into negative reinforcement, positive reinforcement is still behavioral control.

As we have seen, noncontingent giving is a form of control also, and can be destructive, generating behavior that is in nobody's best interest. Giving unconditionally is not the opposite of coercion. If parents give children everything they want regardless of how they act, the children will learn nothing useful to them, to their parents, or to society in general. One nation giving another everything it wants regardless of what it does will not get the recipient to function productively or peacefully in the world society. Noncontingent giving does not signify generosity. It produces its own destructive side effects.

On the other side, the avoidance paradox ([discussed in] Chapter 9) will prevent any coercive peace-keeping policy from succeeding completely; nobody can continue avoiding forever without receiving an occasional shock. Nuclear deterrence suffers a special disadvantage. When the inevitable shock comes, it will put an end to all human conduct. For that reason, a workable policy of mutual deterrence would require the restriction of armaments to less destructive weapons. Even with a peace that we maintain through mutual deterrence, nuclear disarmament would be necessary. An occasional armed conflict that does not wipe everyone out might then serve as the necessary reminder that keeps us avoiding more wars for a while.

Although we can probably never completely eliminate coercion from diplomatic policy, we cannot depend on it as the key peacekeeping mechanism. At most, we should keep it only for emergencies. As with families, a strong background of positive reinforcement can prevent an occasional use of force from producing devastating side effects. But again and again we have seen predominantly coercive control sooner or later producing the very counterviolence it was intended to prevent.

Hungry Generals

Military establishments preempt and use up a huge portion of the world's wealth, transforming it mainly into consumable supplies and weapons. Military organizations produce no food or shelter except for themselves, manufacture no goods for civilian use, provide health care only for their own, set up schools almost solely for education in the methods and technology of warfare, and establish research laboratories to discover new ways and to refine old ways of destroying potential adversaries. Only a minuscule portion of the military budget goes for the production of generally useful goods, technology, knowledge, or education. Most of the resources it appropriates go to waste. In wartime, human lives go down the drain. In peacetime, all weapons eventually burn, explode, or rot.

The world could reduce this wastage enormously by reducing the size of its military establishments. Wealthy and powerful nations might find it possible to scale down their forces safely by substituting positive reinforcement for the coercion that currently passes as diplomacy. International coercion, ipso facto, requires a military backup; retaliation is inevitable. We support coercive diplomacy by building up military forces, producing a still greater wastage of human and material resources. That cycle could be broken by replacing coercion with positive reinforcement as an instrument for maintaining civilized interactions among nations. Eliminating the need to sustain increasingly voracious military organizations would make a significantly larger pool of basic necessities and other resources available for all. To be sure, the mere availability of resources does not mean that they will be distributed fairly or in a spirit of international cooperation but it would at least open up a possibility. Contingent sharing would then lessen nations' need to resort to aggression and counteraggression.

Good Neighbors

Because the stakes are so high, preliminary experimentation is desirable, although diplomacy that is based on empirical data has hardly been a tradition anywhere. Might it make sense for the State Department to establish a research arm that included, among others, behavior analysts [the main name for natural scientists of behavior

before the independent-discipline movement of behaviorology] and experts in scientific methodology? These "foreign-service scientists" could initiate experimental studies, some perhaps asking whether our accumulating knowledge about behavior might be applied in the service of international peace.

The objectives of diplomacy are behavioral. Their aim is to influence the conduct of those who govern other nations. Instead of attempting to destroy an unfriendly government by supporting internal violence and terrorism—and in the process, turning old friends into enemies—might we shape cooperation and friendship? Shaping is a tried and true behavioral procedure. It involves finding some conduct that we consider desirable and making that conduct more likely by providing positive reinforcers. The first reinforceable conduct may be relatively unimportant but it will produce new forms of conduct, closer to what we eventually want. We can therefore gradually reinforce behavior that is more and more important to us. And by providing reinforcers—sometimes changes in our own behavior—that satisfy the needs of the other nation, the process becomes reciprocal; both nations gradually change the nature of their interactions with each other.

In international relationships, that means getting together to find areas of agreement. Disagreements are easy to identify, but we often overlook an unfriendly nation's needs that we could satisfy without endangering ourselves, and we fail to consider the likelihood that the other nation would be willing to go along with at least some small requirements of our own. A certain amount of mutual backscratching is always possible. In any negotiating session, the basic goal is to get the members of the other team to press certain levers; this can be accomplished by means of shaping programs that make positive reinforcements contingent on gradually closer approximations to the desired behavior. The shaping of behavior by means of positive reinforcement ought to be an integral curriculum element in the training of those entering the diplomatic service.

Contingent support, although certainly a technique of control, need not include the coercive elements of punishment and negative reinforcement [to be effective]. Positive reinforcement does not involve threats; support simply comes after desired conduct has occurred and at no other time. Undesirable conduct is not [and should not be] punished either by giving "shocks" or by taking away reinforcers that have already been earned. Control, yes, but not coercive control.

Starting with small and perhaps even unimportant areas of agreement, reinforcement strengthens desirable conduct and in the process makes new behavior appear for the first time. For example, providing medical supplies in return for minimal commercial airport privileges

would bring citizens and government officials of each country into constructive contact, would endow former enemies with the characteristics of positive reinforcers, and would establish bases for trust. Having made small progress, we might then see what other areas of cooperation could be found. Perhaps we could ask for the release of some political prisoners and on our part provide educational opportunities for civilian and military personnel.

In return for friendship and cooperation, we could do more than just remove coercive pressures. We could send farm machinery, help erect factories and train people to own and operate them, provide medical supplies and physicians to initiate public health programs, and establish schools that would help guarantee the country's self-reliance. Eventually, whatever help unfriendly governments might be receiving from each other, we could easily exceed it, and in the process obtain our own diplomatic objectives also. Each nation would give and each would receive; the leaders, the negotiators, and the general populace of both would thereby maintain their self-respect.

The reinforcement contingencies would not include the use of force. Even an anti-American military buildup would not bring destruction raining on their heads. Nor would the form or style of government have to be involved in the contingencies. Friendly actions would bring positive reinforcers, unfriendly actions would not. Instead of the aftermath of mistrust and hostility that the usual coercive practices would have produced, friendship and peace could prevail in the area. Although coercion might help topple an unfriendly government, it would leave equally serious problems in its wake. Positive reinforcement for cooperation might prove just as effective internationally as in the individual family, bringing with it a lessening of the tensions that coercive control only worsens.

Nobody can guarantee that things would work out this way. We possess a wealth of data from the laboratory and from applications of technology to other deep-rooted problems of human conduct. Could this knowledge really provide guides for effective action in the complex arena of international relations? In what looks from the outside like a morass of individual greed for power and wealth, would the desirable effects of positive reinforcement survive the alligators? Could we ensure that reinforcers sent to another country would reach the general population whose conduct we want to influence? Would reinforcers ever be delivered to the neediest in countries where the wealthy have concluded that their own survival depends on keeping most of the population poor and uneducated?

These and other foreseeable problems could be met in various ways, with none perhaps providing a complete solution. Still, positive reinforcement could show some of its desired effects. The same could be true of unforeseen

problems. *We will not know until we try.* Existing data suggest that the attempt would be worthwhile. The disastrous effects of the current control techniques in international diplomacy make the attempt necessary.

Even when coercive policies succeed in overthrowing hostile governments, we find ourselves allied with corruption and viciousness. Again and again, seemingly successful coercive pressures have left the United States supporting governments that maintain themselves through violence, suppression, destruction, and treachery. We therefore remain faced with many of the same problems we were attempting to eliminate—unfriendly governments and populations not only in one country but throughout a region. While our agents of coercion crow over the forceful elimination of a potentially dangerous military base, our opponents gain enormous credibility. Isolated from and mistrusted by our neighbors, we find our position of leadership ever more difficult to sustain. Coercive diplomacy turns us into an eventual loser. Positive reinforcement might not work, but it could do no worse.

Clearly, these suggestions involve oversimplifications. But science always oversimplifies at first. It then gradually adds the complexities that bring controlled experiments into contact with the uncontrolled conditions of the everyday world. Positive reinforcement is a powerful determinant of behavior. Applied on a large scale, its effects are likely to show up broadly even though other variables counteract its action in some localities. It would be worth looking into other opportunities to experiment with positive reinforcement as a replacement for coercion in international relations.

Citizens of the World

The collaborative production and sharing of scientific theory, data, technology, and other products of intellectual labor have established a world community of scholars. In general, the important reinforcers that maintain scholarly excellence are positive. The notion that scientific creativity can be motivated by punishment is so contrary to experience that it is laughable. Scientists find their work reinforcing when it proves useful to other scientists or adds to the general welfare. The well-publicized and prestigious prizes for scientific accomplishment are largely based on the criterion, "How useful have other scientists found the work?" International journals disseminate the results of experimental and theoretical inquiry regardless of the country where the work was done. Scientists and other scholars travel extensively to all parts of the world both to teach and to learn. As a result of these positive interactions, most scientists find the thought of engaging even in a "limited" war against their scientific peers abhorrent.

In the arts, too, reinforcement is positive, contingent on the beauty and originality of the artist's creations—

paintings, music, sculptures, novels, dramas, essays, or performances. Although some artists (and some scientists, too) may lead hard lives, the principal reinforcement for artistic productivity lies not in the negative reinforcement of escape from starvation in the traditional garret but in the effect the work produces on an audience. Like the audience for science, the audience for the arts is international. Artists, too, travel extensively to all parts of the world, teaching, learning, and entertaining. The international artistic community, like the scientific, finds the very thought of war hateful.

Here are two large international groups, artists and scientists, for whom peaceful interactions based on mutual positive reinforcement has become a way of life. Positive reinforcement has been establishing positive relationships among scientists, among other scholars, among artists, and between these producers of knowledge and beauty and their students and audiences all over the world. This worldwide goodwill and cooperation have come about not because of but in spite of standard diplomacy. Indeed, diplomats and their political supporters often regard scientists and artists with suspicion because of their friendly interactions with citizens of potentially hostile nations.

The Peace Corps has never been evaluated for its success in establishing and maintaining international goodwill toward the United States. Many informal testimonials suggest that it has been enormously effective in counteracting the divisions that official coercive diplomacy creates. Nevertheless, this country's support for the Peace Corps grows shakier all the time.

Another positive mechanism for encouraging international cooperation, the Fulbright Scholar Program—maintained by the United States Congress outside the usual diplomatic channels (and, for that reason, subject to steady destructive pressures from State Department officials)—is a small experiment that has been going on for years, but we have not stopped to analyze it and learn from it. Fulbright Fellowships, granted as positive reinforcers for accomplishment, have significantly increased international goodwill in return for a relatively small financial investment.

Why not enlarge the scope of these experiments, extending the positive reinforcement model that has worked for international technology, scholarship, and art to all areas of human activity? When problems and conflicts of interest do arise, individuals with a history of reciprocal positive reinforcement are more likely to insist that their governments work out constructive and not destructive solutions. When those at the negotiating table have no positive bonds, they just make demands. When their citizens have already established cooperative and friendly interactions, it is more natural to propose solutions. Governments will find it difficult to threaten or to

make war if their citizens, even their soldiers, have become friends.

To foster this aim of creating bonds among individuals, could we not establish international institutes, devoted to research, teaching, and the application of knowledge and technology in areas characterized by important, unresolved practical problems? These could include agriculture, nutrition, disease prevention, business management, architecture, law enforcement, computer technology, education, and many others. We could locate these institutes in many nations, excluding none. Each would invite experts and laymen to international workshops and conferences. All who attended would be able to ask their own questions, learn what others are thinking or have discovered, present their own thoughts and discoveries, and evaluate the relative merits of various solutions to a given problem. In the process, they would have a chance to see the “enemy” for themselves, interacting during both work and relaxation. Such positive interchanges would make it difficult for participating individuals to remain or to become enemies.

Positive interactions among people of different nations could also be fostered by a program of citizen exchanges. With national and international support, young people could travel to other countries, living with families long enough to become really acquainted with another culture and to form lasting friendships. Hospitality is a term that covers many positive reinforcers. It means being treated with respect and consideration as a valued and interesting visitor, being “shown around the town,” sharing food and shelter, taking part in family intimacies, learning a new language, and becoming comfortable with culturally specific skills, practices, and customs that seemed strange or even frightening at first. It means acquiring an extensive history of positive exchanges that would be difficult for any circumstances to reverse. If enough citizens could be given such a history, the customary coercive diplomacy would lose popular support.

Such exchanges would clearly not solve all the world's problems. The suggestion is intended not as a cure—all but as a first step that might then make other constructive steps possible. On a large scale, the exchanges would be expensive, but if they eventually permitted a significant reduction in the cost of maintaining military establishments, the substitution of one expense for the other would be easily justifiable.

The general principle is for governments to relieve and prevent international tension by using positive reinforcement to develop and strengthen positive relationships among individual citizens of different countries and cultures, rather than using negative reinforcement to set other governments scrambling to escape and avoid threats. The technique is just the opposite of “summitry,” in which heads of state, having hurled their threats and

counter threats, meet to evaluate each other's suggestions for escaping from the tensions they have created. Instead, they would meet—preferably with behaviorally trained mediators present—to determine how each nation might best achieve its needs. The push for peace would come from below, with the general population setting the ground rules for the conduct of international affairs. In the long run, programs that provide positive reinforcement for the constructive actions of individual citizens would more than pay for themselves. And the improvement in the quality of life, unencumbered by the fear of partial or total destruction, would be incalculable.

Terrorism

Could positive reinforcement help bring terrorism, too, to an end? Perhaps, but not quickly. Terrorist activities are just one side effect of coercive pressures that have been in place for a long time (see Chapter 9). And, of course, terrorism itself is a coercive technique so it, too, generates countermeasures. Once set into motion, repeating cycles of coercion and countercoercion are hard to interrupt. Each side fears that any relaxation of its defenses (the usual euphemism for offenses) will leave it at the mercy of a merciless enemy.

Positive reinforcement, used ineptly, has helped foster terrorism. The payment of ransom, whether money, prisoner exchanges, transportation, armaments, or any other positive return, has ensured that the taking and killing of hostages will continue. Responding to anguished pleas from the families of hostages by paying ransom for the release of one group has guaranteed that others will later be taken. This is not a matter of personal opinion; it is the way positive reinforcement works. As long as we pay terrorists for what they do, they will be happy to keep on obliging us with more of the same.

Another source of strong positive reinforcement that helps perpetuate terrorism is the intense television, radio, newspaper, and magazine coverage of every terrorist act. Terrorists have discovered that throwing a small stone can make a worldwide splash, with ripples extending not only into every council of state but into every household. The relatively small effort involved in taking a few hostages can bring a group up from obscurity, however insignificant and powerless the group may be by any usual criterion. Representatives of the most powerful governments and the most influential churches allow themselves to be led blindfolded to rude negotiating tables where they discuss payment with hostile and contemptuous captors. The news media place the negotiators in the world's center stage. Only the superbowl and the international soccer finals get as much publicity.

One of our well-known newspaper columnists did a piece in which he argued that acts of terrorism have become largely unsuccessful in accomplishing broad politi-

cal or social aims. But he went on to point out, "Terrorism ... has been filling the news for most of our lives, and will doubtless go on demanding the attention of our children and grandchildren as well. What's new is how rarely it achieves its goals these days." In spite of his clear recognition of the broad media response to terrorist acts, this columnist, like almost everybody else, fails to recognize that the media response is itself the goal of terrorism. It does not matter what terrorists say their goals are or whether they achieve their stated goals. The fact remains that conduct is governed by its consequences, and the main consequence of terrorism is media attention.

Imagine the feeling of power and grandeur in the breasts of terrorists as they see themselves and hear their achievements discussed on channel after channel and page after page of the news media. What must it mean to people whom the world has treated with contemptuous disregard to discover that they have been able virtually to wipe out the international tourist industry for a time just by detonating a couple of bombs in airports? Are there simpler ways to make your existence felt than by kidnapping and killing a few defenseless individuals, or planting a time bomb, or machine-gunning a prominent politician or industrialist? Have the deeds of any hero ever gained more recognition?

Even that most recent variety of terrorism, the taking over of schools and the murdering of pupils by their classmates, has received such intensely detailed and continuing media coverage as to guarantee the recurrence of such behavior. Indeed, in one instance—a plot that was fortunately prevented after classmates warned the authorities—14 seventh-grade pupils, who brought weapons, bomb components, and disguises to school, actually admitted that by terrorizing their class, they hoped to get their pictures on television.

By negotiating and paying ransom and by providing unlimited publicity, government and news media have been supplying positive reinforcement that guarantees the continuance of terrorism. It is perhaps too late now for governments to use positive reinforcement as they should have used it originally to bring about acceptable alternative means of protest or to make protest unnecessary. Given the present polarization, governments may no longer have any choice except violent countercoercion to stop terrorism [which *is not* a real solution].

The reinforcement of terrorism by the news media has brought the resurgence of an old threat, censorship. That solution to the media problem is unthinkable. Free communication of news and opinion is one of the strongest protections a people can have against those who would achieve their aims by coercion. Nevertheless, the news media's continuing support of terrorism is making it difficult for concerned citizens to maintain their opposition to censorship. Those who would prefer, for other reasons,

to see our sources of information muzzled are already making noises in that direction, pointing in justification to terrorism's successful exploitation of the media.

Recognition both of its role in reinforcing acts of terrorism, and of its own danger, should therefore engender a certain amount of responsible self-restraint by the news media. The excuse that all the news must be reported is patently false; it has never been possible to report everything. Editors have always had to choose what to publish. The real problem is that the media have never developed criteria for deciding what to report and what to leave unsaid. Taking account of the behavioral consequences of their practices would help provide rational and objective bases for such decisions. For example, is informing the public about an act of terrorism—or about any act of violence—worth the cost of encouraging more such acts? What is important is for the media to put those criteria into place themselves.

As far as government policy on terrorism is concerned, the first thing to be done there, too, is to stop the reinforcement. End all negotiations, even “quiet diplomacy.” Stop enhancing the prestige and power of governments that make the support of international terrorism a matter of national policy. Using them as middlemen to win concessions from the very terrorist groups that exist only by virtue of their protection just perpetuates their practices. To use a technical term that is nonetheless apt, terroristic activity and its support need to be extinguished, not reinforced.

Given terrorism's history of success, however, a policy of extinction—the withdrawal of reinforcement—will require considerable time to take effect. A single large reinforcement is enough to keep an act going for a long time. Terrorism has yielded huge returns—many large reinforcers; we can expect it to continue for a long time even if it never succeeds again. Also, the beginning of extinction will bring a temporary escalation of terroristic activity. Having allowed things to reach this point, we may be left with no alternative than to reply to the escalation with violence of our own.

No one should suffer the illusion, however, that anything permanently constructive can be accomplished that way. Coercion has brought a large segment of the world to a state of economic deprivation, social humiliation, and political repression. The rest of the world will have to reverse its reliance on coercive diplomacy if it is ever to eliminate the threat of desperate countercoercion.✻

More Editor's Notes

DATELINES—2001 September 11 and 2003 March 19: A reality check shows that the *coercive status quo* in international relations continues with all the predicted negative

effects discussed in this article. And the events of these dates show us the kinds of events that (as a result of the *lack* of change in the coercive status quo in international relations) we all, locally and around the world, will be experiencing in ever escalating spirals that are heading for the horrific end of humanity. Obviously, this is not mere alarmism. No less obvious is the need for change, and we may still have time to change, away from the coercive status quo and at least toward practices like those already described. The outcomes of this change very likely are, and can only be, better than the outcomes being experienced from the coercive status quo! Such change, however, may require that *everyone* try to contribute to the change. How will *you* contribute?

Again, this is an excerpt, the second half of Chapter 19, the last chapter in Dr. Sidman's book *Coercion and Its Fallout—Revised Edition* (Sidman, 2001). In the earlier chapters of his book, Dr. Sidman first summarizes what is known about coercion and its three most fundamental effects of escape, avoidance, and counter-coercion (or, of getting away, staying away, and getting even, using the less technical terms preferred by Dr. Glenn Latham in his book *The Power of Positive Parenting* [Latham, 1994]). Then he (a) describes alternatives to coercion that are more effective, and (b) applies this knowledge using a full range of human concerns (from child care and education, through business and industry, to government and diplomacy). To become more effective in reducing coercion around yourself, throughout society, and around the world, read the whole book. You can order copies through booksellers everywhere (ISBN 1-888830-01-8).

Also, the topic Dr. Sidman addresses in this excerpt, and the continuing circumstances to which it is relevant, often generate thoughtful responses on the part of readers. Please share your thoughts with others on more about making a better world by reducing coercion, and how our natural science of behavior can help achieve this. Send or email your comments or articles to the editor (using the addresses on the inside rear cover).—Ed.

References

- Latham, G.I. (1994). *The Power of Positive Parenting*. Logan, UT: P&T ink (ISBN 1-56713-175-1).
- Ledoux, S.F. (2002). Increasing tact control and student comprehension through such new postcedent terms as added and subtracted reinforcers and punishers. In S.F. Ledoux, *Origins and Components of Behaviorology—Second Edition*, pp. 199—204. Canton, NY: ABCs (ISBN 1-882508-08-4).
- Sidman, M. (2001). *Coercion and Its Fallout—Revised Edition*. Boston, MA: Authors Cooperative. (ISBN 1-888830-01-8).✻

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[See the listing in the last spring issue.—Ed.]

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- ❧ Members paying regular dues in the last third of the calendar year will be considered as members through the end of the following calendar year;
- ❧ Members paying regular dues in the middle third of the calendar year will be allowed to pay one-half the regular dues for the following calendar year;
- ❧ A TIBIA member may request the Institute to evaluate his or her credentials to ascertain which TIBI certificate level most accurately reflects the work (and so, by implication, the repertoire) behind those credentials. The Institute will then grant that certificate to the member; as part of this evaluation, the Institute will also describe what work needs to be accomplished to reach the next certificate level. The normal processing fee for this service (US\$20) will be waived for members. For the processing fee of US\$20, a non-member may also request this evaluation and, should she or he

ever join TIBIA, the US\$20 already paid will be applied to the initial membership dues owed. (Faculty teaching behaviorology courses can encourage their students to request this evaluation.)

TIBIA continuously considers additional membership benefits. Future iterations of this column will report all new benefits upon their approval.❧

TIBIA Membership Criteria & Costs

TIBIA has four categories of regular membership, of which two are non-voting and two are voting. The two non-voting categories are Student and Affiliate. The two voting categories are Associate and Advocate. All new members are admitted provisionally to TIBIA at the appropriate membership level. Advocate members consider each provisional member and then vote on whether to elect each provisional member to the full status of her or his membership level or to accept the provisional member at a different membership level.

Admission to TIBIA in the Student membership category shall remain open to all persons who are undergraduate or graduate students who have not yet attained a doctoral level degree in behaviorology or in an acceptably appropriate area.

Admission to TIBIA in the Affiliate membership category shall remain open to all persons who wish to maintain contact with the organization, receive its publications, and go to its meetings, but who are not students and who may not have attained any graduate degree in behaviorology or in an acceptably appropriate area. On the basis of having earned TIBI Certificates, Affiliate members may nominate themselves, or may be invited by the TIBI Board of Directors or Faculty, to apply for an Associate membership.

Admission to TIBIA in the Associate membership category shall remain open to all persons who are not students, who document a behaviorological repertoire at or above the masters level or who have attained at least a masters level degree in behaviorology or in an acceptably appropriate area, and who maintain the good record—typical of “early-career” professionals—of professional accomplishments of a behaviorological nature that support the integrity of the organized, independent discipline of behaviorology including its organizational manifestations such as TIBI and TIBIA. On the basis either of documenting a behaviorological repertoire at the doctoral level or of completing a doctoral level degree in behaviorology or in an acceptably appropriate area, an Associate member may apply for membership as an Advocate.

Admission to TIBIA in the Advocate membership category shall remain open to all persons who are not stu-

dents, who document a behaviorological repertoire at the doctoral level or who have attained a doctoral level degree in behaviorology or in an acceptably appropriate area, who maintain a good record of professional accomplishments of a behaviorological nature, and who demonstrate a significant history—typical of experienced professionals—of work supporting the integrity of the organized, independent discipline of behaviorology including its organizational manifestations such as TIBI and TIBIA.

For all regular membership levels, prospective members need to complete the membership application form and pay the appropriate annual dues.

Establishing the annual dues structure for the different membership categories takes partially into account, by means of percentages of annual income, the differences in income levels and currency values among the world's various countries. Thus, the annual dues for each membership (or other) category are:

<u>Category</u>	<u>Dues (in US dollars)*</u>
Board of Directors member	The lesser of 0.6% of annual income, or \$120.00
Faculty member	The lesser of 0.5% of annual income, or \$100.00
Advocate member	The lesser of 0.4% of annual income, or \$80.00
Associate member	The lesser of 0.3% of annual income, or \$60.00
Affiliate member	The lesser of 0.2% of annual income, or \$40.00
Student member	The lesser of 0.1% of annual income, or \$20.00

*Minimums: \$20 director or faculty; \$10 others

TIBIA MEMBERSHIP APPLICATION FORM

(SEE THE NEXT PAGE FOR THE TIBI / TIBIA PURPOSES.)

Copy and complete this form (please type or print)—for membership or contributions or subscriptions or back issues—then send it with your check (made payable to TIBIA) to the TIBIA treasurer at this address:

Dr. Stephen Ledoux
TIBIA Treasurer
SUNY-CTC
34 Cornell Drive
Canton NY 13617 USA

Check if applies:

- Contribution:
- Subscription:*
- Back issues:*
- & Vol. ____, # __
- & Vol. ____, # __

Name: _____

Member Category: _____

Office Address: _____

Amount enclosed: us\$ _____

Home Address: _____

Office Phone #: _____

Home Phone #: _____

FAX #: _____

CHECK PREFERRED MAILING ADDRESS:

E-mail: _____

Office: Home:

Degree/Institution:** _____

Sign & Date: _____

*Subscriptions: us\$20/year; back issues: us\$10 each.

**For Student Membership:

I verify that the above person is enrolled as a student at: _____

Name & Signature of Advisor or Dept. Chair: _____

TIBI / TIBIA Purposes*

TIBI, as a non-profit educational corporation, is dedicated to many concerns. TIBI is dedicated to teaching behaviorology, especially to those who do not have university behaviorology departments or programs available to them; TIBI is a professional organization also dedicated to expanding the behaviorological literature at least through the magazine/newsletter *Behaviorology Today* (originally called *TIBI News Time*) and the *Behaviorology and Radical Behaviorism* journal;** TIBI is a professional organization also dedicated to organizing behaviorological scientists and practitioners into an association (The International Behaviorology Institute Association—TIBIA) so they can engage in coordinated activities that carry out their shared purposes. These activities include (a) encouraging and assisting members to host visiting scholars who are studying behaviorology; (b) enabling TIBI faculty to arrange or provide training for behaviorology students; and (c) providing TIBI certificates to students who successfully complete specified behaviorology curriculum requirements. And TIBI is a professional organization dedicated to representing and developing the philosophical, conceptual, analytical, experimental, and technological components of the separate, independent discipline of behaviorology, the comprehensive natural science discipline of the functional relations between behavior and independent variables including determinants from the environment, both socio-cultural and physical, as well as determinants from the biological history of the species. Therefore, recognizing that behaviorology's principles and contributions are generally relevant to all cultures and species, the purposes of TIBI are:

- A. to foster the philosophy of science known as radical behaviorism;
- B. to nurture experimental and applied research analyzing the effects of physical, biological, behavioral, and cultural variables on the behavior of organisms, with selection by consequences being an important causal mode relating these variables at the different levels of organization in the life sciences;
- C. to extend technological application of behaviorological research results to areas of human concern;
- D. to interpret, consistent with scientific foundations, complex behavioral relations;

- E. to support methodologies relevant to the scientific analysis, interpretation, and change of both behavior and its relations with other events;
- F. to sustain scientific study in diverse specialized areas of behaviorological phenomena;
- G. to integrate the concepts, data, and technologies of the discipline's various sub-fields;
- H. to develop a verbal community of behaviorologists;
- I. to assist programs and departments of behaviorology to teach the philosophical foundations, scientific analyses and methodologies, and technological extensions of the discipline;
- J. to promote a scientific "Behavior Literacy" graduation requirement of appropriate content and depth at all levels of educational institutions from kindergarten through university;
- K. to encourage the full use of behaviorology as the essential scientific foundation for behavior related work within all fields of human affairs;
- L. to cooperate on mutually important concerns with other humanistic and scientific disciplines and technological fields where their members pursue interests overlapping those of behaviorologists; and
- M. to communicate to the general public the importance of the behaviorological perspective for the development, well-being, and survival of humankind.☺

Periodical Information

Behaviorology Today [known as *TIBI News Time* for the first 4 volumes / 8 issues], is the magazine/newsletter of The International Behaviorology Institute, a non-profit educational corporation, and is published in the spring and fall each year.

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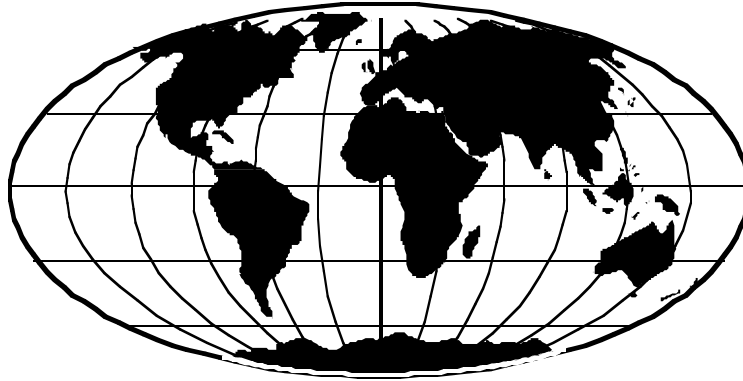
To submit items for publication, contact the editor. Preferred: Send items on a 3.5 inch disk (Mac preferred), in a program that can be placed in PageMaker, along with a hard copy, to the editor:
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Authors' views need not coincide with official positions of TIBI. (Authors retain copyrights.)

*This statement of the TIBI / TIBIA purposes has been adapted from the TIBI by-laws.

**This journal (BARB) is under development at this time and will appear only when its implementation can be fully and properly supported.—Ed.

**THIS POINT IS NOT A MATTER OF CHOICE:
ALL PEOPLE MUST SHARE THIS WHOLE PLANET.
WE SHOULD DO SO PROACTIVELY (I.E., SCIENTIFICALLY)!**



Behaviorology Today

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