VERBAL BEHAVIOR

ABSC 931

Fall, 2010

Wednesdays 6:00-8:30

4014 Dole Human Development Center

Instructor

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Mondays and Tuesdays,
2:00-4:30; Thursdays, 2:00-
5:30; or by appointment

I.   **Course Description**

The 2009-2011 University of Kansas *Graduate School Catalog* lists and describes this course as follows:

> **ABSC 931 Verbal Behavior** (3). An advanced graduate seminar on the analysis of the verbal behavior of the proficient speaker and the biological, environmental, and motivational factors affecting it. Structural and developmental issues, as well as implications for language training and remediation are integrated throughout. Critiques and rebuttals are examined, along with current empirical and conceptual advances in research and theory. An ABA-accredited and BACB® pre-approved course. (Formerly HDFL 831.) Prerequisite: ABSC 798, advanced coursework in psycholinguistics or linguistics, or instructor permission. (p. 171)

This course also fulfills (a) the "Principles of Behavior II or Conceptual Foundations II" course requirement in the Department of Applied Behavioral Science's (ABS) doctoral program (see *Graduate Student Handbook*, 2006, p. 23) and (b) a course in "a specialized area of the non-human and/or human basic research literature" (i.e., Principles of Behavior II) required by the Association for Behavior Analysis International (ABAI) for ABS's accredited doctoral program (see ABAI's *Accreditation of Programs in Behavior Analysis*, 2005, pp. 4, 17).

II.   **Prologue**

The analysis of verbal behavior in the field of behavior analysis is most closely aligned with – and, indeed, is almost synonymous with -- B. F. Skinner's 1957 book, *Verbal Behavior*. Although Skinner's is not the only behavioral account of language (see below), his is the most widely known. It is also controversial because of the well-known and more often read critique of

it by the psycholinguist, Noam Chomsky (1959). Skinner (1987) addressed some of these issues in the following way:

> My *Verbal Behavior* has been called controversial, and in one accepted sense of the word perhaps it is, but most of the argumentation is due to a misunderstanding. The book is not about language. A language is a verbal environment, which shapes and maintains verbal behavior. As an environment, it is composed of listeners. Linguists have usually studied listening rather than speaking (a typical question is why a sentence makes sense), but *Verbal Behavior* is an interpretation of the behavior of the *speaker*, given the contingencies of reinforcement maintained by the community. It uses principles drawn from the experimental analysis of non-verbal behavior -- and nothing else. So far as I am concerned, the only question is whether the interpretation is adequate, but that is not the question raised by the supposed controversy. Those who want to analyze language as the expression of ideas, the transmission of information, or the communication of meaning naturally employ different concepts. Whether they work better is a question, but is it a controversy? (p. 11)

As for "the experimental analysis of non-verbal behavior" that Skinner mentioned in the passage above, the behavior-analytic material available while Skinner was writing *Verbal Behavior* (1931-1957) was almost entirely derived from his and his colleagues' research on the behavior of rats and pigeons. Thus, his "interpretation" was based largely on principles of the behavior of nonhuman organisms available in the 1950s. Skinner, though, was not naive about this. In concluding *The Behavior of Organisms* (Skinner, 1938), his first book on his scientific system, he wrote:

> Whether or not extrapolation [to human behavior] is justified cannot at the present time be decided. It is possible that there are properties of human behavior which will require a different kind of treatment. But this can be ascertained only by closing in upon the problem in an orderly way and by following the customary procedures of an experimental science. We can neither assert nor deny discontinuity between the human and the subhuman fields so long as we know so little about either. If, nevertheless, the author of a book of this sort is expected to hazard a guess publicly, I may say that the only differences I expect to see revealed between the behavior of rat and man (aside from enormous differences in complexity) lie in the field of *verbal behavior*. (p. 442, emphasis added)

In *Verbal Behavior*, he was less circumspect:

> The basic processes which give verbal behavior its special characteristics are now fairly well understood. Much of the experimental work responsible for this advance has been carried out on other species, but the results have proved to be surprisingly free of species restrictions. Recent work has shown that the methods can be extended to human behavior without serious modification. (p. 3)

We shall address the issue of whether the behavior analysis of the 1950s requires modification or not in order to account for verbal behavior. I think it does. It needs the behavior analysis of 2010 any beyond. With this as a prologue, I turn to the course proper.

III.   Course Content

This is an advanced graduate seminar on verbal behavior drawn from B. F. Skinner's (1957) text and other primary and secondary source materials (e.g., journal articles, chapters, on-line tutorials). A close, careful reading of Skinner's text gives us an appreciation of the subtlety and robustness of the behavior-analytic conceptual system and its applicability to verbal behavior. For students in other disciplines, the course offers an in-depth introduction to this material, based on original sources and their modern extensions. But there is more. Skinner's book offers not only an analysis of verbal behavior, but also of related topics in philosophy (e.g., epistemology; i.e., the origins and nature of knowing) and cognition (e.g., consciousness, attitudes), both public and private. Skinner's book, then, is not only far-reaching in its content, but also philosophical in character, both of which are in need of better appreciation and development by behavior analysts and their critics alike.

As for the course content, we will cover (a) background material on Skinner's writing of *Verbal Behavior*; (b) *Verbal Behavior* itself, along with supporting materials drawn from pertinent literatures in the basic, applied, and conceptual analyses of behavior; (c) critiques of Skinner's analysis of verbal behavior, and responses thereto; (d) some current analyses and extensions of this material in relational frame theory; and (e) Act and Commitment Therapy, which is derived from relational frame theory. In fact, throughout, we will be sensitive to applied topics (e.g., clinical and applied behavior analysis).

IV.   Assigned Readings

Skinner, B. F. (1957). *Verbal behavior*. Acton, MA: Copley.

The syllabi listing the assigned readings in *Verbal Behavior* and in the primary and secondary source materials will be handed out in class each week. Other than *Verbal Behavior*, the readings will be posted as pdf files in a gmail account at the Google web site. To access them, log onto your computer and type *gmail.com* into your web browser. You will then sign in at Google with *verbalbehavior931* as your "user name" (no italics) and *absc931!* as your password (no italics). When the site opens, you will find the syllabi and readings on the main page or you can click on "labels" in the lower left-hand side and find the weekly syllabi listed by topic number. All of this material may be downloaded as pdf files.

V.   Recommended Course Readings

A list of recommended readings will be part of each week's syllabus. Although these are optional, they provide (a) references on material related to the topic and (b) references to the scientific and literary citations Skinner listed in his text. They may also be useful as resources for other coursework, research, teaching, and ABS graduate degree requirements (e.g., review paper, theses). I will provide commentary on these and the assigned readings in each syllabus.

Skinner's texts. By way of an introduction to the course, I comment here on other behavior-analytic material on verbal behavior. As for further material by Skinner, this can be found in several of his books, but not in any extended treatment. The exception might be in *About Behaviorism* (Skinner, 1974), which contains a chapter on "verbal behavior" (see pp. 98-112), but it does little justice to *Verbal Behavior*. Another of his books also bears mentioning -- *Notebooks, B. F. Skinner* (Skinner, 1980). This is a collection of informal notes Skinner made between 1956 and 1978 on a variety of topics, many of them pertinent to *Verbal Behavior*.

Introductions and primers. As for texts concerning Skinner's analysis, only two have been published, but are now out-of-print: Norman Peterson's (1978) *An Introduction to Verbal Behavior* and Stephen Winokur's (1976) *A Primer of Verbal Behavior: An Operant View*. Peterson's (1987) text is the place to begin for an introduction to Skinner's analysis. In *Verbal Behavior*, Skinner developed a new set of terms and concepts to describe the behavior of the speaker. These terms are innovative and complex enough that readers can benefit from having a preliminary grounding in them and the concepts on which they are based. Peterson (1987) offers this. Although out of print, Peterson's text is now available as an on-line tutorial at http://foxylearning.com/vb, which will be assigned early in the course.

Although Peterson's (1987) text is designed for students who are already familiar with behavior-analytic terms and concepts (e.g., reinforcement, punishment, stimulus control), students new to the field may have some trouble with his text. For an introductory review of the basic behavior-analytic terms and concepts, see Chance (1999), Holland and Skinner (1961), Keller (1969), and Reynolds (1968); for mid-level introductions, see Catania (2007) and Mazur (2002); for professional handbooks, see Honig (1966) and Honig and Staddon (1977); for the cutting-edge basic research journal, see the *Journal for the Experimental Analysis of Behavior* (*JEAB*, est. 1958). The foregoing notwithstanding, Skinner did intend to write *Verbal Behavior* as a self-contained text, such that familiarity with behavior analysis per se was not necessary. Thus, students unfamiliar with behavior analysis or "learning theory" may read the book to good effect, albeit sometimes with difficulty.

In contrast to Peterson (1987), Winokur's (1976) primer is cast at a higher level: It is more technical, subtle, and sophisticated. However, it is also less an independent "primer" that stands alone and apart from Skinner's text than it is a companion piece to be read alongside it. Indeed, Winokur sometimes almost requires you to have read Skinner (1957) before you can understand his primer. His style is spare. Nonetheless, the book extends Skinner's analysis in some useful ways, although often in a quixotic enough fashion that makes it, again, less useful as a primer than its title suggests. Winokur's text is organized and illustrated largely with material drawn from a course on verbal behavior taught for many years by Kenneth MacCorquodale (1919-1986) at the University of Minnesota. MacCorquodale began teaching this material in the late 1940s, just after Skinner gave his William James Lectures at Harvard University on the topic of verbal behavior, which was the basis of his book. As for the aim of Winokur's book, and the aim of the present course, Winokur (1976) puts it this way, although I would not cast it in so narrow a fashion:

> My aim here is to introduce you to Skinner's natural science of an individual's verbal behavior. This account seeks to explain talking in terms of a person's past history, current

circumstances, and nothing more. Another way of saying this is that we will look at an enumeration of the variables of which verbal behavior is a function. That is, you will be introduced to what Skinner, and I, consider a behavior analysis of talking. (p. 1)

Other texts. Although Peterson (1978) and Winokur (1976) are the only two textbook introductions to *Verbal Behavior*, some related texts have been published. Perhaps the most behavior-analytic treatment is Evalyn Segal's (1975) difficult-to-find *Language: A Behavioral Perspective*. She offers a sophisticated behavior analysis of language and language development that draws parallels and anti-parallels between that approach and the more standard psycholinguistic perspectives. In *Explanatory Models in Linguistics: A Behavioral Perspective*, Pere Julia (1983) presents a behavioral interpretation of linguistics more generally. In *Psychological Aspects of Language*, Phil Chase and Linda Parrott (now Linda J. Hayes) (1986) have edited a potpourri of chapters on language theory, refinements of basic terms and definitions, and examples of research and application, but some of them also critical. Similar presentations may also be found in Steve and Linda Hayes' (1992) *Understanding Verbal Relations* and Hayes, Hayes, Sato, and Ono's (1994) *Behavior Analysis of Language and Cognition*.

Chapters. For chapter summaries of verbal behavior, Keller and Schoenfeld (1950, pp. 376-400) offer the earliest presentation of Skinner's (1957) analysis. Among the best summaries since then are found in Tighe (1982, pp. 301-320), Richelle (1993, pp. 119-137), Donahoe and Palmer (1994, pp. 296-323), Bailey and Wallander (1999), O'Donohue and Ferguson (2001, pp. 119-148), and Catania (2007, pp. 239-260). Although not a summary, I recommend Catania's (1998) "The Taxonomy of Verbal Behavior," especially its glossary.

Journals. Only one journal focuses on "verbal behavior" -- *The Analysis of Verbal Behavior* (est. 1982 as *Verbal Behavior News*). Other journals likely to publish pertinent material are *The Behavior Analyst*, *Behavior and Philosophy* (once *Behaviorism*), *JEAB*, the *Journal of Applied Behavior Analysis*, and *The Psychological Record*. *The Analysis of Verbal Behavior* has published two reference lists of citations pertinent to Skinner's *Verbal Behavior* -- Sundberg and Partington (1982, 1983) -- which might be consulted for additional material, but they are now dated. For a pre-1984 citation analysis of *Verbal Behavior*, see McPherson, Bonem, Green, and Osborne (1984); for one between 1984 and 2004, see Dymond, O'Hora, Whelan, and O'Donovan (2006). Finally, the Association for Behavior Analysis International has a special interest group on the analysis of verbal behavior (see http://www.abainternational.org/Special_Interests/verbal_behavior.asp.

On-line sources. In addition to the on-line link to the ABAI Verbal Behavior SIG, David Palmer (Smith College) has a web site, one part of which is dedicated to verbal behavior -- http://www.lcb-online.org/html/11__verbal_behavior.html. It mainly consists of links to important documents in the history of verbal behavior (e.g., the Hefferline Notes, Chomsky's review, responses to Chomsky), along with his own and other articles on topics in verbal behavior, some of which we will read this semester.

Applications. Two other sources of recommended course readings are topical, not textual. One is the growing application of *Verbal Behavior* to early intensive behavioral

intervention for children with autism and other developmental disabilities. The initial application was made by Joe Spradlin (1963) at Parsons State School and Hospital, but has been mainly developed by Mark Sundberg (see Sundberg, 2007, in press; Sundberg & Michael, 2001; see www. marksundberg.com/), originally in collaboration with Jim Partington (e.g., Partington & Sundberg, 1998a. 1988b; Sundberg & Partington, 1998). The latest generation of this application is *The Verbal Behavior Milestones Assessment and Placement Program: The VB-MAPP*, a language and social skills assessment program for children with autism or other developmental disabilities. The verbal behavior approach to these applications is also being advanced by Vince Carbone at his Carbone Clinic (www.drcarbone.net/). Carbone has a seven-CD seminar on *The Verbal Behavior Approach to Teaching Children with Autism* (see www. abatoolchest.com/). Although this approach has not yet spawned much empirical research (see Carr & Firth, 2005), two new texts are available: Mary Lynch Barbera's (2007), *The Verbal Behavior Approach: How to Teach Children with Autism and Related Disorders* and Doug Greer and Denise Ross's (2008), *Verbal Behavior Analysis: Introducing and Expanding New Verbal Capabilities in Children with Language Delays*.

Other behavioral approaches. Other recommended readings address approaches to verbal behavior that are arguably – some more, some less -- compatible with Skinner's (1957), the earliest of which was J. R. Kantor's (1959) interbehavioral psychology (see Schoenfeld, 1969). For this, see Kantor (1936), *An Objective Psychology of Grammar,* and Kantor (1977), *Psychological Linguistics*. For an overview, see William Gardner (1987), *Language: The Most Human Act* (see Bijou & Ghezzi, 1994). For other approaches, see the texts by Arthur Staats (1968) and Kurt Salzinger (1978). The late Ernst Moerk presented data (new and re-analyzed) and a quasi-behavioral perspective on language development in *Pragmatic and Semantic Aspects of Early Language Development* (Moerk, 1977), *The Mother of Eve: A First Language Teacher* (Moerk, 1983), and *A First Language Taught and Learned* (Moerk, 1992). His work is written largely for psycholinguists and developmental psychologists, and published in their journals, and hence is not well known in behavior analysis. We will read his work later in the semester.

Finally, Steve Hayes, Dermot Barnes-Holmes, and Brian Roche (2001) have edited a text on their approach to language and cognition -- *Relational Frame Theory: A Post-Skinnerian Account of Human Language and Cognition*. Depending on your perspective, RFT either extends or supersedes Skinner's analysis of verbal behavior. We will draw on it throughout the semester, as well as take its on-line tutorial (see http://foxylearning.com/rft). We will also draw on a new applied text that is informed by RFT: Rehfeldt and Barnes-Holmes (2009), *Derived Relational Responding: Applications for Learners with Autism and Other Developmental Disabilities.*

VI.   Course Requirements

The course will be conducted as a faculty- and student-led graduate seminar. The reading will be substantial, but not unreasonable for an advanced graduate course -- somewhere between 75 and 100 pages per week. The course requirements are that you read the assigned material, attend class, and participate in class discussion (20%), take a quiz at the start of each class (20%), prepare a weekly discussion question (10%), complete a weekly reading evaluation form (10%), write critiques of Chomsky's (1959) review of *Verbal Behavior* and an accessible summary of the Skinner-Chomsky "debate" (10%), serve as a class discussion leader (10%), and

write a ten-page term paper (20%). The final grade will be given on a plus/minus bases (i.e., A, A-, B+, B…). The details follow.

Attendance and participation (20%). Class attendance and participation need no definition. Your grade, though, will be pro-rated each week by the percent of time you arrive late or leave early.

Quizzes (20%). Each class will begin with a brief quiz over the week's required readings. Although it will generally not require any deep memorization, the core topics, content, and terms in each reading should be well understood. To assist you with the reading in Skinner's (1957) *Verbal Behavior*, I shall include discussion objectives and questions in each week's syllabus drawn from materials prepared independently by Jack Michael (Western Michigan University) and Joseph J. Pear (University of Manitoba).

Discussion questions (10%). A written discussion question will be required each week. These are to be questions you have about some aspect of the reading that you did not understood or that would benefit from elaboration. The questions should also be suitable for and raise fruitful class discussion. They are not to be questions you might ask on a quiz or questions whose answers you could look up in a dictionary or glossary or that you are expected to know as part of the course prerequisites. Instead, they should ask for explanations about, clarifications of, elaborations on, or challenges to the facts, concepts, and analyses in the readings. In other words, the discussion questions are intended to set the occasion for insightful and critical thinking and class commentary. I may also ask you to clarify or comment on your questions in class. Some technical niceties: (a) You may have questions about a topic that do not come from the reading, and may ask them as well (and I will try to answer them), but you will receive a grade and credit only for the question based on the readings. (b) The question must come from the readings overall (e.g., if it comes from one reading, but is answered in another reading, it will not count). (c) The question must include the citation (not the reference) and the citation's page number(s) of the reading from which it is drawn so that I can consider its context. The questions need not be long; often, a sentence or two will suffice. The discussion questions are due to me via e-mail (ekm@ku.edu) by 5:00pm the Monday before Wednesday's class. They must be sent as text, with your last name in parentheses at the end of it, as in (Morris).

Reading evaluations (10%). A readings' evaluation form will be provided at the end of each week's syllabus on which I ask you to evaluate the reading assignments for that topic. The evaluations are both quantitative (i.e., rankings without ties; ratings with ties allowed) and qualitative (e.g., explanation of rankings and ratings, questions about the readings, further suggestions for clarification). This allows you to ask further questions about the readings, as well as influence which readings I retain or drop in the future. They are to be handed in at the end of class.

Take-home assignments: Chomsky critiques and debate summary (10%). Take-home critiques of Chomsky's (1959) review of *Verbal Behavior* will be required on some of the topics. His review will be compelling in places, but a close reading of *Verbal Behavior* refutes most of the criticisms. For these assignments, I shall ask you to critique Chomsky's review based on the reading in Skinner (1957). You should prepare it as though you were responding to Chomsky,

trying to convince him of his error(s). In other words, what would Chomsky think? Your critique should be brief and to the point, citing specific places (with page numbers from Chomsky and Skinner) where Chomsky was in error. Your critique may also be more general, based on Skinner's overall approach to a particular topic. The critiques need be no more than a half-page long, but must be prepared in APA style. They are due to me via e-mail (ekm@ku.edu) by 5:00pm the Tuesday before Wednesday's class. They must be sent as text, with your last name in parentheses at the end of it, as in (Morris). Later in the course, I will ask that you summarize the Skinner-Chomsky "debate" in a single page, based on your weekly critiques and class discussion. The summary should be suitable for a general audience of behavioral, social, and cognitive scientists who have not read Skinner's book or Chomsky's critique.

Discussion leaders (10%). You will be assigned to lead class discussion on one or more of the course topics, alone or with other students, depending on enrollment. These occasions will require close and careful reading of the week's required reading assignments. Students assigned to a topic will be considered our "experts" on that material. Discussion leaders are exempt from all other assignments due that week, except for the term paper assignment, but it may be turned in the week afterward. You will receive the same grade on the others that you receive for being a discussion leader. You may, of course, complete those assignments and receive the grades for them.

The discussion should have the following features on which you will be graded (see the form at the back of the syllabus): (a) Provide a double-spaced, one-page outline (no more, no less) of the material you will cover and the issues you will address; (b) begin with a brief overview of all the assigned readings; (c) go back through that material, leading and prompting class discussion for the remainder of the period with (i) probing and insightful questions (not with further monologue on the assignment) or (ii) other pedagogical procedure (e.g., group work on topics and questions; debates); (d) be sure to address the discussion questions you think are relevant, as well as answer the take-home assignment; and (e) end by having covered all the assigned readings for the topic. You may also use other pedagogical techniques (e.g., small group discussions of questions you hand out, but not the discussion questions (see above), even though you might address them, too. I will, of course, assist you in class and add my own comments and queries, and meet with you before class, if you like.

Please prepare your material ahead of time, being careful to select and provide examples related to verbal behavior or behavior analysis more generally. You may speak without notes, with an outline, or from written material. Remember that your audience will not be as familiar with the material as you, so organize your presentation carefully and do not speak too quickly. We will begin assigning topics today and complete the process next week.

Term paper (20%). Finally, the course requires a paper pertinent to some aspect of verbal behavior or related course content, which may be broadly defined. The paper must be no longer (or much shorter) than ten pages, excluding references, and should be prepared according to the *Style Manual* of the American Psychological Association. The paper will be graded along the dimensions used for grading ABS comprehensives answers (see the form on the last page of the syllabus). Seven successive approximations to your papers will be due throughout the semester, each worth 1%. For each approximation, you turn in the previous assignment along

with the new one. The final paper, itself, is worth another 14%. The due dates for these requirements are listed in Section VI below, "Course Schedule and Discussion Topics."

As for your default audience, it should be the readers of the field's journals: conceptually-based journals (e.g., The Behavior Analyst), research journals (e.g., *Journal of Applied Behavior Analysis; Journal for the Experimental Analysis of Behavior*), specialized journals (e.g., The Analysis of Verbal Behavior, or journals in select content domains (e.g., autism, developmental disabilities, development, gerontology). This 900-level course is a post-MA, doctoral elective or requirement whose terminal performance should be -- at an AAU or Research I university like KU or in a leading ABS doctoral program -- the ability to make a contribution (or good approximation) to the field's literatures. That said, though, you might want to write for a different audience, for instance, policy makers, undergraduates, or the general public. That would be fine, too. It is a repertoire too often missing among scientists. If these are your audiences, let me know because my feedback will have to be different.

One final point: As I make comments on your written work throughout the course, I will often use abbreviations and some editorial conventions. Among the most common are: = right/good,   = Greek for psychology,   = Greek for philosophy, BA = Greek for behavior analysis, VB = verbal behavior,   = development, x = not in APA style, tr = poor transition between sentences or paragraphs, wc = word choice problem, and awk = awkward phrasing.

VII.   Disabilities

If you have a disability that prevents you from demonstrating your ability to meet the course requirements, you should contact me as soon as possible so that we can discuss what accommodations can be made to ensure your full participation in the course and to facilitate the educational opportunities offered by the course. Also, the staff at KU's Disability Resources (22 Strong Hall, 785-864-2620; ssdis@ku.edu) coordinates accommodations and services for KU courses. If you have a disability for which you may request accommodation in KU classes and have not contacted their offices, please do so as soon as possible.

VIII.   Academic Misconduct and Course Requirements

Two words of unneeded caution. First, academic misconduct will not be tolerated. As defined in Article II, Section 6 of the Rules and Regulations of the University Senate:

Academic misconduct by a student shall include, but not be limited to, disruption of classes, giving or receiving of unauthorized aid on examinations or in the preparation of notebooks, themes, reports or other assignments, or knowingly misrepresenting the source of any academic work, falsification of research results, plagiarizing of another's work, violation of regulations or ethical codes for the treatment of human and animal subjects, or otherwise acting dishonestly in research.

Second, I take the timely completion of the course requirements to be a matter of your priorities, both academic and personal. No late work may be handed in for credit where the reason is poor planning, competing requirements, or other interests. If you foresee having

difficulties in these regards, we should discuss this beforehand. I am sorry if this sounds insensitive, but you will often be evaluated professionally by what you accomplish, not by what you say will (or you mean or meant to) accomplish. More personally, I must set my own priorities for course management and time allocation so that I can meet my own university and professional obligations this semester.

IX.   Course Schedule and Discussion Topics

Dates   **Discussion Topics**

August 25   0.   Course Introduction and Overview

September 1   1.   Background, Introduction, and Critique

                                          Term paper topic (25-50 words)

September 8   2.   A Program: A Functional Analysis of Verbal Behavior, and
                                          General Problems

September 15   3.   Controlling Variables: The Mand

                                                  (a) Individual abstracts of five references for your term
                                                  paper (25-30 words each), along with explanations about
                                                  how each of them will contribute to the paper, and (b) the
                                                  description of your topic, revised as edited or requested.

September 22   4.   Controlling Variables: Verbal Behavior under the Control of
                                          Verbal Stimuli

September 29   5.   Controlling Variables: The Tact I: Public Events

                                                  (a) Five more abstracts of references for your term paper
                                                  (25-30 words each), distinguished from the first five, along
                                                  with explanations about how each of them will contribute
                                                  to the paper, (b) your last graded assignment, and (c) the
                                                  description of your topic and the first five abstracts, revised
                                                  as edited or requested.

October 6   6.   Controlling Variables: The Tact II: Private Events

October 13   7.   Controlling Variables: Special Conditions Affecting Stimulus
                                          Control; and the Audience

                                                  (a) Five more abstracts of references for your term paper
                                                  (25-30 words each), distinguished from the first ten, along
                                                  with explanations about how each of them will contribute

to the paper, (b) a one-page outline of your paper (20-25 lines), (c) your last graded assignment, and (d) the description of your topic and the first ten abstracts, revised as edited or requested.

October 20	8.	Controlling Variables: The Verbal Operant as a Unit of Analysis; and the Verbal Community
October 27	9.	Multiple Variables: Multiple Causation; Supplementary Stimulation; and New Combinations of Fragmentary Responses

(a) The introduction to your paper, no more than three-quarter's of a page long; (b) your references without abstracts; (c) your last graded assignment; and (d) the description of your topic and the outline, revised as edited or requested.

November 3	10.	The Manipulation of Verbal Behavior: The Autoclitic; Grammar and Syntax as Autoclitic Processes; and Composition and Its Effects
November 10	11.	The Production of Verbal Behavior: Self-Editing; Special Conditions of Self-Editing; and Self-Strengthening of Verbal Behavior

(a) A rough draft of the first five pages of your paper, (b) your references without abstracts, (c) your last graded assignment, and (d) your introduction, revised as edited or requested

November 17	12.	The Production of Verbal Behavior: Logical and Scientific Verbal Behavior, and Thinking
November 24	00.	No Class: Thanksgiving Break
December 1	13.	Reviews and Rebuttals to the Reviews of *Verbal Behavior*

(a) A rough draft of your entire paper, (b) your references without abstracts, (c) your last graded assignment, and (d) your five page rough draft, revised as edited or requested

December 8	14.	Acceptance and Commitment Therapy
December 17	00.	Term paper due by 5:00pm, along with the topic

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Partington, J. W., & Sundberg, M. L. (1998a). *Assessment of basic language and learning skills (The ABLLS): An assessment for language delayed students*. Pleasant Hill, CA: Behavior Analysts, Inc.

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Salzinger, K. (1978). Language behavior. In A. C. Catania & T. A. Brigham (Eds.), *Handbook of applied behavior analysis: Social and instructional processes* (pp. 275-321). New York: Irvington.

Schoenfeld, W. N. (1969). J. R. Kantor's *Objective psychology of grammar* and *Psychology and logic*: A retrospective appreciation. *Journal of the Experimental Analysis of Behavior, 12,* 329-347.

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Sundberg, M. L. (2007). Verbal behavior. In J. O. Cooper, T. E. Heron, & W. L. Heward, *Applied behavior analysis* (2nd ed.) (pp. 526-547). Upper Saddle River, NJ: Merrill/Prentice Hall.

Sundberg, M. L. (in press). *A behavioral approach to language assessment and intervention for children with autism.* Concord, CA: AVB Press

Sundberg, M., & Michael, J. (2001). The benefits of Skinner's analysis of verbal behavior for children with autism. *Behavior Modification, 25*, 698-724.

Sundberg, M., & Partington, J. (1998). *Teaching language to children with autism and other developmental disabilities*. Danville, CA: Behavior Analysts, Inc.

Tighe, T. J. (1982). *Modern learning theory: Foundations and fundamental issues*. New York: Oxford University Press.

Winokur, S. (1976). *A primer of verbal behavior: An operant view*. Englewood Cliffs, NJ: Prentice-Hall.

VERBAL BEHAVIOR

ABSC 931

Class Presentations and Discussions

Presenter(s): _____   **Grade** (%): _____

      As described in the course syllabus, you will be assigned to lead class discussion for one or more weeks (and topics) during the semester. This requirement will count for 20% of your final grade. As also described, the discussion is to have the following formal features. These, and the quality with which they are carried out, will be the basis for your grade.

_____   1. First, provide a one-page outline or synopsis of the material you will cover and specific issues you will to address (1).

_____   2. Then, begin with a five-minute overview of all the assigned reading (1).

_____   3. After this, go back through the material, leading and prompting class discussion for the remainder of the period with (i) probing and insightful questions (not with further monologue on the assignment) or (ii) other pedagogical procedure (e.g., group work on topics and questions; debates) (5).

_____   4. Address the discussion questions that may prompt insightful discussion, as well as the take-home assignment (1).

_____   5. End by having covered all the assigned readings for the topic (even if some are more important than others and deserve differential emphasis) (2).

Comments

VERBAL BEHAVIOR

ABSC 931

Grade Sheet, Grade Summaries, and Final Grade

Topic Number and Date	Attend/ Disc (20%)	Quiz (20%)	Disc Quest (10%)	Read Evals (10%)	Chomsky Critiques (10%)	Disc Leader (10%)	Term Paper (20%)
1. August 25	_____	_____	_____	_____	_____	_____	_____
2. September 1	_____	_____	_____	_____	_____		
3. September 8	_____	_____	_____	_____	_____		_____
4. September 15	_____	_____	_____	_____	_____		
5. September 22	_____	_____	_____	_____	_____		_____
6. October 6	_____	_____	_____	_____	_____		
7. October 13	_____	_____	_____	_____	_____		_____
8. October 20	_____	_____	_____	_____	_____		
9. October 27	_____	_____	_____	_____	_____		_____
10. November 3	_____	_____	_____	_____	_____		
11. November 10	_____	_____	_____	_____	_____		_____
12. November 17	_____	_____	_____	_____	_____		
13. December 1	_____	_____	_____	_____	_____		_____
14. December 8	_____	_____	_____	_____	_____		
00. December 17							_____

VERBAL BEHAVIOR

ABSC 931

Topic 1

Background, Introduction, and Critique

Assigned Readings

Peterson, N. (1978). *An introduction to verbal behavior.* Grand Rapids, MI: Behavior Associates. Tutorial available at http://foxylearning.com/vb.

Michael, J. (1984). Verbal behavior. *Journal of the Experimental Analysis of Behavior, 42,* 363-376.

Skinner, B. F. (1957). *Verbal behavior* (Two personal epilogues II: No black scorpion, pp. 456-460). Englewood Cliffs, NJ: Prentice-Hall.

Skinner, B. F. (1957). *Verbal behavior* (Preface, pp. vii-viii). Englewood Cliffs, NJ: Prentice Hall.

Coleman, S. R. (1985). B. F. Skinner, 1926-1928: From literature to psychology. *The Behavior Analyst, 8,* 77-92.

Donahoe, J. W. (2004). Interpretation and experimental-analyses: An underappreciated distinction. *European Journal of Behavior Analysis,* 5, 83-89.

Catania, A. C. (1997). An orderly arrangement of well known facts: B. F. Skinner's *Verbal Behavior. Contemporary Psychology, 42,* 967-970.

Chomsky, N. (1959). Review of Skinner's *Verbal Behavior. Language, 35,* 26-58 [but read only pp. 26-44].

Sherrard, C. (1988). Rhetorical weapons: Chomsky's attack on Skinner. *Educational Psychology, 8*, 197-205.

Recommended Readings

Bailey, J. S., & Wallander, R. J. (1999). Verbal behavior. In B. A. Thyer (Ed.), *The philosophical legacy of behaviorism* (pp. 117-152). Boston: Kluwer Academic.

Barsky, R. F. (1997). *Noam Chomsky: A life of dissent.* Cambridge, MA: MIT Press.

Bjork, D. W. (1993). *B.F. Skinner: A life.* New York: Basic Books.

Carroll, J. B. (1992). Psychology and linguistics: Detachment and affiliation in the second half-century. In S. Koch & D. E. Learly (Eds.), *A century of psychology as science* (pp. 825-854). Washington, DC: American Psychological Association.

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Catania, A. C. (2007). *Learning* (interim 4th ed.). Cornwall-on-the-Hudson, NY: Sloan

Chomsky, N. (1957). *Syntactic structures.* Cambridge, MA: MIT Press.

Collins, J. (2007). Meta-scientific eliminativism: A reconsideration of Chomsky's review of Skinner's *Verbal Behavior. British Journal of the Philosophy of Science, 58*, 625-658.

Critchfield, T. S. (2000). Staffing the empirical analysis of verbal behavior. *The Analysis of Verbal Behavior, 17,* 175-177.

Critchfield, T. S., Buskist, W. F., & Saville, B. (2000). Wither the muse: What influences empirical research on verbal behavior? *The Analysis of Verbal Behavior, 17,* 175-177.

Czubaroff, J. (1988). Criticism and response in the Skinner controversies. *Journal of the Experimental Analysis of Behavior, 49,* 321-329. [Read only pps. 321-325]

Donahoe, J. W., & Palmer, D. C. (1994). *Learning and complex behavior.* Boston: Allyn and Bacon.

Dymond, S., O'Hora, D., Whelan, R., & O'Donovan, A. (2006). Citation analysis of Skinner's *Verbal behavior. The Behavior Analyst, 29,* 75-88.

Eshleman, J. W. (1991). Quantified trends in the history of verbal behavior research. *The Analysis of Verbal Behavior, 9,* 23-32.

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

Hixson, M.D. (1998). Ape language research: A review and behavioral perspective. *The Analysis of Verbal Behavior, 15,* 17-39.

Kaminski, B. J. (1988). The impact of Skinner's *Verbal Behavior* on the experimental analysis of behavior. *Experimental Analysis of Human Behavior Bulletin, 6,* 25-28.

Knapp, T. J. (1990). *Verbal behavior* and the history of linguistics. *The Analysis of Verbal Behavior, 8,* 151-153.

Knapp, T. J. (1992). *Verbal behavior:* The other reviews. *The Analysis of Verbal Behavior, 10,* 87-95.

Knapp, T. J. (1997). Meeting the enemy: An essay review of *Noam Chomsky: A life of dissent. The Analysis of Verbal Behavior, 14,* 105-109.

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

McPherson, A., Bonem, M., Green, G., & Osborn, J. G. (1984). A citation analysis of the influence on research of Skinner's *Verbal Behavior. The Behavior Analyst, 7,* 157-167.

Moore, J. (2000). Behavior analysis and psycholinguistics. *European Journal of Behavior Analysis, 1,* 5-22.

Moore, J. (2007). Conceptual foundations of radical behaviorism. Cornwall-on-Hudson, NY: Sloan.

Morris, E. K., & Schneider, S. M. (1986). Reference citations in B. F. Skinner's *Verbal Behavior. The Analysis of Verbal Behavior, 4,* 39-43.

Normand, M. P., Fossa, J. F., & Poling, A. (2000). Publication trends in *The Analysis of Verbal Behavior:* 1982-1998. *The Analysis of Verbal Behavior, 17,* 175-177.

Oah, S., & Dickinson, A. M. (1989). A review of the empirical studies of verbal behavior. *The Analysis of Verbal Behavior, 7,* 53-68.

O'Donohue, W., & Ferguson, K. E. (2001). *The psychology of B. F. Skinner*. Thousand Oaks, CA: Sage.

Ogden, C. K., & Richards, I. A. (1923). *The meaning of meaning.* New York: Harcourt, Brace.

Palmer, D. C. (2003). Cognition. In K. A. Lattal & P. N. Chase (Eds.), *Behavior theory and philosophy* (pp. 167-185). New York: Kluwer Academic/ Plenum.

Powell, R. P., & Still, A. W. (1979). Behaviorism and the psychology of language: An historical reassessment. *Behaviorism, 7,* 71-89.

Richelle, M. (1976). Formal analysis and functional analysis of verbal behavior: Notes on the debate between Chomsky and Skinner. *Behaviorism, 4,* 209-221.

Richelle, M. (1993). *B. F. Skinner: A reappraisal.* Hillsdale, NJ: Erlbaum.

Russell, B. (1921). *The analysis of mind.* London: Allen & Unwin.

Russell, B. (1926). [Review of *The meaning of meaning*.] *Dial, 81*, 114-121.

Russell, R. (1927). *Philosophy.* New York: Norton.

Russell, B. (1940). *An inquiry into meaning and truth.* New York: Norton.

Russell, B. (1959). *My philosophical development.* New York: Norton.

Sautter, R. A., & LeBlanc, L. A. (2006). Applications of Skinner's analysis of verbal behavior with humans. *The Analysis of Verbal Behavior, 22*, 35-48

Skinner, B. F. (1967). B. F. Skinner. In E. G. Boring & G. Lindzey (Eds.), *A history of psychology in autobiography* (Vol. 5, pp. 387-413). New York: Irvington.

Skinner, B. F. (1972, July 15). On having a poem. *Saturday Review, 55*, 32-35. [Reprinted in B. F. Skinner (Ed.), (1972). *Cumulative record* (pp. 345-355). Englewood Cliffs, NJ: Prentice-Hall.]

Skinner, B. F. (1976). *Particulars of my life.* New York: Knopf.

Skinner, B. F. (1979). *The shaping of a behaviorist.* New York: Knopf.

Skinner, B. F. (1980). *Notebooks, B. F. Skinner.* Englewood Cliffs, NJ: Prentice-Hall.

Skinner, B. F. (1983). *A matter of consequences.* New York: Knopf.

Sundberg, M. L. (2007). Verbal behavior. In J. O. Cooper, T. E. Heron, & W. L. Heward, *Applied behavior analysis* (2nd ed.) (pp. 526-547). Upper Saddle River, NJ: Merrill/Prentice Hall.

Tighe, T. J. (1982). *Modern learning theory: Foundations and fundamental issues*. New York: Oxford University Press.

Tweney, R. D. (1979). Reflections on the history of behavioral theories of language. *Behaviorism, 7,* 91-103.

Watson, J. B. (1913). Psychologies as the behaviorist view it. *Psychological Review, 20,* 158-177.

Watson, J. B. (1922). The analysis of mind [review of Bertrand Russell's *The analysis of mind*]. *Dial, 72,* 97-102.

Winokur, S. (1976). *A primer of verbal behavior: An operant view*. Englewood Cliffs, NJ: Prentice-Hall.

Whitley, P. (1985). *Notebooks, B. F. Skinner:* A referenced index of entries relevant to *Verbal Behavior. The Analysis of Verbal Behavior, 3,* 23-37.

Wood, W. S. (1986). Introductory comments to Bertrand Russell's review of *The Meaning of Meaning. Journal of the Experimental Analysis of Behavior, 45,* 107-108.

Zuriff, G. E. (1976). Stimulus equivalence, grammar, and internal structure. *Behaviorism, 4,* 43-52.

Commentary

Our first topic for the semester is a general introduction to the topic of verbal behavior within the discipline of behavior analysis. We shall take Peterson's (1978) introductory tutorial on the basic terms and concepts in Skinner's (1957) book, *Verbal Behavior*, and address some background for Skinner's treatment of verbal behavior, the nature of behavioral interpretation, Noam Chomsky's (1959) critique of the basic behavioral processes underlying Skinner's book, and Skinner's comment of that critique.

Introduction

As mentioned in the main syllabus, only a few summaries of Skinner's analysis of verbal behavior have been published, along with two introductory texts. The former include, in chronological order, Tighe (1982, pp. 301-320), Richelle (1993, pp. 119-137), Donahoe and Palmer (1994, pp. 296-323), Bailey and Wallander (1999), O'Donohue and Ferguson (2001, pp. 119-148), Catania (2007, pp. 239-260), and Moore (2007, pp. 161-187). Although not a summary, I recommend Catania's (1998) "The Taxonomy of Verbal Behavior," especially its glossary. The introductions are Winokur's (1976), *A Primer of Verbal Behavior: An Operant View*, and Norm Peterson's (1978), *An Introduction to Verbal Behavior*. The terms and concepts Skinner developed were largely new to the science of behavior when he published *Verbal Behavior*. Today, a few of them are more familiar because of their use in the treatment of language disorders in children with autism (see Sundberg, 2007). The terms and concepts are innovative and complex enough that you will benefit from having a preliminary grounding in them because we will come across some of tem in our outside readings before we get to them in Skinner (e.g., tacts, autoclitics). Peterson (1978) offers this in a programmed instructional format. However, his book is out of print, but lucky us: Eric Fox has prepared an on-line version that is available at http://foxylearning.com/vb. Access to it will cost $9.00 for the semester. It is our first "reading" this week. Eric reports it may take from 2 to 5 hours to complete. I think you will be able to complete it in 2 to 3 hours.

Background

Overview. For more historical background than we have time to cover, the assiduous student might review John B. Carroll's (1992), "Psychology and Linguistics: Detachment and Affiliation in the Second Half-Century." Carroll addresses the history of the linguistics by reviewing the reviews of the major publications during this period. In doing so, he provides a capsule summary of the context in which Skinner was working when he wrote *Verbal Behavior*

and afterwards. For material specifically on the history of behavioral theories of language, see Powell and Still (1979) and Tweney (1979). For our purposes, we begin with Jack Michael's (1984) article, "Verbal Behavior." Michael covers some of the past, present, and future of the empirical and conceptual work on verbal behavior, and its influence on behavior analysis and the psychology of language (see Hixson, 1998, for an elaboration of the ape language research). He also situates Skinner's (1957) treatment of this topic in the broader behavior-analytic tradition.

One of the criticisms of *Verbal Behavior* is that it had neither a sound empirical foundation nor did it, at first, spawn much empirical research. Michael (1984) addresses these issues in passing. For a more detailed look at the criticisms (and some refutations of them), see John Eshleman's (1991) "Quantified Trends in the History of Verbal Behavior Research" (see also Eshleman & Vargas, 1988; Kaminski, 1988; McPherson, Bonem, Green, & Osborne, 1984; Oah & Dickison, 1989). For more recent analyses of the empirical foundations of the analysis of verbal behavior, see Crithfield, Buskist, and Saville (2000); of the empirical research, see Critchfield (2000); of empirical research on verbal behavior, see Sautter and LeBlanc (2006); and of publication trends, see Normand, Fossa, and Poling (2000). For a recent update on citation analyses, see Dymond, O'Hora, Whelan, and O'Donovan (2006).

Background. With this as an overview, we turn to background material on matters historically closer to Skinner's career and how he came to be interested in verbal behavior and write his book. Much of this may be found, of course, in Skinner's autobiographical writings: (a) his 1967 autobiographical chapter, "B. F. Skinner," in the Boring and Lindzey series on the history of psychology in autobiography and (b) his three-volume autobiography (see Skinner, 1976, 1979, 1983). The first B. F. Skinner biography -- Daniel W. Bjork's (1993), *B. F. Skinner: A Life* -- also offers some coverage. These materials address, in part, Skinner's writing *Verbal Behavior*. As for what we find in *Verbal Behavior* itself, Skinner offered only a few cryptic remarks. These are found in the book's Preface (Skinner, 1957) and "Two Personal Epilogues II: No Black Scorpion" (Skinner, 1957), which are our next readings.

For more in depth coverage of Skinner's writing *Verbal Behavior,* we turn to Steve Coleman's (1985), "B. F. Skinner, 1926-1928: From Literature to Psychology." Coleman offers a cogent description and interpretation of Skinner's first moves toward literature (e.g., he was an English major in college) and later moves toward psychology, both of which contributed to what became Skinner's book. If the variables that influenced Skinner's becoming a behaviorist can be understood, then his subsequent analysis of *Verbal Behavior* can be understood, well, perhaps better understood. Coleman (1985) helps us here. For additional references pertinent to variables that may have affected Skinner's analysis of verbal behavior, see Morris and Schneider's (1986) listing and description of the references Skinner cited in *Verbal Behavior*. See also Whitley's (1985) subject index of similar material in Skinner's (1980) *Notebooks, B. F. Skinner.*

For an example of this background material, see Scott Wood's (1986) introductory comments to a review by Bertrand Russell (1926) of Ogden and Richard's (1923) *The Meaning of the Meaning,* which was Skinner's first introduction to behavioral psychology or, at least, to John B. Watson's classical behaviorism (Watson, 1913; see Skinner, 1976, pp. 298-300). Watson (1922), himself, found Russell's (1921) philosophy to be behavioral, albeit not thoroughgoing enough. Russell, in turn, found Watson's behavioral philosophy important, but wanting in some

regards (Russell, 1927, 1959, pp. 129-130). Although Russell never explicitly endorsed Watson's behaviorism, Russell offered solutions to conceptual problems (e.g., imagery, "seeing") and practical problems (e.g., cultural design) that Skinner adopted, assimilated, or simply accepted. Russell's solutions remain, today, largely in accord with the behavior-analytic perspective. In turn, Skinner's 1947 William James Lectures at Harvard University, titled "Verbal Behavior," were influenced by and were in partial response to Russell's 1940 Harvard William James Lectures, *An Inquiry into Meaning and Truth* (Skinner, 1979, p. 324).

Behavioral Interpretation

Skinner's (1957) *Verbal Behavior* is a "behavioral interpretation," that is, an interpretation of verbal behavior in terms of and constrained by the basic behavioral principles and processes. The book was largely interpretative because Skinner had little or no research within the behavior-analytic tradition to support it. Such is the case in many sciences, though. For a brief overview of behavioral interpretation, we shall read John Donahoe's (2004) "Interpretation and Experimental Analysis: An Underappreciated Distinction." For an interpretation specific to cognition, see David Palmer's (2003) chapter, "Cognition."

One of the most salient distinctions between psycholinguistics and Skinner's analysis of verbal behavior is the structure-function dichotomy. In his behavioral translation, Catania (1972) makes the distinction between (a) Chomsky's program as a *structural* or formal analysis (e.g., grammar) and (b) Skinner's program as a *functional* analysis. In doing so, he argues that structural and functional accounts need not be incompatible, even if their underlying assumptions are. As for the differences in their assumptions, we will discuss these as the course progresses. For further discussion of the function-structure distinction with respect to language, see Catania (1972, 2007, pp. 239-260, 279-296), Richelle (1976), and Zuriff (1976).

Now that we appreciate the interpretive nature of *Verbal Behavior*, we turn briefly to what Skinner attempted in his book before turning to Chomsky's (1959) review. For this, we will read Charlie Catania's (1997) retrospective review of Skinner's book, "An Orderly Arrangement of Well Known Facts: B. F. Skinner's *Verbal* Behavior." For a longer, more technical account, see Kenneth MacCorquodale's (1969) "B. F. Skinner's *Verbal Behavior*: A Retrospective Appreciation."

Chomsky's Critique and Rhetorical Style

Given this background, we now turn to the most ardent critic of Skinner's (1957) *Verbal Behavior* – Noam Chomsky -- in particular, to his 1959 "Review of Skinner's *Verbal Behavior*." Skinner's book was reviewed by others as well (see Knapp, 1992), some of them by renowned psycholinguists. Their reviews were not as negative as Chomsky's; indeed, some were quite complimentary. They are worth considering for the pre-Chomsky concerns Skinner's book addressed, that is, prior to the putative cognitive revolution, which Chomsky is alleged to help launch. We will look into these other reviews later in the course.

Chomsky's (1959) review is not an easy read for behavior analysts because of its many misunderstandings and its rhetorical style, yet it is still oddly compelling. Indeed, this may be a

test of how well we understand behavior analysis. As I mentioned in the main course syllabus, we will make our way through Chomsky's review over the semester, in which context you will be asked to rebut it, as well as prepare a short essay that summarizes the "Chomsky-Skinner Debate" (see, e.g., Knapp, 1997; Richelle, 1993, pp. 119-137; cf. Barsky, 1997). For this first week, we begin with Chomsky's (1959, pp. 26-45) critique of behavior analysis in general, not Skinner's treatment of verbal behavior per se. That will come later. Toward the end of the course, we shall address several analyses of and responses to Chomsky's criticism, both from within and without the behavior-analytic literature. For some background on psycholinguistics, see Moore's (2000) paper, "Behavior Analysis and Psycholinguistics," and Moore (2007, pp. 354-376). For more information on Chomsky, see http://www.chomsky.info.

Rhetorical style. As I mentioned above, Chomsky's (1959) review is both oddly compelling and deeply frustrating without the reader's often knowing why. This is because he makes effective use of rhetorical style. To understand rhetorical style or, at least, what Chomsky was up to in employing it, we will read Carol Sherrard's (1988) article, "Rhetorical Weapons: Chomsky's Attack on Skinner" (see also Czuberoff, 1988). After you read it, you will be able to tact Chomsky's use of it. Later in the course, we will cover Skinner's (1957) treatment of autoclitics as a verbal operant. You will see then (or intuit) that rhetoric is largely autoclitic verbal behavior.

By the way, Skinner never responded to Chomsky in any substantive way for reasons we touch on later, for instance, in his tongue-in-check commentary about (and perhaps a poor metaphor to describe) creative behavior, "On Having a Poem" (Skinner, 1972; see also Moore, 2000). That was the first place Skinner commented in print on Chomsky's review (see Skinner, 1976, p. 408). In addition, only two formal behavior-analytic rebuttals to Chomsky were ever published, along with perhaps a half-dozen or so other commentaries. We shall cover some of these later in the course.

References and Citations

For material in this week's assignments in *Verbal Behavior* that corresponds to material in *Notebooks, B. F. Skinner* (1980), see p. 453,1f (for 312.2 and 360.1) and p. 356,1 (for 75.2) in the latter. For the reference to the footnote citation in Skinner (1957), see Russell (1940). For readers interested in the scientific and literary references Skinner (1957) cited in this week's material, also see Russell (1940).

Take-Home Assignment

Based on this week's reading of Chomsky (1959, pp. 26-45), describe (a) one of his misunderstandings of behavior analysis, (b) why it is a misunderstanding, and (c) the correct understanding of behavior analysis on that point.

Term Paper Assignment

A 25-50 word summary of your term paper topic.

Quiz Questions and Answers

These questions are not for you to answer. You have your own discussion questions to ask. However, they might guide your reading. They are drawn from materials prepared independently by Jack Michael (Western Michigan University) and Joseph J. Pear (University of Manitoba)

1.   Briefly, how does Skinner account for Whitehead's remark, "No black scorpion in falling on this table"? How does Skinner qualify his account (pp. 456-460)?

Name:_____

Reading Evaluations

Topic 1

Background, Introduction, and Critique

	Ranking for the assignment (1-8)	Rating for the course (1-5)
Peterson (1978)	_____	_____
Michael (1984)	_____	_____
Skinner (1957)	_____	_____
Coleman (1985)	_____	_____
Donohoe (2004)	_____	_____
Catania (1997)	_____	_____
Chomsky (1959)	_____	_____
Sherrard (1988)	_____	_____

The lower the number, the better the ranking (no ties) or rating (e.g., 1 = best, 5 = worst)
_____

Which of this week's topics, readings, or concepts need further review or clarification? What else can I help you with?

Rhetoric

The widespread acceptance of Chomsky's review cannot be due solely to its devastatingly correct analysis, for the analysis is wanting in many regards, as MacCorquodale (1970) and others (and you) have pointed out. The acceptance of Chomsky's review would seem, in part, due to readers' "preparedness" to accept his criticisms. This preparedness is a function of readers' implicit common sense and mentalistic psycholinguistics, as well as their misunderstandings about behaviorism. In addition, as we have seen, reader behavior can also be manipulated by rhetorical style (e.g., autoclitics). This is our third topic, for which our readings are Jeanine Czubaroffs' (1988) "Criticism and Response in the Skinner Controversies" (but only the section on Chomsky) and Carol Sherrard's (1988) "Rhetorical Weapons: Chomsky's Attack on Skinner." They offer some insights into how the rhetorical devices used by Chomsky (and others) can create this spurious control.

VERBAL BEHAVIOR

ABSC 931

Topic 2

A Program: Functional Analysis of Verbal Behavior,

Definition and General Problems

Assigned Reading

Michael, J. (1992). Introduction I. In Skinner, B. F. (1957). *Verbal behavior* (pp. vii-xii). Acton, MA: Copley.

Vargas, E. A. (1992). Introduction II. In Skinner, B. F. (1957). *Verbal behavior* (pp. xiii-xxv). Acton, MA: Copley.

Skinner, B. F. (1957). *Verbal behavior* (Ch. 1: A functional analysis of verbal behavior, pp. 1-12). Acton, MA: Copley.

Skinner, B. F. (1957). *Verbal behavior* (Ch. 8: The verbal operant, pp. 224-226). Acton, MA: Copley.

Fox, E. (2010). *RFT: An introduction to relational frame theory*. http://foxylearning.com/ tutorials.

Hayes, S. C., Blackledge, J. T., & Barnes-Holmes, D. (2001). A personal prologue (pp. vii-ix), Preface (pp. xi-xiii); Part 1: The basic account (p. 1); Language and cognition: Constructing an alternative approach within the behavioral tradition. In S. C. Hayes, D. Barnes-Holmes, & B. Roche (Eds.), *Relational frame theory: A post-Skinnerian account of human language and cognition* (pp. 3-20). New York: Kluwer Academic / Plenum.

Normand, M. P. (2009). Much ado about nothing? Some comments on B. F. Skinner's definition of verbal behavior. *The Behavior Analyst, 32*, 185-190

Skinner, B. F. (1957). *Verbal behavior* (Ch. 2: General problems, pp. 13-34). Acton, MA: Copley.

Chomsky, N. (1959). Review of Skinner's *Verbal Behavior*. *Language, 35*, 26-58. [Read only pp.   pp. 34-36]

Recommended Reading

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Barnes-Holmes, D., & Hayes, S. C. (2002). Relational frame theory is a behavior analytic account: Is Tonneau's? *European Journal of Behavior Analysis, 3,* 87-94.

Baum, W. (1974). Definition in behavioral science. A review of B. B. Wolman's *Dictionary of behavioral science. Journal of the Experimental Analysis of Behavior, 22*, 445-451.

Blackledge, J. T. (2003). An introduction to relational frame theory: Basics and applications. *Behavior Analysis Today, 3*, 421-432.

Burgios, J. E. (2003). Laudable goals, interesting experiments, unintelligible theorizing: A critical review of Steven C. Hayes, Dermot Barnes-Holmes, and Bryan Roche's (Eds.), *Relational frame theory* (New York: Kluwer Academic/Plenum, 2001). *Behavior and Philosophy, 31,* 19-45.

Catania, A. C. (1972). Chomsky's formal analysis of natural language: A behavioral translation. *Behaviorism, 1*, 1-15.

Catania, A. C. (1986). On the difference between verbal and nonverbal behavior. *The Analysis of Verbal Behavior, 4*, 2-9.

Catania, A. C., & Cerutti, D. T. (1986). Some nonverbal properties of verbal behavior. In T. Thompson & M. D. Zeiler (Eds.), *Analysis and integration of behavioral units* (pp. 185-211). Hillsdale, NJ: Erlbaum.

Chase, P. N. (1986). Are they really so different? Comments on the differences between verbal and social behavior. In P. N. Chase & L. J. Parrott (Eds.), *Psychological aspects of language* (pp. 118-122). Springfield, IL: Charles C Thomas.

Cherpas, C. (1993). The concept of strength in verbal behavior. *The Analysis of Verbal Behavior, 11*, 55-62.

Dymond, S, May, R. J., Munnelly, A., & Hoon, A. E. (2010). Evaluating the evidence base for relational frame theory: A citation analysis. *The Behavior Analyst, 33*, 97-117.

Espinosa, J. M. (1992). Probability and radical behaviorism. *The Behavior Analyst, 15*, 51-60.

Galizio, M. (2003). The abstracted operant: A review of *Relational frame theory: A post Skinnerian account of human language and cognition,* edited by S. C. Hayes, D. Barnes-Holmes, and B. Roche. *The Behavior Analyst, 26,* 159-169.

Galizio, M. (2004). Relational frames: Where do they come from? A comment on Barnes-Holmes and Hayes (2003). *The Behavior Analyst, 27,* 107-112.

Harre, R., & Lamb, R. (Eds.). (1983). *The encyclopedic dictionary of psychology*. Cambridge, MA: MIT Press.

Hayes, S. C. (Ed.). (1989). *Rule-governed behavior: Cognition, contingencies, and instructional control*. New York: Plenum.

Hayes, S. C. (1991). A relational control theory of stimulus equivalence. In L. J. Hayes & P. N. Chase (Eds.), *Dialogues on verbal behavior* (pp. 19-40). Reno, NV: Context Press.

Hayes, S. C. (1994). Relational frame theory: A functional approach to verbal events. In S. C. Hayes, L. J. Hayes, M. Sato, & K. Ono (Eds.) *Behavior analysis of language and cognition* (pp. 9-30). Reno, NV: Context Press.

Hayes, S. C., Barnes-Holmes, D., & Roche, B. (Eds.). (2001). *Relational frame theory: A post-Skinnerian account of human language and cognition*. New York: Kluwer Academic / Plenum.

Hayes, S. C., & Brownstein, A. (1985, May). *Verbal behavior, equivalence classes, and rules: New definitions, data, and directions*. Paper presented at the meeting of the Association for Behavior Analysis, Columbus, OH.

Hayes, S. C., Fox, E., Gifford, E. V., Wilson, K. G., Barnes-Holmes, & Healey, O. (2001). Derived relational responding as learned behavior. In S. C. Hayes, D. Barnes-Holmes, & B. Roche (Eds.), *Relational frame theory: A post-Skinnerian account of human language and cognition* (pp. 21-49). New York: Kluwer Academic /Plenum.

Hayes, S. C., & Hayes, L. J. (1989). The verbal action of the listener as a basis for rule-governance. In S. C. Hayes (Ed.), *Rule-governed behavior: Cognition, contingencies, and instructional control* (pp. 153-190). New York: Plenum.

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Head, H. (1926). *Aphasia and kindred disorders of speech*. New York: Macmillan.

Hineline, P. N. (1986). Can verbal be nonsocial? Can nonsocial be verbal? In P. N. Chase & L. J. Parrott (Eds.), *Psychological aspects of language* (pp. 123-127). Springfield, IL: Charles C Thomas.

Ingvarsson, E., & Morris, E. K. (2004). Post-Skinnerian, post-Skinner, or neo-Skinnerian: A Review of Hayes, Barnes-Holmes, and Roche's *Relational Frame Theory. The Psychological Record, 54,* 497-504.

Jesperson, O. (1922). *Language: Its nature, development and origin*. New York: Holt.

Johnson, L. M., & Morris, E. K. (1987). When speaking of probability in behavior analysis. *Behaviorism, 15*, 107-129.

Lee, V. L. (1981). Terminological and conceptual revision in the experimental analysis of language development. *Behaviorism, 9*, 25-54.

Lee, V. L. (1984). Some notes on the subject matter of Skinner's *Verbal behavior*. *Behaviorism, 12*, 29-40.

Leigland, S. (1997). Is a new definition of verbal behavior necessary in light of derived relational responding? *The Behavior Analyst, 20,* 3-9.

Marr, M. J. (2003). Frames and relations [review of *Relational frame theory: A post-Skinnerian account of human language and cognition]. Contemporary Psychology, 48,* 526-529.

Matos, M. A., & Passos, M. L. R. F. (2006). Linguistic sources of Skinner's *Verbal behavior*. *The Behavior Analyst, 29*, 89-107.

McIlvane, W. J. (2003). A stimulus in need of a response: A review of *Relational frame theory: A post-Skinnerian account of human language and cognition. The Analysis of Verbal Behavior, 19,* 29-37.

Moore, J. (1984). On the tactful specification of meaning: A review of Harre and Lamb's *The encyclopedic dictionary of psychology*. *Journal of the Experimental Analysis of Behavior, 41*, 387-395.

Moore, J. (2000). Words are not things. *The Analysis of Verbal behavior, 17*, 143-160.

Moore, J. (2009). Some thoughts on the relation between derived relational responding and verbal behavior. *European Journal of Behavior Analysis, 10*, 31-47.

Ogden, C. K., & Richards, I. O. (1923). *The meaning of meaning: A study of the influence of language upon thought and of the science of symbolism*. New York: Harcourt, Brace.

Osborne, J. G. (2003). Beyond Skinner? A review of *Relational frame theory: A post-Skinnerian account of human language and cognition* by Hayes, Barnes-Holmes, and Roche. *The Analysis of Verbal Behavior, 19,* 19-27.

Palmer, D. C. (2004a). Data in search of a principle: A review of S. C. Hayes, D. Barnes Holmes, & R. Roche (Eds.), *Relational frame theory: A post-Skinnerian account of Human language and cognition. Journal of the Experimental Analysis of Behavior, 81,* 189-204.

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Salzinger, K. (2003). On the verbal behavior of *Related frame theory: A post-Skinnerian account of human language and cognition. The Analysis of Verbal Behavior, 19,* 7-9.

Schlinger, H. D. (2008a). Conditioning the behavior of the listener. *International Journal of Psychology and Psychological Therapy, 8*, 309-322.

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Segal, E. F. (1975). *Language: A behavioral perspective* (Chapter 1: Language as verbal behavior, pp. 1-14). San Diego: San Diego State University Press.

Sidman, M. (1994). *Equivalence relations and behavior: A research story*. Boston: Authors Cooperative.

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Skinner, B. F. (1938). *The behavior of organisms: An experimental analysis*. New York: Appleton-Century.

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Spradlin, J. (2003). Alternative theories of the origin of derived stimulus relations. A review of *Relational frame theory: A post-Skinnerian account of human language and cognition. The Analysis of Verbal Behavior, 19,* 3-6.

Tonneau, F. (2002). Who can understand relational frame theory? A reply to Barnes-Holmes and Hayes. *European Journal of Behavior Analysis, 3,* 95-102.

Vaughan, M. (1989). Rule-governed behavior in behavior analysis: A theoretical and experimental history. In S. C. Hayes (Ed.), *Rule-governed behavior: Cognition, contingencies, and instructional control* (pp. 97-118). New York: Plenum.

Winokur, S. (1976). *A primer of verbal behavior: An operant view* (pp. 1-24, 146-148). Englewood Cliffs, NJ: Prentice-Hall.

Zuriff, G. E. (1976). Stimulus equivalence, grammar, and internal structure. *Behaviorism, 4*, 43-52.

Commentary

This week's readings introduce us to Skinner's (1957) "program," some of the problems faced by a behavior-analytic account of verbal behavior, and an alternative (better: complementary) account – relational frame theory. Our first two readings are the two introductions to the 1992 paperback reprinting of Skinner's book – one by Jack Michael (1992) and one by Ernie Vargas (1992). They provide some insight into Skinner's program.

Skinner's Program: A Functional Analysis of Verbal Behavior

Our third reading is the first chapter in *Verbal Behavior*, "A Functional Analysis of Verbal Behavior." Here, Skinner (1957) defines and describes what he takes to be the general characteristics of verbal behavior, discusses the traditional formulations of verbal behavior (ca. 1957), and introduces his formulation. Recall, here, that Skinner's formulation is functional, as opposed to structural, the latter of which is the tradition in psycholinguistics (see Catania, 1972; Richelle, 1976; Zuriff, 1976). These distinctions notwithstanding – that is, between Skinner's and the traditional formulations and between structure and function – Skinner (1957) does draw on some traditional and structural sources in describing some characteristics of verbal behavior, but not on their underlying mentalistic and reductionistic assumptions. For this, see Maria Matos and Maria Passos's (2006) article, "Linguistic Sources of Skinner's *Verbal Behavior*." For an

informed overview of language as a subject matter for behavior analysis, see Vicki Lee's (1981) "Terminological and Conceptual Revision in the Experimental Analysis of Language Development." Lee's work is a thoughtful elaboration on Skinner's, especially as it contacts literatures outside mainstream behavior analysis. Here, she discusses common-sense psychology, behavior analysis, linguistics, and interrelations among them. This is a difficult, but recommended reading (see also Lee, 1984).

The definition of verbal behavior I. A fundamental issue Skinner (1957) addresses in his first chapter is the definition of verbal behavior, and how verbal behavior is distinguished from nonverbal behavior and, especially, from social behavior. However, he touches on the definition only in passing. For more, we have to jump ahead to the extension and elaboration of his definition in Chapter 8, "The Verbal Operant as a Unit of Analysis," but just three pages of it – pp. 224-226. The definition of verbal behavior is complex and not entirely resolved, but we need to address it nonetheless. For further treatment of the "verbal-nonverbal" distinction, see Catania (1986), Catania and Cerutti (1986), and Parrott (1986b). As for its distinction from social behavior, see Chase (1986), Hineline (1986), and Parrott (1986a).

The principles of behavior I. Orthogonal to the issue of definition, but eventually interrelated with it, was the sufficiency of the basic principles of behavior circa 1957 for the analysis of verbal behavior, as noted in the main course syllabus. In Skinner's (1938) first systematic presentation of his science – *The Behavior or Organisms* – he wrote the following about extending the basic principles described therein to human behavior:

> Whether or not extrapolation is justified cannot at the present time be decided. It is possible that there are properties of human behavior which will require a different kind of treatment. But this can be ascertained only by closing in upon the problem in an orderly way and following the customary procedures of an experimental science. We can neither assert nor deny continuity between the human and subhuman fields so long as we know so little about either. If, nonetheless, the author of a book of this sort is expected to hazard a guess publicly, I may say that the only differences I expect to see revealed between the behavior of rat and man (aside from enormous differences in complexity) lie in the field of verbal behavior. (p. 442)

However, in *Verbal Behavior*, Skinner (1957) wrote thus:

> It would be foolish to underestimate the difficulty of this subject matter, but recent advances in the analysis of behavior permit us to approach it with a certain optimism. New experimental techniques and fresh formulations have revealed a new level of order and precision. The basic processes and relations which give verbal behavior its special characteristics are now fairly well understood. Much of the experimental work responsible for this advance has been carried out on other species, but the results have proved to be surprisingly free of species restrictions. Recent work has shown that the methods can be extended to human behavior without serious modification. (p. 3)

An Alternative Program: Relational Frame Theory

Since the mid-1980s, Steve Hayes and his colleagues have proposed an alternative program for the analysis of verbal behavior (and cognition) that is today called relational frame theory (RFT; see Hayes & Brownstein, 1985; Hayes & Hayes, 1989). Recall that according to Sidman (1994, 2000), stimulus equivalence is a basic behavioral principle relating the three-term contingency to its context (e.g., conditional discriminative stimuli). In Hayes's (1991) view, stimulus equivalence is a one class (i.e., equivalence) of a broader class of "relational frames," that is, a higher-order operant acquired through a history of reinforcement for "arbitrarily applicable responding," not just stimulus equivalence (e.g., "larger than" for *any* two arbitrary objects).

The most comprehensive presentation relational frame theory to date is Hayes's edited text with Dermot Barnes-Holmes and Bryan Roche (2001), *Relational Frame Theory: A Post-Skinnerian Account of Human Language and Cognition* (see also Hayes, 1994). For some applications of it, see Rehfeldt and Barnes-Holmes (2009), *Derived Relational Responding: Applications for Learners with Autism and Other Developmental Disabilities*. Hayes et al. (2001) explain RFT in detail and extend it to various content domains of psychology (e.g., language, cognition) and application (e.g., psychotherapy). Hayes et al. (2001) present an interesting challenge and interesting data – data that, no matter how they are eventually accounted for, expand the power of a naturalistic account of verbal behavior beyond Skinner's (1957) and that answer some criticisms of it. The RFT book has been reviewed in all the major behavior-analytic journals and beyond (see Burgios, 2003; Galizio, 2003; Ingvarsson & Morris, 2004; Marr, 2003; McIlvane, 2003; Osborne, 2003; Palmer, 2004a; Salinger, 2003; Spradlin, 2003). Most of the reviews have been generally supportive, but not of all of the book. Others have been more critical of the book's content and style (and title). Hayes and his colleagues have also responded to and rebutted almost every review (e.g., Barnes-Holmes & Hayes, 2004), to which most of the original reviewers and others have responded (Galizio, 2004; Palmer, 2004b; Tonneau, 2002). Some of these are testy. More recently, though, some of Hayes's colleagues have sought a synthesis of RFT and Skinner's account. For this, see Barnes-Holmes, Barnes-Holmes, and Culllinian's (2000) "Relational Frame Theory and Skinner's *Verbal Behavior:* A Possible Synthesis." For a recent positive evaluation of its evidence base via a citation analysis, see Dymond, May, Munnelly, and Hoon (2010). For a recent criticism of its efidenec base, see Moore (2009).

Relational frame theory is not easy to understand or master. It incorporates a new vocabulary, new behavioral relations, and perhaps a new principle of behavior. In addition, the writings on it are not always crystal clear, but it does benefit from study. For an introduction, see Blackledge (2003), but even better is Eric Fox's (2010) on-line tutorial, *RFT: An Introduction to Relational Frame Theory*. It is available at http://foxylearning.com/tutorials. Access to it will cost $9.00 for the semester or $90 for a lifetime subscription. It is our next "reading" this week. Eric reports it may take from 2 to 5 hours to complete. I think you will be able to complete it in 2 to 3 hours. For an introduction to RFT as it relates to Skinner's (1957) verbal behavior, we next read the prefatory material and opening chapter in Hayes et al. (2001) -- "Language and Cognition: Constructing an Alternative Approach within the Behavioral Tradition."

The definition of verbal behavior II. One of the issues Hayes et al. (2001) address is the definition of verbal behavior. Recall that, for Skinner, verbal behavior was a subclass of social behavior – behavior mediated by the behavior of other people whose behavior has been "conditioned precisely in order to reinforcement behavior of the speaker" (p. 225; see Peterson, 1978). In RFT, verbal behavior is "framing relationally" (see also Hayes, Fox, Gifford, Wilson, Barnes-Holmes, & Healey, 2001, pp. 43-45 on "verbal behavior"; Hayes, 1984; Hayes & Hayes, 1989, 1992). Everything else is social behavior. Skinner's definition is broader. For a critical look at this point, see Sam Leigland's (1997) article, "Is a New Definition of Verbal Behavior Necessary in Light of Derived Relational Responding?" Our next reading, though, addresses the definition of verbal behavior from the standpoint of definitions. This is Matt Normand's (2009) "Much Ado About Nothing? Some Comments on B. F. Skinner's Definition of Verbal Behavior." By the way, Jay Moore's (1984) review of Harre and Lamb's (1984), *The Encyclopedic Dictionary of Psychology*, is pertinent to this week's reading in several ways. Moore addresses the issue of what constitutes a "definition," as raised by Skinner (1957; see also Baum, 1974), and discusses misunderstandings of Skinner's treatment of verbal behavior and "radical behaviorism" more generally.

The principles of behavior II. Recall that Skinner's 1957 position on the sufficiency of the basic behavioral principles to account for verbal behavior was that:

> The basic processes and relations which give verbal behavior its special characteristics are now fairly well understood. Much of the experimental work responsible for this advance has been carried out on other species, but the results have proved to be surprisingly free of species restrictions. Recent work has shown that the methods can be extended to human behavior without serious modification. (p. 3)

In contrast, research on stimulus equivalence (Sidman, 1994, 2000) and relational frame theory (Hayes et al., 2001) suggests that Skinner may have been closer to the mark in 1938:

> We can neither assert nor deny continuity between the human and subhuman fields so long as we know so little about either. If, nonetheless, the author of a book of this sort is expected to hazard a guess publicly, I may say that the only differences I expect to see revealed between the behavior of rat and man (aside from enormous differences in complexity) lie in the field of verbal behavior. (p. 442)

That is, the principles of behavior of the 1950s may not have been sufficient to account for verbal behavior. This point is made forcefully by Steve Hayes in the context of RFT's new definition of verbal behavior – a definition that incorporates processes and a principle drawn from the RFT research. Be prepared to identify and discuss the new principle in class.

General Problems

We next turn to Skinner's (1957) second chapter, "General Problems," where he discusses (a) verbal behavior as a dependent variable, (b) the independent variables of which

verbal behavior is a function, and (c) the "total verbal episode." One of the points he makes is that the "basic datum" in the analysis of verbal behavior is not a specific instance of responding, but the probability of responding more generally (see Moore, 2000). The issue of "probability" is not unproblematic in behavior analysis (see Espinosa, 1992; Johnson & Morris, 1987). As for how it relates to the concept of response strength in *Verbal Behavior*, see Cherpas (1993).

The behavior of the listener. The last topic Skinner addresses in this chapter -- and for some behavior analysts, a problem -- is the behavior of the listener. Skinner argues that its is not verbal in any important sense. For more on this, see his 1989 chapter, "The Behavior of the Listener." The "problem" is that the behavior of the listener may have to be verbal in order for verbal behavior to develop in a speaker. This is a matter we shall address later (see Hayes & Hayes, 1989; Parrott, 1984). For related material on the behavior of the listener from Skinner's perspective, see his treatment of "rule-governed behavior" (e.g., Skinner, 1969, pp. 133-171), which is nicely introduced by Vaughan (1989; see also Hayes, 1989).

Take-Home Assignment

Read Chomsky (1959, pp. 34-36) on "response strength." Then, on the basis of this week's readings in Skinner, describe how his critique corresponds with Skinner's analysis (or not).

Term Paper Assignment

None this week.

Primers, References, and Citations

With respect to the primers of Skinner's (1957) text, Winokur's (1976) two opening chapters – "Introduction" and "The Interlocking Verbal Operant Paradigm" -- parallel Skinner's first two chapters in that they comment on the "program" of *Verbal Behavior* and on some general problems. He then extends Skinner's analysis of the "verbal episode" in more detail. Segal (1975) might be consulted for further introductory material.

For material in *Verbal Behavior* that corresponds with material in *Notebooks, B. F. Skinner* (1980), see 2,1 (for 159,1), 3,2f (for 75.2), 3,3ff (for 89.2, 242.2, and 343.2), 5,2f (for 131.2, 197.2, 323.1, and 329.2), 6,2 (for 341.2), 7,2f (for 114.1 and 215.2), 11,3 (for 307.1), 13,2 (for 114.1), 14,1 (for 345.1), 14,2f (for 306.1), 20,1f (for 222.2 and 242.1), 20,2f (for 133.1 and 343.2), 21,2 (for 334.1), 22,1 (for 331.2), 23,1f (for 334.2), 24,1 (for 110.1), 24,2 (for 315.1), 25,1 (for 72.1), 25,3 (for 144.1, 169.1, 248.1, and 306.1), 28,2 (for 331.2), 33,1 (for 19.1, 48.1, 82.2, 133.2, 232.3, and 248.1), and 34,1 (for 262.1).

If you are interested in the scientific and literary reference citations Skinner listed in this week's material, see Head (1926), Jesperson (1922), Ogden and Richards (1923), Quine (1940), Russell (1940), and Skinner (1953).

Study Guide and Objectives

Chapter 1

1.   Notice that 1.1 runs through the major principles of operant behavior; that 1.2 exemplifies nonverbal behavior; and that 1.3 covers verbal behavior. Discuss how verbal behavior, as defined by Skinner, is similar to other behavior, how it differs from other behavior, and why a special treatment of it is justified (1-2).

2.   Skinner makes frequent use of "etymology." Be sure you know how to use this term and its various forms. Why does Skinner object to "speech or language"? What does he mean by "etymological sanction" in 2.1? (Notice that "sanction" is a peculiar word; it has two opposite meanings.)

3.   Regarding the first sentence of 2.2, reread Peterson 9 and 10, and Skinner 155.1, 224-226.

4.   In 2.2, we get the first hint that for Skinner the behavior of the speaker is the main topic to be dealt with, rather than the behavior of the listener (or rather than the way a verbal stimulus affects listeners). Skinner's is not the usual approach and, as a result, many readers have trouble understanding him. (More on this later.)

5.   Some sociologists and other social scientists would consider the last half of 2.2 a form of reductionism, and hence objectionable for that reason. This is an important issue in dealing with social behavior. From the behavioral point of view, social behavior is the behavior of the individual with respect to stimuli and other operations provided by another individual.

6.   3.1 was written in 1957, at a time when there was no "behavior modification" movement, only a few scattered studies. As expressed four years earlier, however, in *Science and Human Behavior* (Skinner, 1953), Skinner had no doubt that laboratory procedures worked out with nonhumans would to be of major significance in understanding human behavior, no matter what the degree of complexity.

7.   Please be sure to understand the main point of 3.2 ("...the real proof of the pudding is..."); also, be sure you clearly distinguish between "causal" and "casual." What are the criteria for assessing the extent to which we "understand" verbal behavior? Discuss the engineering problems that an adequate understanding of verbal behavior may help us solve (3, 9). Distinguish between what Skinner means by "understanding" verbal behavior and what is usually meant by "understanding" verbal behavior.

8.   In 3.3 through 4.2, Skinner mentions several disciplines or special fields that deal with language. If you are not familiar with any of these. please look them up in an unabridged dictionary or encyclopedia.

9.   Note the point about writing in 5.1 -- a rather subtle issue. Also, be sure you can say why psychology has neglected some of the events needed for a causal analysis of verbal behavior.

10.   Discuss verbal behavior's favorable characteristics as an object of study (5).

11.   The material in 5.2, 6.1, and 6.3 is very important. What is Skinner's criticism of ideas, images, meanings, information, etc? Discuss the difficulties involved in attempting to explain verbal behavior in terms of these concepts (5-10). Note that he is not agreeing with the first sentence of 5.2: "quite erroneously" should be added to "it has generally been assumed..."

12.   The point in 7.1 is a complex one and is important simply because no one else makes it very well and because many language scholars have the same misunderstanding Skinner is talking about. Note that at the end of 8.1, Skinner says, "it has seemed necessary," but that he would certainly not agree that this is really necessary; he is portraying the views of others that he certainly disagrees with.

13.   Please read 8.2 and 8.3 carefully. If you have not thought about these issues, they may seem somewhat strange and philosophical, but they cannot be ignored, and a behavioral approach is an attractive alternative to the usual approach.

14.   8.4 deals with reference. At this point, you might read 114.1-116.0.

15.   Be sure you know what Skinner means by "account for" in 9.2.

16.   How have traditional "explanations" of verbal behavior tended to delay a science of verbal behavior (5-10)?

17.   What are the basic steps to be taken in a functional analysis of verbal behavior? Discuss in general some of the problems involved in such an analysis (10-11).

18.   As you read 10.1 through 11.2, look over the book's table of contents.

19.   What is the purpose of this book? Be able to give a detailed account of Skinner's account, including what the purpose is and is not. What is included and what is excluded? This is an important issue: Failure to understand Skinner's purpose in writing the book has led to much misdirected criticism (10-11). What is the "relevant literature" he refers to on 11?

20.   In what sense is the book "theoretical," and in what sense is it not (11-12)?

21.   Why must we consider the behavior of the listener in an analysis of the behavior of the speaker?

Chapter 8

1. Review Peterson's definition of verbal behavior and study the section 224.2-226 very carefully. Be able to explain the main points and the relevance of the examples.

2. What is Skinner's refined definition of verbal behavior? What sorts of responses are now excluded from the definition he offered previously? (224-226)

3. Which of the following behaviors are verbal and which are not, and why: (a) bees communicating to each other the location of honey, (b) engaging in good table manners, (c) the behavior of a computer, (d) the behavior of a computer programmer, (e) playing a game, (f) nursing a sick patient, (g) cooking for someone, (h) setting up a traffic light, (i) buying something, (j) building a house, (k) driving a car, (l) shooing a fly, (m) handing a person a glass of water when requested, (n) crossing the street to avoid meeting someone you do not like, (o) dancing, (p) giving someone flowers, (q) giving a concert, and (r) praying.

Chapter 2

1. In 13.1 and 13.2, Skinner describes the way most people define "language," what he does not care for in such definitions, and how he deals with the same issues. Distinguish between verbal and nonverbal behavior.

2. Briefly explain what Skinner means he says we can see the meaning or purpose of a response. How does this differ from the way meaning or purpose is usually used (13-14)?

3. For Skinner, how is the definition of "verbal behavior" related to the form, mode, and medium of the response? The answer is: Not at all. Be able to explain why and to give examples of verbal behavior that illustrate different forms, modes, and media (14.1).

4. What is the distinction between verbal behavior and vocal behavior as audible speech (14.2)? Provide examples of vocal behavior that are verbal and that are nonverbal.

5. How is a cumulative recorder like an alphabet, yet different from an alphabet?

6. Discuss the relative merits and demerits of the following techniques for recording verbal behavior: (a) recording the actions of all the muscles involved, (b) acoustic report, (c) using a phonetic alphabet, (d) direct quotation, and (e) indirect quotation (14-19).

7. What is an acoustic record of verbal behavior? How does it differ from a record of vocal behavior (15.1)? What kinds of acoustic records are there? How do these records differ from a phonetic record (15.2)? What is a phoneme? What is the field of phonetics and phonology?

8. Understand the main point of 16.1 about response classes.

9.   Understand the main point of 17.1. (Sign language is a better example.)

10.   In 17.2 through 19.2, some rather complex points are made about quotation as a scientific anomaly, and about the way a direct quote differs from a phonetic transcription. Be able to make these distinctions and to describe the anomaly. Note carefully the sequences in the first sentence of 19.2.

11.   Be able to give several meanings of the word "word."

12.   According to Skinner, what is the basic unit of verbal behavior (19-22)? Distinguish between "operant," "response," and "response instance" (20.1). On the basis of the material in 20.2, you can formulate a distinction between a formal and a causal analysis. Do so. What is the point of the discussion of "fast"?

13.   Distinguish between a behavioral and a linguistic approach to the choice of a unit size (21.1).
14.   How does a verbal repertoire differ from a vocabulary (21.2)?
15.   Discuss Skinner's conception of the role of probability in the science of verbal behavior (22, 28).

16.   The notion of response strength is based on three general types of evidence: (1) the emission of a response (22.2 and 22.3); (2) the dynamics of a response -- energy level, speed, and repetition (23.1-24.2); and (3) the overall frequency of a response (27.1-28.1). Be able to give each of these and to give examples that illustrate and help explain them. Discuss their adequacy. (Regarding the first one, be able to invert it so as to infer unusually weak behavior.)

17.   Organize and memorize the main limitations on the various evidences of response strength (25.1-27.1).

18.   Be able to list and explain each of the independent variables and related processes discussed in 28.3 through 33.1: reinforcement, shaping, maintaining contingencies, extinction, stimulus control, deprivation, satiation, and aversive control. Be familiar with those that seem most important to Skinner; that is, the ones he spends the most time on. In a sense, this section is a review of the major principles of operant and respondent behavior. Are any main principles of behavior omitted? Look over 203-219 for an elaboration on some of this material.

19.   Comment on the variables controlling the concepts of "drive" and "need," and the usefulness of such concepts (32-33).

20.   Discuss the role of the listener in the total verbal episode, and our interest in that role in analyzing verbal behavior (33.3-34.2).

21.   The following notes from *Notebooks* (Skinner, 1980) are pertinent: 75.2, 114.1, 169.1, 197.4, 242.1-242.2, 315.1, 334.2, and 343.2.

Quiz Questions and Answers

1. (a) Why does Skinner prefer "verbal behavior" over "speech" and "language"?

    "Speech" too strongly implies merely vocal behavior, whereas "verbal" behavior includes writing, signing, etc. "Language" has come to refer to the practices of the community rather than the behavior of an individual, and Skinner is concerned with individual behavior.

2. How does Skinner justify omitting detailed consideration of the effect of a verbal stimulus on a *listener*?

    When a listener responds to a verbal stimulus nothing very different happens from when a listener responds to any stimulus, thus no special treatment is necessary.

3. Skinner (1957) remarks: "Psychology has been led to neglect some of the events needed in a functional or causal analysis. It has done this because the place of such events has been occupied by certain fictional causes which psychology has been slow in disavowing." (a) What events have been neglected? (b) What fictional causes have occupied their places?

    (a) Consequences, EOs, SDs, CEs, etc; (b) ideas, images, meanings, and other inner events.

4. Discuss whether or not language has an independent existence apart from the behavior of the speaker. In other words, consider the sense in which language may have an independent existence and the sense in which it may not. Skinner is more interested in this second sense, of course.

    Verbal behavior sometimes leaves physical records, such as ink marks on paper, which continue to have an existence beyond the behavior that produced them. Also, the practices of the verbal community have an existence in the repertoires of all the members of the culture separate from the behavior of any one member of the community. But these are only *patterns* of relevant behavior, in which case language is somewhat like the repertoires of the other members of the community as above. That a word exists apart from the behavior of speaking or writing, as does an axe or shovel, is clearly not a reasonable interpretation, except in the senses above.

5. Skinner characterizes his book as an exercise in interpretation. Carefully and thoroughly explain what this means.

See *Verbal Behavior* pp. 11,3-12,1. The exercise is directed to the behavior of the individual speaker and listener; no appeal is made to statistical experimental data; basic facts are known to every educated person; no attempt is made to survey the literature; emphasis is placed on the orderly arrangement of well-known facts according to principles of behavior from the animal lab; the conditions appealed to are accessible and manipulable, hence the approach is inherently practical; no appeal is made to hypothetical explanatory concepts; the ultimate aim is prediction and control of verbal behavior.

6.   In considering speech as vocal verbal behavior, it might be "recorded" in the following fashions: (1) as a record of muscle contractions, (2) as an acoustic record, (3) as a phonetic transcription, (4) as a direct quotation, and (5) as an indirect quotation. Skinner says that as we go from (1) to (5), we (a) retain less and less information about the specific instance, but (b) add more and more inference about the conditions under which the response was made. Illustrate and explain carefully both (a) and (b) by comparing adjacent items in the sequence from (1) to (5). That is, illustrate (a) by comparing (1) with (2), or (2) with (3), etc. Likewise for (b).

An example illustrating (a) is that the phonetic record contains no information about the absolute pitch, speed, loudness of the verbal behavior, whereas an acoustic record does contain this information. An example illustrating (b) is that a direct quotation appropriate to a particular set of phonetic symbols for a sequence of sounds would not discriminate between "send me, too" and "Send me two." The direct quotation, when written down, would make the distinction, but not on the basis of the sounds being quoted -- the difference must be inferred from other information.

7.   How does Skinner make the point that the science of phonology and the science of phonetics are *not* really important for an understanding of verbal behavior?

These sciences would not exist if all behavior were written or if we all "signed," yet all the main problems of verbal behavior would still remain.

8.   Distinguish between response form and the concept of the operant by writing about the word "lead" (or if you prefer "tear" or "bow").

As a written response, "lead," as a type of metal, and "lead," as the opposite of "follow," have but one response form, one topography. However, two quite different operants are involved because each is controlled by a different variable (e.g., writing "lead" under the control of variables that also control "the opposite of 'follow'").

9.   Carefully describe and give examples of *three* kinds of evidence for verbal response strength.

(a) Emission of response: The very occurrence of a response is some evidence of

the strength of that operant, especially if it occurs under unusual circumstances, for instance circumstances where it is not appropriate, for example, two psychologists talking shop at a Super Bowl game. (b) The dynamic properties of response: Energy level, speed, and repetition. Other things being equal, a loud response is ordinarily stronger than a soft one, the fast one is stronger, the repeated one is stronger. A person who, for a moment, is very negative with respect to some question say "NO" louder than necessary, very quickly after the question is asked, and several times (NO! NO! NO!). (c) Overall frequency in a large sample of verbal behavior. If a person uses sexual analogies, terms, and references whenever possible, we might assume that strong sexual verbal behavior.

10.   Words are traditionally spoken as having "meaning." (a) When a word is a response, what do we mean behaviorally by the "meaning" of that word? (b) When a word is a stimulus, what do we mean behaviorally by the "meaning" of that word?

(a) The variables responsible for the occurrence of that response; (b) the effect that stimulus had on a listener.

11.   From Skinner's perspective, human language is an area requiring special analytic concepts and methods, but certainly no abandonment of the behavioral emphasis on environmental independent variables and behavioral dependent variables. Others, however, find it hard to see how one can deal with the essence of language and meaning without considering cognitive structures located inside the organism: "Words are not just stimuli and responses; they have meaning for the person(s) involved, and this meaning cannot be represented in behavioral terms." How would Skinner deal with such a claim?

From the point of view of a speaker, the meaning of the words spoken is equivalent to the variables that are responsible for the occurrence of those responses. From the point of view of the listener, the meanings are the effects on the listener's behavior that those verbal stimuli have.

12.   From the point of view of Watson, and also that of Russell, the notion that "a word is a symbol of the thing that it refers to" can be behavioralized by saying that

_____ _____.

We behave toward the symbol in the same way be behave toward the thing. Or, the "word" or other type of symbol generates the same behavior that the thing generates.

13.   From Skinner's point of view, however, this is only partly right. Explain.

He would possibly agree if you limit this interpretation to respondent behavior. It is possible that we salivate to "lemon" just as we salivate to the sight of a lemon, but certainly not with respect to operant behavior. We grasp, cut, and place in a glass of alcoholic beverage a real lemon; we certainly do not grasp, cut, and place in a glass the word "lemon."

14. At the end of Chapter 1, Skinner discusses the methodological nature of his book. What do you think are the four ways his book differs most from this other scholarly works dealing with language?

> No reference is made to statistical concepts derived from groups; little use is made of experimental results; no survey of the relevant literature is conducted; and no appeal is made to hypothetical explanatory entities.

15. (a) Why might we expect verbal behavior to break free of stimulus control more easily than nonverbal behavior? (b) Illustrate and explain this point with some specific examples.

> (a) Because verbal behavior does not require any environmental support for its execution. (b) Suppose some object looks somewhat like a typewriter, but instead of the keys, there is a printed message, no moveable carriage, etc. It just looks like a typewriter, but has none of the relevant parts. The behavior of typing with this object could not easily occur, would not occur, or would not be carried very far because the letters would not move, no carriage-return lever could be contacted, no typing noises would be produced, etc. However, the verbal behavior of saying "typewriter" could easily occur, and probably would, perhaps accompanied by "It looks like a...."

16. Skinner says that verbal behavior requires no external support. How can this be true if verbal behavior is defined as behavior that affects the environment through someone else's behavior (i.e., verbal behavior is powerless unless someone else reacts to it). Resolve this paradox in a way that would be understandable to someone who did not already know the answer.

> Skinner means that verbal behavior (i.e., verbal vocal and sign language, but not writing) does not require any external support for its execution. It can occur without any environmental props or objects to supply critical stimulus elements in chaining, for instance. Of course, verbal behavior needs external support in the form of appropriate stimulus conditions (e.g., an audience) in order to be strong behavior; that is, if verbal behavior is only reinforced in the presence of certain stimuli, then it will only be strong in their presence. Nonverbal behavior, however, often requires external support for execution, in addition to needing discriminative stimuli. Ice-skating, for example, cannot readily occur without ice skates or without ice. Saying "ice skating," though, as in "I wish I could go ice skating," requires no such support, although such verbal behavior will, of course, be stronger in the presence of an appropriate audience (e.g., ice, skaters).

17. "Profiting from the past" is nothing more than exposure to unconditioned and stimuli, to unconditioned and conditioned reinforcers, and to discriminative stimuli that has the effect of _____.

Altering the organism's repertoire.

Name: _____

Reading Evaluations

Topic 2

A Program:

A Functional Analysis of Verbal Behavior and General Problems

	Ranking for this week (1-6)	Rating for the course (1-5)
Michael (1992)	_____	_____
Vargas (1992)	_____	_____
Skinner (1957)	_____	_____
Fox (2010)	_____	_____
Hayes et al. (2001)	_____	_____
Normand (2009)	_____	_____

The lower the number, the higher the ranking (no tied ranks) or rating (tied ratings are fine).
_____

Which of this week's readings, topics, or concepts need further review or clarification? That is, what else can I help you with?

VERBAL BEHAVIOR

ABSC 931

Topic 3

Controlling Variables: The Mand

Assigned Reading

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Commentary

In developing his analysis of verbal behavior, Skinner (1957) first organized it into response classes -- that is, verbal operants -- defined in terms of their controlling variables. His classification was interpretive. That is, it was not based on prior empirical analyses of verbal behavior, but on extensions of the basic principles into this domain. This week, we examine the first of these verbal operants -- the mand. According to Skinner (1957), "A 'mand'...may be

defined as a verbal operant in which the response is reinforced by a characteristic consequence and is therefore under the functional control of relevant conditions of deprivation or aversive stimulation" (pp. 35-36). These "relevant conditions" are today's motivating operations (e.g., establishing operations).

Manding has several interesting characteristics. First, it requires listeners who respond "in ways which have been conditioned precisely in order to reinforce the behavior of the speaker" (Skinner, 1957, p. 225). The history through which mands emerge not only establishes individual mands, but also a general tendency to "mand" – generalized manding -- a higher-order operant whose emission is not easily traced to obvious contemporary variables. Second, manding can be subtle and occur in many forms, some of which will lack a typical mand structure, for instance, the imperative mood (e.g., "Give me the nibbler."). Indeed, as a functionally defined unit of behavior, mands – like the other verbal operants -- have no inherent structure. For instance, a mand might have the structure of a description, as in "That sure looks like a good set of references for writing a term paper," yet have the function of a mand, as in meaning, "I would like to see your reference list as I prepare my term paper." Third, the occurrence of a "pure" mand -- a mand controlled *only* by its characteristic consequences -- is rare and maybe improbable in the mature speaker because variables other than establishing operations are almost inevitably at work. For instance, some variables will set the occasion for a specific mand, as in (e.g., "Pass me the nibbler" in the presence of a nibbler, but not its absence), while other variables related to time, place, and audience will add supplementary control (e.g., "Oh, don't let the hardware store close before I get there."). Moreover, multiple establishing operations may distort a pure mand function (e.g., "Give *me* the last cookie," when motivated to irk a sibling).

Enough of this. We need to move on to the assigned reading. First, please read Skinner's (1957, pp. 35-51) chapter, "The Mand." This is his main treatment of mands, although they will be discussed throughout the rest of the book as it and the other verbal operants are compared and contrasted and as other verbal operants are "composed" of them. Introductory and supplementary readings on the mand may be found in Catania (2007), Peterson (1978), Segal (1975), and Winokur (1976). For a critique of Skinner's analysis of the mand, see Place (1982).

Our second reading addresses motivating operations. In the past, I have assigned Jack Michael's (1988) treatment of establishing operations in the context of mands – "Establishing Operations and the Mand" (see also Michael, 1983). It describes (a) the defining relation between establishing operations and mands, (b) some reasons why teaching mands is often neglected, and (c) the practical importance of attending more closely to mand relations in language training. For a more recent general treatment of establishing operations, see Michael (1993), "Establishing Operations" (see also Laraway, Snycerski, Michael, & Poling, 2003; Michael, 1982) and its commentaries (e.g., Sundberg, 1993). Because I have found Michael (1988) redundant with another reading, I am instead assigning Esther Shafer's (1994), "A Review of Interventions to Teach a Mand Repertoire." Shafer clarifies and extends the concept of the establishing operation in the context of manding and describes several strategies for teaching mands, even though "mands," per se, may be only implicit (not explicit) in those analyses. For research on motivating variable and the mand, see Gutierrez, Vollmer, Dozier, Borrero, Rapp, Bourret, and Gadaire (2007), Hall and Sundberg (1987), Hartman and Klatt (2005), and Sundberg, Loeb, Hale, Eigenheer, and *Behavior Analysis, Inc*., & *STARS School*

(2001/2002).

      The third reading is Jim Halle's (1987), "Teaching Language in the Natural Environment: An Analysis of Spontaneity." Although the issue of spontaneity pertains to several verbal operants, it has been mostly addressed with respect to mands (e.g., Hernandez, Hanley, Ingvarsson, & Tiger, 2007). As for the empirical literature addressed this review, see Jim Halle, Ann Marshall, and Joe Spradlin's (1979) seminal study, "Time Delay: A Technique to Increase Language Use and Facilitate Generalization in Retarded Children." Time delay has some characteristics of an establishing operation, which the authors used to increase the rate of verbal behavior (i.e., manding) and to facilitate response generalization for children with developmental disabilities. This and similar procedures have been used in other language training programs – for instance, in incidental teaching -- although only a few of the programs explicitly mention "mands" (see, e.g., Hall & Broden, 1977; Hart & Risley, 1968, 1974, 1975; Hewett, 1965; Lovaas, 1966; Risley & Wolf, 1967; Rogers-Warren & Warren, 1980).

      Some literatures, of course, address the functional analysis and training of mands directly. The functional analysis of aberrant behavior, in fact, today makes extensive use of Skinner's analysis of mands and the concept of establishing operations (see, e.g., Bowman, Fisher, Thompson, & Piazza, 1997; Derby, Fisher, Piazza, Wilke, & Arthur, 1998; Matsuoka, Noro, & Kobayashi, 1996; Yamamoto & Mochizuki, 1988). As for the direct training of mands, see Bondy and Frost (1993), Brady, Saunders, and Spradlin (1995), and Simic and Bucher (1980); for its training by parents, see Chaabane, Alber-Morgan, and DeBar (2009). For a more general review of "communication" training based on Skinner's (1957) book, see Sundberg (1983, 1987) and Sundberg and Partington (1998; see Shafer, 1999). For a functional analysis of manding per se, we will read Jason Bourret, Tim Vollmer, and John Rapp's (2004) article, "Evaluation of Vocal Mand Assessment and Vocal Mand Training Procedures" (see also Bowman, Fisher, Thompson, and Piazza, (1997). For related literatures, see Braam (1991), Drasgow, Halle, and Ostrosky (1998), Duker, Dortmans, and Lodder (1993), Grow, Kelley, Roane, and Schillingsburg (2008), Hung (1980), Pellecchia and Hineline (2007), Tiger and Hanley (2004), Winborn, Wacker, Richman, Asmus, and Geier (2002), and Yi, Christian, Vittimberga, and Lowenkron (2006). For research on the relation between mands and the other verbal operants, see Drash, High, and Tudor (1999).

      For research that implicates stimulus equivalence (stimulus class membership) with the mand relationship, see DeRose, McIlvane, Dube, Galpin, and Stoddard (1988), Dube, McIlvane, MacKay, and Stoddard (1987), and Dube, McIlvane, McGuire, MacKay, and Stoddard (1989). If you are interested in research topics concerning the mand, see Sundberg (1991, pp. 88-89). For our final reading other than Chomsky (1959), we will address manding from a relational frame perspective with Carol Murphy, Bermot Barnes-Holmes, and Yvonne Barnes-Holmes's (2005) article, "Derived Manding in Children with Autism: Synthesizing Skinner's *Verbal Behavior* with Relational Frame Theory" (see also Chambers & Rehfeldt, 2003; Murphy & Barnes-Holmes, 2009, 2010; Rosales & Rehfeldt, 2007).

Take-Home Assignment

      Please read Chomsky (1959, pp. 45-47) on manding. Then, on the basis of your other assigned readings, critique his analysis. You need not draw your critique from this material in

Chomsky (1959), but these pages are the ones most closely focused on the week's assignment in *Verbal Behavior*.

Term Paper Assignment

Five annotated references (25-30 words), plus your topic, revised as edited or requested. Please be sure that your references are related to your topic. If this is not clear, please explain how in your annotation.

References and Citations

For those interested in the scientific and literary reference citations Skinner listed in this week's material, see Jesperson (1922). For material in *Verbal Behavior* that corresponds with material in *Notebooks, B. F. Skinner* (1980): 35,f (141.1, 144.3), 36,1 (240.3), 38,1 (93.1, 328.1), 39,1 (21.1), 40,0 (295.2), 40,2 (133.2), 41,1 (88.2, 350.2, 350.4), 41,2 (85.2), 41,3 (217.2, 345.1), 42.0 (177.1, 177.2), 42.1f (105.2), 44.2f (18.1, 18.2, 29.2), 46,2 (278.1), 47,1 (31.1, 107.2, 192.2, 203.1, 353.3, 357.1), 47,2 (85.2, 293.2, 337.1), 48,1f (85.1, 190.2), 48,2 (190.3), 49,1 (62.1, 232.3, 232.4), and 50,2 (10.2, 253.2).

Study Objectives and Questions

Chapter 3

1.   In 35.1 through 36.1, the essential features of the mand relation are given. What is a mand? Give some examples of mands and say why they fit the definition (35-36). Study this carefully and abstract out of the three paragraphs several essential features of the mand. Include the one given in the last half of 36.3.

2.   Main point of 36.2 -- a sort of double point. Be sure you are clear about this use of "formal." Why can we not conclude from the form of a verbal operant whether or not it is a mand? How can we determine this (36-37)?

3.   37.1 describes a speech episode, and Figure 1 diagrams this set of events. Study Figures 1, 2, and 3 carefully so that you can explain the different parts. Be sure that are you clear about the function of "Thank you" and "You're welcome." (The arrows for "Thank you" in Figure 3 should be double arrows.)

4.   In terms of discriminative stimuli, responses, and reinforcers, diagram and explain examples, different from those in the book, of each of the following kinds of mands: (a) requests, (b) commands, (c) entreaty, (d) question, (e) advice, (f) warning, (g) permission, (h) offer, and (i) call (38-40).

5.   An important point is made in 40.1, which is contrary to the view of many social scientists (see also 2.2).

6.   40.3 makes a major point, which has been illustrated in 38.1 through 40.2. Be able to

make this point, which is a contrast between traditional and behavioral approaches to language. Illustrate it with a number of examples.

7.   Explain how we can empirically demonstrate the "chain" nature of a verbal episode involving a mand. (p. 40)

8.   The chances that a given mand will be reinforced are often rather low. In 41.1 and 41.2, several ways are described to decrease the likelihood of the listener's "revolting." The first two are called "softened" or "disguised mands." Be able to recognize these, give examples of them, explain how they increase the probability that they will be reinforced, and also to give some of the other ways to get listeners to comply.

9.   What is a generalized mand? Give some examples and say why the examples fit the definition (41-42).

10.   Understand the main points about the dynamic properties of the mand (42.2). Discuss factors that determine the intensity, pitch, intonation, speed, frequency, and probability of a mand, and give examples (42-43).

11.   Understand the main points about the probability of the listener reinforcing the speaker (42.3). Discuss factors that determine the probability and intensity of a listener's response to a mand, and give examples (42-43).

12.   What are the two traditional interpretations of the mand (43.2)? Discuss, with examples, how Skinner's treatment of the mand differs from the traditional treatment of this type of verbal behavior. What advantages does Skinner's treatment have over the traditional treatment (43-45)?

13.   A very important point is made in 45.3 and illustrated in the preceding two paragraphs. Be familiar with it. It occurs often in the conflict between behavioral and nonbehavioral approaches to human behavior. Be able to distinguish the two kinds of simplicity.

14.   A form of mand extension that can be called "simple mand extension" is described in 46.2 through 47.1. Know this. Discuss, with examples, the role played by stimulus discrimination and stimulus induction (i.e., generalization) in the emission of a mand (46-47). The issue is complicated by the possibility of extension occurring along the dimensions of establishing operations rather than discriminative stimulus dimensions.

15.   Be sure you understand the point of the last sentence of 47.1 -- verbal behavior needs no external support, etc.

16.   What is a superstitious mand (47.2)? Give examples of such mands and say how they may be acquired (47-48). What is the role of rule-governed behavior (3)?

17.   What are the essential features of the magical mand? Give examples of such mands and say how they might be explained (48.1-49.1).

18.   Critically discuss Skinner's account of the mand in literature (49-51).

Quiz Questions and Answers

1.   "A mand is not a formal unit of analysis. No response can be said to be a mand by its form alone." After writing this, however, Skinner then qualifies the statement, or sort of takes it back. Explain his qualification, and give an example that illustrates his qualification.

>   Certain formal properties of may be so closely associated with specific kinds of variables that the latter may often be safely inferred. For example, in English, the forms "who, what, when, where, why," etc. are associated with mand variables of the type that control questions (i.e., mands for verbal action).

2.   For Skinner, how is a question distinguished from other types of mands?

>   Questions mand verbal action on the part of the listener; other mands mand nonverbal action.

3.   (a) Supposing that someone wants the TV turned off, illustrate the two types of softened mands that might occur under these circumstances. (b) In *Notebooks*, Skinner comments on a common verbal practice for softening questions. What is it?

>   (a) I could sure study more effectively if the TV were off (tact). Would you mind turning the TV off (mand for verbal action)? (b) I wonder if it is after 4:00.

4.   In *Notebooks*, Skinner discusses finger placement when one says "Shhh" to get someone to be quiet. What was the point of that note?

>   When saying "Shhh" to someone, if one touches one's own lips, the finger can be, and usually is, sideways because no real blocking action is required -- the person saying "Shhh" is already predisposed to be quiet. But, when touching someone else's lips to "Shhh," one uses the front of the finger so that it could actually prevent vocalization.

5.   (a) Provide a behavioral translation of the following statement: "A child uses a particular tone of voice as a sign that it wants something." If reasonably accomplished, your translation is, in a sense, simpler than the original, even though it is clearly less familiar. Explain in what sense it is simpler.

>   (a) A child emits a response with a particular form (e.g., tone of voice) under the control of some establishing operation, or as the result of having received some form of reinforcement for doing so, or under certain states of deprivation or aversive stimulation. (b) The terms in this answer can be defined by experimental operations, and the answer is consistent with other statements about verbal and nonverbal behavior.

6.   Provide a behavioral translation of the following: "Very early on, a child cries as a sign that it is hungry, but crying is not used intentionally until the child sees that people attend to its

crying."

> Very early crying occurs as a function of food deprivation, but crying is not yet operant behavior (i.e., it is not verbal behavior, it is not controlled by a history of reinforcement, it is not the type of behavior that is controlled by its consequences) until it is followed by some form of reinforcement.

7.   How would you explain, behaviorally, the occurrence of a mand where, for the speaker, the consequence being manded has never functioned as a mand before?

> This is the magical mand. It might be explained in the following way: (i) Most speakers eventually have an extensive history where a response form functions as an effective mand, as well as being the same response form for a tact controlled by the reinforcer for the mand. We are often successful in manding in a way that is very close to tacting or to making an intraverbal response in the sense of "naming the reinforcer." (ii) When some establishing operation or establishing stimulus comes to strength so that some event that has not been manded before becomes a form of reinforcement, and assuming that a relevant tact or intraverbal is in the speaker's repertoire, this response becomes strong along with some generalized mand forms, such as "Would you please hand me the..." or "May I..." It is a form of generalization involving larger units of behavior than single response forms.

Name: _____

Reading Evaluations

Topic 3

The Mand

	Ranking for this week (1-5)	Rating for the course (1-5)
Skinner (1957)	_____	_____
Shafer (1994)	_____	_____
Halle (1987)	_____	_____
Bourret et al. (2004)	_____	_____
Murphy et al. (2005)	_____	_____

The lower the number, the higher the ranking or rating.

_____

Which of this week's readings, topics, or concepts need further review or clarification? That is, what else can I help you with?

VERBAL BEHAVIOR

ABSC 831

Topic 4

Controlling Variables:

Verbal Behavior under the Control of Verbal Stimuli

Assigned Reading

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Esch, B. E., Carr, J. E., & Michael, J. (2005). Evaluating stimulus-stimulus pairing and direct reinforcement in the establishment of an echoic repertoire of children diagnosed with autism. *The Analysis of Verbal Behavior, 21*, 43-58.

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Commentary

This week's topic addresses verbal behavior controlled by verbal behavior – antecedent verbal behavior -- the consequences of which are generalized conditioned reinforcers. The primary subcategories of this class of verbal operants are echoic, textual, and intraverbal behavior, along with transcription and translation. Please begin this week's assignment with Skinner's (1957) chapter, "Verbal Behavior Under the Control of Verbal Stimuli" (pp. 52-79). Overviews of this material may be found in Catania (2007), Peterson (1978), Segal (1975), and Winokur (1976).

Formal Correspondence: Echoic and Textual Behavior, and Transcription

In the first three classes of verbal behavior under the control of verbal behavior, a formal or point-to-point correspondence exists between verbal stimuli and verbal responses. These are echoic and textual behavior, and transcription. Skinner actually conducted some early research with respect to them (e.g., Skinner, 1936, 1937, 1939, 1941; see Rutherford, 2000), but we will not cover it beyond what he included in *Verbal Behavior*. For behavior-analytic research on echoic behavior, see Boe and Winokur (1978a, 1978b), Lane and Schneider (1963), Matheny (1968), and Neville (1968). For research on textual behavior, see Lee and Pegler (1982). For research on transcription, see Lee and Sanderman (1987); on spelling, speaking, and writing, see Moxley (1990); on handwriting, see Gonzalez and Waller (1974). As for textual behavior that is also "reading" -- not all textual behavior is reading -- see Moxley's (1986) functional analysis of reading, and Johnson's (1986) reply thereto (see also Daly, 1987; Goldiamond, 1962; McDowell, 1968).

No Formal Correspondence: Intraverbal Behavior

In the fourth class of verbal behavior under the control of verbal behavior -- intraverbal behavior -- no formal or point-to-point correspondence exists between verbal stimuli and verbal responses. For this material, we begin with Ernie Vargas's (1986) conceptual refinement and extension of Skinner's material in his chapter, "Intraverbal Behavior," which also covers some other conceptual work in this area (see also Holland, 1986; Michael, 1980; Vargas, 1982). Read this material not for the new vocabulary Vargas offers, but for the breadth he offers when considering this material.

For some research on intraverbal behavior, see Braam and Poling (1983), Chase, Johnson, and Sulzer-Azaroff (1988), Finkle and Williams (2002/2003), Ingvarsson, Tiger,

Hanley, and Stephenson (2007), Israel (1960), Luciano (1986), Partington and Bailey (1993), Perez-Gonzales, Garcia-Asenjo, Williams, and Carnerero (2007), Poon and Butler (1972; Tenenbaum and Wolking (1989), and Watkins, Pack-Teixteira, and Howard (1989). For some reviews, see Cihon (2007). For a review of conditional discrimination research with intraverbals, we shall read Judah Axe's (2008) "Conditional Discrimination in the Intraverbal Relation: A Review and Recommendation for Future Research."

Automatic Reinforcement

Our next set of assignments addresses "automatic reinforcement," beginning with Maggie Vaughan and Jack Michael's (1982), "Automatic Reinforcement: An Important Concept in the Analysis of Verbal Behavior." Automatic reinforcement has proven both difficult and slippery, but it is real and important nonetheless. Vaughan and Michael clarify "automatic reinforcement" as Skinner (1957) introduced it and as he appeals to it in other work (see Palmer, 1996). For the empirical research on automatic reinforcement in the context of the acquisition of verbal behavior, it is not yet very strong. For some research, see Sundberg, Michael, Partington, and Sundberg (1996), Smith, Michael, and Sundberg (1996), Yoon and Bennett (2000), Miguel, C. F., Carr, J. E., & Michael, J. (2002), Esch, Carr, and Michael (2005), Normand and Knoll (2006), Ward, Osnes, and Partington (2007), Yoon and Feliciano (2007), Carroll and Klatt (2008), and Stock, Schulze, and Mirenda (2008). We shall read Esch, Carr, and Grow's (2009) article, "Evaluation of an Enhanced Stimulus-Stimulus Pairing Procedure to Increase Early Vocalizations on Children with Autism."

Take-Home Assignment

Please read Chomsky (1959, pp. 51-52) on verbal behavior under the control of verbal stimuli. Then, on the basis of the other assigned readings, critique his analysis in one APA page or less. You need not draw your Chomsky critique from this material, but these pages are the most closely focused on the assignment in *Verbal Behavior* this week.

Cites and Citations

If you are interested in further research topics concerning verbal behavior under the control of verbal stimuli, see Sundberg (1991, pp. 87, 89-91). For material in *Verbal Behavior* that corresponds with material in *Notebooks, B. F. Skinner* (1980), see: 54.3 (19.1, 82.2), 55.4 (327.1), 58.1 (135.2), 65.2f (86.1, 160.2), 67.1 (95.2), 68.2 (283.2), 69.2 (120.1, 132.2, 212.1), 70.1f (283.2), 70.3 (260.1), 71.4 (206.1), 72.0 (74.2, 84.1, 178.1, 208.1), 72.1f (276.2), 72.2 (311.1), 73.1 (192.3), 73.2 (43.1, 260.1, 296.2), 74.2 (23.2, 94.2), 74.3 (307.1), 75.1 (260.1), 76.2 (355.1), 77.1f (141.3), 77.3f (310.2), 78.2 (17.1, 30.1), and 79.2 (114.1). For readers interested in the scientific and literary reference citations Skinner listed in this chapter, see Burney (1950), Carroll (1941), Critchley (1927), Foley and Macmillan (1943), Fowler (1930), Goodenough (1946), Rylands (1928), and Thorndike (1938).

Study Objectives and Questions

Conditioned Generalized Reinforcement

1.   What is a generalized conditioned reinforcer? Distinguish it from ordinary conditioned reinforcement via the history and conditions of its current usage. Avoid the common error of saying that a generalized conditioned reinforcer is one that will strengthen a variety of responses.

2.   Explain how a verbal response can be made relatively independent of establishing operations, and thus brought under the almost exclusive control of a prior or current discriminative stimulus (53-55). Note that there are two possibilities -- one in 53.2 and one in 53.3. Be able to illustrate each by talking about a rat learning to press a lever in the presence of a light. Be able to answer the general question: "What role does generalized conditioned reinforcement play in Skinner's approach to verbal behavior" (53-55, but also read 151.2, and especially 151.3)"?

3.   Be able to describe two different kinds of generalized conditioned reinforcement (53.3 and 54.3-55.1).

4.   State and explain some common examples of verbal behavior reinforced by generalized conditioned reinforcers (53-55). Why, by definition, would such responses not be mands?

Echoic Behavior

5.   What is echoic behavior? Give some examples.

6.   Describe the evidence for the tendency to engage in echoic behavior (55.4-56.1).

7.   Describe the various sources of reinforcement for echoic behavior, including "educational" reinforcement. What are the advantages of an echoic repertoire to a speaker (56.2-57.2)?

8.   Note carefully the two kinds of behavior that are *not* to be considered echoic behavior (58.1 and 59.1): (a) verbal responses that are "self- reinforcing" and (b) the later reproduction of speech. Be sure you understand the notion of automatic reinforcement; it is not a technical term (66.2-66.3).

9.   What are the advantages of an echoic repertoire to the group of which a speaker is a member (60-61)?

10.   Describe the main points of 59.3-61.1. The possible explanations of echoic behavior are the contingencies of survival, contingencies of reinforcement, and the intermingling of the two. Why does Skinner maintain, "Echoic behavior does not depend upon or demonstrate any instinct or faculty of imitation" (59-60)?

11.   Be sure you understand the point made in the discussion of diaminodiphenylmethane (61.2).

12.   Describe the main points of 62.3, 63.1, 64.1, and 65.1. In order, the four paragraphs deal with (a) the necessity (or rather, the lack of necessity) of teaching minimal correspondence, (b) the size of the minimal repertoire, (c) comparison with other verbal operants, and (d) maybe repetition is nothing more than excessive strength.

13.   Discuss what is involved in determining the smallest unit of echoic behavior. Why does Skinner say: (a) "The smallest acoustic...unit available in describing speech...is not at issue here" and (b) "The speech sound (or the linguist's 'phoneme') is not necessarily the smallest unit" (63-64)?

14.   What is self-echoic behavior? How is it explained? Why is it difficult to demonstrate (64-65)?

Textual Behavior

15.   What is textual behavior? What are the reinforcements for textual behavior (66.1, 66.2, 67.1)? There are four in all.

16.   Be sure you thoroughly understand the two important differences between echoic and textual behavior (i.e., between duplic and codic behavior) mentioned at the end of 67.2 and explained in 67.3 and 69.1, specifically with respect to the manner in which each is acquired and their smallest functional units.

17.   Be able to compare the minimal unit that usually develops in echoic behavior (63.1-64.1) with that of the two types of transcriptive behavior (69.3-71.2).

Intraverbal Behavior

18.   What is intraverbal behavior? Give some common examples. What are the various kinds of reinforcement for intraverbal behavior (74-75)? Be sure you understand "contiguous usage."

19.   Note carefully the last sentence of 74.3 -- nonverbal circumstances occur together.

20.   Describe the main point on 75.3: The more complex the stimulus pattern, the stronger the control over a single response.

21.   Be sure you understand the first sentence of 76.2 regarding the number of intraverbal units.

22.   Briefly describe some of the features of Jung's system for classifying word associations. Explain why Skinner believes that such a classification system is of little value in analyzing intraverbal behavior (73-76)?

23.   Explain what Skinner means of intraverbal behavior: "...there is no minimal repertoire similar to that which approaches mimicry in echoic behavior or permits the skilled reader to pronounce a new word in a text" (76.3).

24.   What does Skinner mean by "react as a listener" in 77.2 and 77.3? Be sure you understand the first sentence of 77.3. What is "automatic correction"? Be sure you understand 78.1 on bilingual and intraverbal repertoires.

25.   Explain how translation from a new to an old language is similar to the early stages of reading (77).

26.   Describe the main point of 78.1 regarding the bilingual speaker as a translator.

27.   The fact that it is sometimes possible for a skillful bilinguist to translate readily from one language to another is often said to show the need for some such concept as "idea" or "proposition." Explain why Skinner rejects such "explanations," and the alternative account he proposes (78).

28.   Explain, with examples, why verbal behavior under the control of verbal stimuli and generalized reinforcement often does not show much dynamic variation in speed or energy of response. What are the variables that might produce dynamic variation in this type of behavior (78-79).

29.   What is the traditional attitude toward echoic, textual, and intraverbal behavior? What accounts for this attitude? What is Skinner's view (79.2-80).

Quiz Questions and Answers

1.   What role does generalized conditioned reinforcement play in Skinner's approach to verbal behavior?

> It is through the use of conditioned generalized reinforcement that verbal behavior is freed from control by specific establishing operations, and brought under the almost exclusive control of antecedent stimuli. This applies to all forms of verbal behavior but the mand.

2.   Two kinds of behavior might seem to be echoic, but are not. Describe each briefly, and explain why neither should actually be considered to be echoic.

> (1) Responses that are automatically (self-)reinforcing because the form of the response product resembles stimuli that are reinforcing for other reasons (e.g., the pet phrases of an admired person). (2) Response that are later reproductions of overheard speech (e.g., saying what someone else said yesterday, or an hour ago, etc.). In neither case is there an immediately prior controlling stimulus.

3.   What role does generalized conditioned reinforcement play in Skinner's approach to verbal behavior?

> It is through the use of conditioned generalized reinforcement that verbal behavior is freed from control by specific establishing operations, and brought under the almost exclusive control of antecedent stimuli. This applies to all forms of verbal behavior but the mand.

4.   Distinguish between "self-reinforcement" as used by Skinner and "self-reinforcement" used currently in the context of self-control and self-management.

> For Skinner, "self-reinforcement" refers to some consequence of behavior that functions as reinforcement, but which is the natural outcome of the response that produced that consequence. The recent usage refers to a person's providing some consequences thought to function as reinforcement for that person, and done in order to strengthen the behavior that preceded the consequence.

5.   Two important differences between duplic and codic behavior arise from the fact that in duplic behavior the response produced resembles the stimulus, whereas in codic it does not. Describe these differences and illustrate them by comparing (a) taking dictation with (b) copying a text (but <u>not</u> by comparing textual and echoic behavior as was done in the text).

> In codic behavior, the development of a minimal repertoire comes to a stop at the level of the smallest *arbitrary* codic relationship. In duplic behavior, however, the minimal repertoire can become as fine grained as our sensory capacities permit. Thus, in copying a text, the copier can produce correspondences as fine as a skilled artist (or forger) could

accomplish (.e., each irregularity of the letter could be copied). In taking dictation, however, the smallest degree of correspondence is limited to the letter-phoneme relation (See also p. 68.2, second sentence.)

6.　　By the time most children are three or four years old, they have a reasonably accurate echoic repertoire. Describe three possible origins of this, that is, three possible behavioral explanations of three echoic repertoire. Describe each carefully, using examples if necessary.

(1) An unconditioned reflex: When a child hears "o," this sound elicits the muscle responses (vocal musculature) that produces an "o" sound. This would be due to the contingencies of survival. (2). A capacity to be reinforced by the similarity between a sound just heard and one just produced, which would then be a form of reinforcement that would shape (via operant conditioning) echoic responses so long as the child had a variety of different sound-producing responses in its repertoire and so long as the sounds occurred fairly often on a semi-random basis. This might be due to an intermingling of phylogenic contingencies of survival and ontogenic contingencies of reinforcement. (3) The behavior could be shaped by some completely irrelevant form of reinforcement. (i.e., one that is not the natural product of the response), such as social approval, attention, affections, etc. This would be due to due to contingencies of reinforcement.

7.　　Provide an original example illustrating that the more complex the stimulus pattern, the stronger the intraverbal control over a single response.

The stimulus "red" would probably produce a wide variety of intraverbal responses, but "roses are red" would probably produce "violets" as a response, as in "Roses are red, violets are blue; sugar is sweet and so are you."

8.　　Explain, with an example, what the following sentence means: "One may emit textual responses, but not react as a listener."

Textual responses typically result in an auditory stimulus consisting of a sequence of stimuli that ordinarily control a variety of behavior on the part of listeners. For example, "What time is it?" typically induces listeners to look at their watches and reply; or, "It's time to leave" might produce putting on coats and leaving. It is possible for a person to make textual responses that produce theses sounds, but without reacting to them by looking at a watch, watching others else to see if they look at theirs, or getting ready to leave. This usually occurs as a result of the textual responder not being well controlled by the language in which the textual responses are occurring, or being distracted by other events (as when an adult is reading to a child, but thinking about other things).

9.　　How might a person become a skillful bilinguist, and yet not be able to translate from one language into the other?

If the behavior in both languages involved speaking and listening only within each language, for example, if the bilingual person was never in the presence of variables relevant to both languages, such as listeners of both, or written material in one and a

listener in the other. That is, if the bilingual person never encountered contingencies relevant to both languages, but only encountered the contingencies one at a time.

10.   Why is the mand dynamically lively, yet textual behavior often dynamically flat? Explain what dynamically lively and flat mean, and compare manding and textual behavior.

(1) "Dynamically lively" means "shows considerable variation from moment to moment or from response to reponse in energy level, speed, and repetition of the response." (2) Mands are dynamically lively because the controlling variables (i.e., the establishing operations that are responsible for the response) vary in strength from moment to moment and from response to response. In contrast, textual behavior is ordinarily dynamically flat, that is, quite uniform in energy level, speed, and repetition because the controlling variables—the visual stimuli that control the response—are uniform in their control (e.g., same size, darkness, etc.).

11.   What does Skinner suggest is the basis for the enjoyment of music?

"Please in anticipation' (*Notebooks*, 192.3): Skinner suggests that it is reinforcing (what gets reinforced?) to be able to emit responses (e.g., singing, thinking?) whose products resemble the musical stimuli we hear, just before or about the same time that they appear in the music (see *Verbal Behavior*, pp. 268-280). This is not unlike the possible pleasure in listening to poetry, other than the pleasure of reacting as a listener to prose aspects of the verbal material.

12.   How does Skinner explain that he often slightly misses the point of a question that is asked after a talk?

He says that he has answered the same types of questions a great many times. There are about fifty very common questions regarding educational material and their fifty answers are so strong that they simply occur even if the question asked is not specifically relevant to any of them.

Name:_____

READING RANKING AND RATINGS

Topic 4

Controlling Variables:

Verbal Behavior under the Control of Verbal Stimuli

	Ranking for the week (1-5)	Ratings for the course (1-5)
Skinner (1957)	_____	_____
Vargas (1986)	_____	_____
Axe (2008)	_____	_____
Vaughan & Michael (1982)	_____	_____
Esch, Carr, & Grow (2009)	_____	_____

The lower the number, the higher the ranking or rating.

_____

Any other queries or comments?

VEBAL BEHAVIOR

ABSC 931

Topic 5

Controlling Variables: The Tact and Public Stimuli

Assigned Reading

Skinner, B. F. (1957). *Verbal behavior* (Ch. 5: The tact, pp. 81-129). Englewood Cliffs, NJ:
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34*, 325-332.

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perspective. *The Behavior Analyst, 24*, 191-199.

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and applied behavior analysis. *Journal of Applied Behavior Analysis, 29*, 409-431.

Moore, J. (1984). On the tactful specification of meaning: A review of Harre and Lamb's *The
Encyclopedic Dictionary of Psychology*. *Journal of the Experimental Analysis of
Behavior, 41*, 387-395.

Chomsky, N. (1959). Review of Skinner's *Verbal Behavior* (pp. 47-50). *Language, 35*, 26-58.

Recommended Reading

Branch, M. N. (1977). On the role of "memory" in the analysis of behavior. *Journal of the
Experimental Analysis of Behavior, 28*, 171-179.

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relations. *Journal of the Experimental Analysis of Behavior, 51*, 29-45.

Carew, T. (1670). Pretensions of poverty. In *Poems, songs and sonnets, together with a masque*
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Carnap, R. (1937). *The logical syntax of language* (A. Smeaton, Trans.). New York: Harcourt
Brace.

Catania, A. C. (2007). *Learning* (interim 4th ed.). Englewood Cliffs, NJ: Prentice-Hall.

deRose, J. C., deSousa, D. G., & Hanna, E. S. (1996). Teaching reading and spelling. Exclusion
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Devaney, J. M., Hayes, S. L., & Nelson, R. O. (1986). Equivalence class formation in language-able and language- disabled children. *Journal of the Experimental Analysis of Behavior, 6*, 243-257.

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Egan, C. E., & Barnes-Holmes, D. (2009). Emergence of tacts following mand training in young children with autism. *Journal of Applied Behavior Analysis, 42*, 691-695.

Hall, G. A., & Chase, P. N. (1991). The relationship between stimulus equivalence and verbal behavior. *The Analysis of Verbal Behavior, 9*, 107-119

Horne, P. J., Hughes, J. C., & Lowe, C. F. (2006). Naming and categorization in young children: IV: Listener behavior training and transfer of function. *Journal of the Experimental Analysis of Behavior, 85,* 247-273.

Horne, P. J., & Lowe, C. F. (1996). On the origins of naming and other symbolic behavior. *Journal of the Experimental Analysis of Behavior, 65*, 185-241.

Horne, P. J., & Lowe, C. F. (1997). Toward a theory of verbal behavior. *Journal of the Experimental Analysis of Behavior, 68*, 271-296.

Horne, P. J., Lowe, C. F., & Randle, V. R. L. (2004). Naming and categorization in young children: II: Listener behavior training. *Journal of the Experimental Analysis of Behavior, 81,* 267-288.

Kodak, T., & Clements, A. (2009). Acquisition of mand and tacts with concurrent echoic training. *Journal of Applied Behavior Analysis, 42*, 839-844.

Lowe, C. F., Horne, P. J., Harris, F. D. A., & Randle, V. R. L. (2002). Naming and categorization in young children: Vocal tact training. *Journal of the Experimental Analysis of Behavior, 78,* 527-549.

Lowe, C. F., Horne, P. J., & Hughes, J. C. (2005). Naming and categorization in young children: III: Vocal tact training and transfer of function. *Journal of the Experimental Analysis of Behavior, 83*, 47-65.

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Newman, J. R. (1956). *The world of mathematics: A small library of the literature of mathematics from A'h-mose the scribe to Albert Einstein* (Vol. 1). New York: Simon & Schuster.

Palmer, D. C. (1989). A behavioral interpretation of memory. In P. N. Chase & L. J. Hayes (Eds.), *Dialogues on verbal behavior* (pp. 261-279). Reno, NV: Context Press.

Partington, J. W., Sundberg, M. L., Newhouse, L. & Spengler, S. M. (1994). Overcoming an autistic child's failure to acquire a tact repertoire. *Journal of Applied Behavior Analysis, 17*, 733-734.

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Commentary

This week's topic is the tact, specifically, the tact of public stimuli (as in "contact") or, better yet, its verb form -- tacting (as in "contacting"). Tacts are verbal operants whose controlling variables are antecedent *non*verbal events, objects, and relations that function as discriminative stimuli that set the occasion for verbal behavior. Antecedent nonverbal events, objects, and relations, however, are not limited to public (overt) events occurring outside the skin of the speaker; they also include private (covert) events inside the skin, accessible only to the speaker. The tacting of private events warrants more attention than we can provide at this point. We shall devote next week's topic to it.

The Tact

Our first assignment this week covers more of Skinner (1957, pp. 81-129) than any assignment in it to date and can be a little difficult, so you might get an early start on it. Corresponding coverage may be found in Catania (2007), Peterson (1978), Segal (1975), and Winokur (1976). Among the recommended readings, the Place-Skinner interchange concerns Place's (1985) assertion that Skinner used "tact" in more than one way, and inconsistently. Skinner (1985) answered, not so. As for research on tacting that draws from *Verbal Behavior*, only a few articles speak directly to tact training (e.g., Woods, 1984). Others speak to it more in the context of the independence of tacting from other verbal operants or how the other operants contribute to tacting, but we will cover these later in the course. If you are interested in research topics concerning the tact, see Sundberg (1991, p. 88).

Metaphor and guessing. In his material on the tact, Skinner (1957) discusses metaphorical extension (pp. 92-99) and guessing (pp. 105-106), the first of which we will look at more closely. For this, please read Cornwell and Hobbs's (1984) "Behavior Analysis of Metaphor" and Stewart and Barnes-Holmes (2001) "Understanding Metaphor: A Relational Frame Perspective." In this context, we might discuss the place of metaphor in science, both pro and con. As for "guessing," this is verbal behavior in the apparent absence of anything to tact. For more on this, see Skinner's (1942) early article, "The Processes Involved in the Repeated Guessing of Alternatives."

Remembering. In other of this week's reading, Skinner touches briefly on "remembering." In behavior analysis, memory is accounted for in terms of (a) "stimulus control," in large part not unlike that involved in tacting public events (see Branch's, 1977 response to Shimp, 1976), and (b) problem-solving, as in trying to remember something (see Palmer, 1989). We will address the latter later in the course in the context of problem-solving. The former is not essentially verbal, so we will set it aside. For some relevant literature, though, see Jack Marr's (1983) "Memory: Models and Metaphors" which, in part, compares and contrasts the behavioral and cognitive views on memory. Other psychologists, by the way, sometimes come to positions not unlike a behavior analysis. See, in particular, Michael Watkins' (1990) article, "Mediationism and the Obfuscation of Memory." Watkins, however, does not admit to being a "behaviorist" and misdescribes the behavior-analytic approach to memory, especially memory as problem-solving.

Stimulus Equivalence

Although stimulus equivalence is subsumed under relational frame theory, stimulus equivalence itself will arise throughout the course and be central to an analysis of verbal behavior. As mentioned before, the importance of relational frame theory and stimulus equivalence lies in their accounting for the "acquisition" of behavior that has no prior history of *direct* reinforcement and that cannot be explained by stimulus generalization. These are the sorts of behaviors -- new behaviors in situations not previously encountered -- that behavior analysis is said to have no account of. This criticism is especially common in the area of language development because "emergent" behavior of this sort is so common. Lacking a proper account of such phenomena, behavior analysis is said to be deficient as a theory of language

development, where a linguistic-cognitive account is thereby said to be necessary (Chomsky, 1959). Research on stimulus equivalence and verbal behavior suggests that behavior analysis is not so deficient, though.

Murray Sidman (1971) is largely credited with the modern discovery of stimulus equivalence and he has his own perspective on it. For an overview, see Sidman (1986); for a broader treatment, see Sidman (1994); for his most up to date treatment, see "Equivalence Relations and the Reinforcement Contingency" (Sidman, 2000), where he contrasts it with some alternative perspectives. The stimulus equivalence literature is not the easiest material to follow. It will require some careful and close reading, but it will pay dividends. For an overview of stimulus equivalence in the area of verbal behavior, see Genae Hall and Phil Chase's (1991), "The Relationship Between Stimulus Equivalence and Verbal Behavior" (see also deRose, deSousa, & Hanna, 1996; Dube, MacDonald, McIlvane, & Mackay, 1991; Polson, Grabavac, & Parsons, 1997). The relationship is not uncontroversial, of course. It involves such difficult issues as whether stimulus equivalence requires verbal behavior or vice versa (see, e.g., Devaney, Hayes, & Nelson, 1986). For stimulus equivalence research relevant to tacting, see Bush, Sidman, and DeRose's (1989) analysis of the contextual control of emergent equivalence relations. If you feel you need more of an overview, see Murray Sidman's (1986) chapter, "Functional Analysis of Emergent Verbal Behavior." Here, Sidman organizes the nature of stimulus equivalence and its relations by building on the more basic units of analysis (e.g., the three-term contingency).

Naming. Whether stimulus equivalence is a basic behavioral process unto its own in a natural science of behavior or is explained by another process in behavior's natural history remains controversial. "Naming" has been proposed as one of the latter processes by Pauline Horne and Fergus Lowe (1996, 1997) to account for the transfer of function in equivalence relations, albeit a controversial account. For more recent publications from their research program, see Lowe, Horne, Harris, and Randle (2002), Horne, Lowe, and Randle (2004), Lowe, Horne, and Hughes (2005), and Horne, Hughes, and Lowe (2006). For our purposes, we will read Stromer, Mackay, and Remington's (1996) article, "Naming, the Formation of Stimulus Classes, and Applied Behavior Analysis." Tacting, by the way, is not exactly naming. You should know the difference.

Definition

This week's topic, a well as some earlier ones, may benefit from a consideration of what we mean by a "definition." For this, we will read Jay Moore's (1984), "On the Tactful Specification of Meaning: A review of Harre and Lamb's *The Encyclopedic Dictionary of Psychology*.

Take-Home Assignment

Please read Chomsky (1959, pp. 47-50) on "tacts." Then, on the basis of the other assigned readings, critique his analysis in one APA page or less. You need not draw your Chomsky from this material, but these pages are the most closely focused on the assignment in *Verbal Behavior* this week.

Term Paper Assignment

Please prepare five more annotated references, plus your first five annotated references and your topic, all revised as edited or requested.

Cites and Citations

For readers interested in the scientific and literary reference citations Skinner listed in this chapter, see Carew (1670), Carnap (1937), Newman (1956), Richards (1934), Russell (1940), Sheridan (1910), Skinner (1942), Spurgeon (1935), Tooke (1857), Watson (1924), Weiss (1929), Wells (1937), and Wilstach (1917).

For material in *Verbal Behavior* that corresponds to material in *Notebooks, B. F. Skinner* (1980), see: 82,1 (320.1), 82,2 (295.2), 85,1 (295.2), 86,1 (193.2), 86,2f (145.1), 87,1 (312.2), 88,1 (213.1), 88,2 (268.1), 94,2 (112.2), 95,2 (71.1, 112.2), 97,2 (76.1, 225.2), 98,1f (112.2, 326.1), 99,1 (10.2), 99,2f (107.2, 192.2, 203.1, 256.1, 332.1, 353.3, 355.2, 357.1), 99,3 (99.1), 102,1 (260.1), 108,2 (222.2), 111,1f (10.2. 222.2, 320.1), 114,2f (114.1), 117,2 (320.1, 341.2), 120,2f (133.1), 124,2f (173.2), 124,3 (345.1), 125,1 (324.2), and 127,1 (10.2).

Discussion Questions and Objectives

1.   Be able to supplement the last sentence of 81.1 with a qualification regarding the relevant establishing operation.

2.   What is a tact? Give some examples of tacts and explain why they fit the definition (81.3-82.0).

3.   In 82.1, Skinner rejects common sense terminology for the tact relation as a response that "refers to," "mentions," "announces," "talks about," "names," "denotes," and "describes" its stimulus. Why?

4.   Be able to give some original examples like those in 82.2, and to explain what they are examples of.

5.   Be able to contrast mand and tact as in 83.1, especially with respect to the last sentence of the paragraph.

6.   What is a "pure" tact, and therefore what is an impure tact (83.2, 147.1)? Why do tacts differ in degrees of "purity" or "objectivity"? Why is it advantageous to the verbal community for tacts to be as pure and objective as possible? (83-84)

7.   In applied behavior analysis programs for retarded and autistic children, bites of dinner food may be used to reinforce the children's correct naming of pictures. Are the children emitting mands, tacts, or something intermediate between the two (83-84)?

8.   Explain whether the following individuals are emitting mands, tacts, or something intermediate between the two in the following cases: (a) Scientists who publish falsified data in order not to "perish" or in order to advance their careers; (b) scientists who "see" and report more in their data than there really is; (c) scientists who report their findings with complete accuracy.

9.   Discuss the reciprocal relationship between the evolution of science and the development of increasingly pure tacts (83-84).

10.   Skinner identified four sources of reinforcement for the tact in this section. One is an explanation of the question mark in Fig. 5; one is related to Fig. 6, one is like one type of reinforcement for the intraverbal relation; and one is "automatic" reinforcement (see also 440.4). Be able to explain and provide examples for all of these sources of reinforcement (84.1-86.1).

11.   Be able to describe and explain Watson's and Russell's attempt to explain the effect of the speaker's tact on the listener (i.e., the speaker's "reference") in terms of Pavlovian conditioned reflexes (86.2-87.1).

12.   What are Skinner's objections to the Watson-Russell account, and why does he feel that his own interpretation is more satisfactory? (86.2-89)

13.   What do we mean behaviorally by the listener's belief in the verbal behavior of the speaker? What factors determine this belief? See 88.2, and also 42.3 for a similar section on the mand.

14.   In connection with the next to last sentence of 88.3, read 315.1.

15.   Explain what Skinner means by "the linkage is merely longer" in 89.1.

16.   The form of a tact is controlled by a prior discriminative stimulus, but whether tacting occurs at all or not is further determined by other stimulus conditions. Skinner gives three such conditions in 89.2. What are they?

17.   The last sentence of 90.1 is an explanation of what?

18.   What is an extended tact (91)?

19.   Be able to make the general points that are being made in the next to last and last sentences of 92.1, and in 92.3, 107.3, and 311.2.

20.   Note "for the first time" in the second sentence of 93.1 and also the expression "appearance" in the middle of the paragraph, which should be taken to mean "first appearance for a particular speaker."

21.   Make the main point of 93.2 about metaphors becoming standard tacts. That is, explain why expressions such as "the eye of a needle" were probably once extended tacts, but seldom or never are now (93-95).

22.   What is a "dead metaphor" and what are the "traces of extension" (94.2)?

23.   An important analysis of the evolution of increasingly effective verbal behavior is made in 94.3 and 95.1.

24.   Synthesize some general points from 96.1, first sentence (pressure for metaphor), 99.1 (science and literature), 50.2 (same sort of point), and the beginning of 418.1 (the role of the literary community).

25.   Note the rather subtle basis for extension described in 97.1 ("Juliet is the sun").

26.   What is the value of metaphor? See 97.3 and 98.1, as well as the long footnote.

27.   What is the main point of 98.2-98.3 about the development of literary vocabulary through metaphor?

28.   What is the main point of the first half of 100.3 about the rareness of true metonymy?

29.   Read 102.1-106.3, and try to develop a precise definition of solecism.   There are a number of interesting points in this section (e.g., why proper names are easy to forget) -- know them.

30.   Define, explain why they occur (insofar as possible), discuss, and give examples illustrating each of the following: (a) generic extension of a tact; (b) metaphorical extension of the tact (see 95 for the distinction between a and b); (c) metonymical extension of the tact; (d) solecistic extension of the tact; (e) nomination (when is it an extended tact and when is it not, and explain); and (f) guessing (when is it a tact, and when is it not, and explain) (91-106).

31.   Discuss, with examples, conditions under which an extended tact will be maintained and adopted (and how) by a verbal community, and the conditions under which (and how) it will be extinguished or punished by the verbal community (see, e.g., 94-95, 97-97, 102).

32.   What is the behavioral interpretation of the term "abstract," as in "abstract word" or "abstract concept"? For that matter, what is a "concept" (see 107.1-107.2)? In other words, what is an abstract tact?

33.   How does the verbal community establish abstract tacts in the speaker?

34.   Give an example illustrating how the process of abstraction can be demonstrated in species other than humans. Explain why the behavior of organisms in an operant conditioning experiment must be considered verbal by Skinner's definition? Does this invalidate or weaken the definition? See 107-108.

35.   What is the main point of 108.1 about abstraction and complex properties?

36.   Why is the process of abstraction probably never complete (109)?

37.   Be able to explain why abstraction is a particularly verbal practice. That is, why could a nonverbal response never probably come under the exclusive control of a stimulus property such as "redness," whereas a verbal response can? Provide original examples illustrating this point. See 109.1-109.2.

38.   Discuss how abstraction, things, and the properties of things have been a source of confusion to philosophers of knowledge. Does Skinner's account help to clarify these issues? Explain (109-113).

39.   A very important point is made in 112.3, and is referred to a number of times later. Be sure you understand this point about the discovery of referents of abstract tacts as an empirical process. How can we empirically investigate the "meanings" of abstract tacts? See 112-113.

40.   Describe the main points about the importance of abstraction in comparison to a repertoire of "proper" tacts (113.1-113.2) and about the dynamics of extended tacts (113.3-114.1).

41.	Explain why, in general, the degree of abstractness of a tact is directly related to the ratio of unreinforced to reinforced instances of its occurrence (114).

42.	How does Skinner restate and deal with the problem of reference. Note the last sentence of 114.2, where Skinner describes two aspects of language that most interest language scholars: (a) the effects of verbal stimuli on the listener and (b) the verbal practices and conventions of the verbal community. These are not Skinner's interests, though -- his is in the behavior of the speaker.

43.	Note the important general point regarding the application of behavioral concepts in the last sentence of 115.1.

44.	The general approach of this whole section is stated in the last two sentences of 116.0.

45.	Be able to compare and contrast the various minimal repertoires (including CT and TD and duplic sign behavior) in 116.1-117.1. But, for the tact also consider 120.2-123.1.

46.	Why does Skinner feel that such units as "morphenes" and "affixes," etc. are not particularly helpful in the type of analysis he is conducting? How can we empirically determine the functional units of tacts? See 120-123.

47.	Review 82.3, and then look over 326-327 as a way of understanding further the statement near the end of 116.2 regarding assertion (see also the last chapter of Peterson.)

48.	Note carefully the solution to the problem of the referent of the abstract tact and Skinner's criticism of it in 117.2.

49.	What are the disadvantages of homonom and synomyny? See 118.1-119.1.

50.	In echoic and textual behavior, there is a point-to-point correspondence between stimuli and responses. Through extended training, smaller responses come under the control of smaller stimuli; this is called the development of a minimal repertoire (see 61-64). In intraverbal behavior, there is no point-to-point correspondence between stimuli and responses; small units of responses are developed, of course, but there is no functional unity of small stimuli and responses, as there is in echoic and textual behavior (see 76-77). In an "ideal language," tacts would be like echoics and textuals; that is, there would be a point-to-point correspondence between stimuli and responses and, through extended training, smaller responses would come under the control of smaller stimuli. With special reference to Figure 7 (118), discuss the extent to which this state of affairs is approximated, and why the approximation is not perfect and not possible (115-120).

51.	Explain why models, pointing, quotations, onomatopoeia, hierglyphs, and pictographs approach the types of operants necessary for an "ideal language" (123-127). Note a point in favor of sign language over vocal behavior in 124.2.

52.   127.2 is quite important. Master all terms and relations.

53.   Who comes closer to the truth -- the scientist or the poet? (127)

54.   Understand the main points of 128-1-129.1: Traditionally, linguists and philosophers have believed that words had to refer to things. They then were faced with having to find the referents of such words as "please" and "Caesar." Using these two words as examples, discuss how Skinner's treatment resolves the difficulty (128-129).

Quiz Questions and Answers

1.   Without mentioning the establishing operation, deprivation, or aversive stimulation, complete the following sentence: A mand is characterized by a unique relation between _____ _____, whereas a tact is characterized by a unique relation between _____.

> A mand is characterized by a unique relation between *the form of the response and the reinforcement characteristically received in a given verbal community (or characteristic consequence),* whereas a tact is characterized by a unique relation between *a prior stimulus and the form of the response*.

2.   Roughly speaking, the mand permits the listener to infer something about _____, regardless of _____, while the tact permits the listener to infer something about _____, regardless of _____.

> Roughly speaking, the mand permits the listener to infer something about *the condition of the speaker*, regardless of *the external conditions*, while the tact permits the listener to infer something about *the circumstances*, regardless of *the condition of the speaker*.

3.   In addition to the generalized reinforcement received in the process of being educated, what is the main source of reinforcement for the tact?

> The reaction of the listener as the result of being able to behave effectively because of the speaker's tact. In other words, listeners benefit from tacts by being able to do something that they could not have done if the speaker had not emitted the tact. This improved effectiveness either functions directly as reinforcement for the speaker or the listener provides reinforcement (e.g., "Thanks," and other forms of gratitude).

4.   Describe two types of automatic reinforcement.

> Skinner calls them (a) autistic or artistic and (b) practical. The former is reinforcement that results when the response produced is reinforcing because of its similarity to some other stimulus that is already reinforcing (e.g., a person adopts the verbal mannerisms, pet phrases, and vocabulary of an admired person -- so called "identification"). The latter is when the response produced functions as a discriminative stimulus for some subsequent behavior that can be carried out more effectively because of the discriminative stimulus (e.g., when naming an object permits the speaker to respond more effectively to it in some other way).

5.   Which type of automatic reinforcement -- autistic/artistic or practical -- is also a source of reinforcement for the tact?

> The "practical."

6.   Whether tacting occurs or not depends on the presence of a listener, and if the listener indicates a disposition to reinforce the tact by saying "What is that?" tacting is likely to be strong. What other situation is especially favorable for the occurrence of a tact?

   The stimulus condition that controls the tact should be quite novel in some respect, for example, its location or condition (e.g., the billiard table at the bottom of the swimming pool).

7.   (a) Give the three terms for the three types of tact extensions; (b) explain how they differ from one another; (c) and, in the case of the tact extensions that is least useful to a listener, explain why such a response occurs at all.

   (a) Generic, metaphoric, and metonymic. (b) In the generic extension, the new stimulus has all the defining features relevant to the culture's reinforcement practices; in the metaphoric extension, the stimulus has some, but not all of the defining features; and in the metonymic extension, the stimulus has none of the relevant features determining the community's reinforcement for that response. (c) In metonymic extension, the response occurs because of some other stimulus that has been present along with the defining features, but that is not part of those features.

8.   Provide a behavioral translation of each of the following: (a) A speaker uses a response to describe a stimulus. (b) A speaker uses a response to describe or disclose a need. (c) A speaker invents a figure of speech to express a similarity between a novel stimulus and another more familiar stimulus.

   A particular response form is evoked by a particular type of a stimulus. (b) A particular response form is evoked by a particular establishing stimulus or eliciting stimulus. (c) Because of its similarity to a more familiar stimulus, a novel stimulus evokes a response that was previously reinforced with respect to the more familiar stimulus.

9.   What is the behavioral difference between a dead metaphor and a generic tact?

   The dead metaphor may still show the "traces of functional extension" in that it is more easily learned, less easily forgotten or interfered with by new learning, etc. than the generic tact. For instance, even though you learned "leg of a table" as a standard tact -- that is, as the name of that object -- its metaphorical characteristic probably makes it easier to remember, less interfered with by new learning, etc.

10.   Faced with a stimulus for which a speaker has no generic tact, there are two common alternative types of behavior possible. What are they?

   "Metaphor" and "abstract tacts" -- Skinner later calls them "common nouns," as contrasted with "proper" nouns.

11.   Even when a generic tact is available, a nongeneric extension may be more effective. Give two reasons why, and provide examples that illustrate these two possible advantages of the nongeneric form.

> It may be more familiar to a particular listener, and it may arouse emotional responses, which is a form of effectiveness if one is trying to influence a listener in some way. Examples in which Skinner seems to be including dead as well as spontaneous metaphor: In certain subcultures (e.g., teenage youths), some slang metaphors (e.g., "up tight," "all wound up") are probably more familiar to listeners than "emotionally intense" or some other more generic terms. For the emotional effect, again in some settings, to remark to one's companion that "You sure turn me on" may have better effects than "I find you very sexually stimulating."

12.   Explain carefully why abstraction is a peculiarly verbal practice, and illustrate your explanation by discussing the abstract tact "round."

> Because nonverbal (i.e., practical) behavior is seldom if ever uniquely related to some *single* stimulus feature. That is, there is no practical response (e.g., eating, picking up, throwing, storing) that is uniquely correct for all round objects. There is only the verbal response of saying "round" that is the correct thing to do with respect to all round objects irrespective of other features.

13.   Provide a possible explanation of the increasingly popular "share," as in "I'd to share my analysis of our situation with you."

> Before giving mine, I want to see what you all say.

14.   Briefly, what is Skinner's general reaction to poetry (see *Notebooks*)?

> It is ok for fun, but should not be taken seriously -- it should not be considered a basis for any practical action or any serious scientific purpose.

15.   In any pair of tacts, we note that the stimuli may be the same, similar, or different -- and likewise the responses. From Skinner's Figure 7, (a) consider one tact to be a tendency to say "hare" as the result of seeing a rabbit. Provide second tacts ("a tendency to say _____ as the result of _____) which, with "hare," would illustrate cells 2, 3, and 7 of the figure.

> (a) A tendency to say "hare" as the result of seeing any small furry animal, any rapidly moving object or especially one that starts suddenly, or any situation involving a high birth rate, or timidity, etc. (b) A tendency to say "hair" when seeing someone's hair. Note that when you say it, "hare" and "hair" are indistinguishable -- vocally they are the same response -- only in writing, and this example does not involve writing. (c) A tendency to say "rabbit" on seeing a rabbit.

16.   Given the above, provide your own original examples of pairs of tacts that illustrate cells 5 and 6.

   (a) "Strike" as controlled by a violent blow and "stroke" as controlled by a gentle touching motion. Both involve contact with the hand, etc., and both start with the same consonants and end with the same consonant. (b) For cell 6, "type" and "ripe" are similar responses, but controlled by very different stimulus conditions.

17.   Why does Skinner try to avoid metaphor in his writing (see *Notebooks*)?

   Because it will not be effective unless the reader has a similar history to the writer. Skinner also suggests that it tells too much about the writer, but the above is his real reason.

Name: _____

Reading Ratings

Topic 5

Controlling Variables: The Tact and Public Stimuli

	Ranking for this assignment (1-5)	Rating for the course (1-5)
Skinner (1957)	_____	_____
Cornwell & Hobbs (1984)	_____	_____
Stewart & Barnes-Holmes (2001)	_____	_____
Stromer et al. (1996).	_____	_____
Moore (1984)	_____	_____

(The lower the number, the higher the ranking or rating.

_____

Other comments or queries?

VERBAL BEHAVIOR

ABSC 931

Topic 6

Controlling Variables: The Tact II:

Verbal Behavior under the Control of Private Events

Assigned Reading

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Recommended Reading

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Commentary

This week's assignment takes up the second part of Skinner's analysis of tacts -- tacting private events -- as well as related material on consciousness. Skinner's presentation here shows that he has been misunderstood about ignoring private, covert action (e.g., as either stimuli or responses). He does not dismiss such activity or the tacting thereof, but his analysis is not the usual one, especially with respect to the non-causal status of private events.

Private Events

Please begin with Skinner (1957, pp. 130-146). This is not a long assignment, and will complete our chapter on tacts. Here, Skinner takes up the topic of "verbal behavior under the control of private stimuli." For introductions to this material, see Catania (1998), Peterson (1978), and Segal (1975). For further refinement of it, see its original presentation in Skinner (1945) and its subsequent elaboration in Skinner (1953). In the earlier contexts, Skinner was complaining about how psychologists were turning "psychological terms," descriptive intervening variables, or concepts that referred to observables (e.g., personality, intelligence) into unobservable explanatory hypothetical constructs. In his view, this "operationalizing" of psychological terms was mentalistic. Proper operationalization seeks the meanings of psychological terms not through measurements of behavior said to index mental states and events, but in the discriminative stimuli that set the occasion for speaking those mental terms in the first place (e.g., people's behavior in context; see Skinner, 1989). After this, please turn to Jay Moore's (1980) "On Behaviorism and Private Events," which reviews Skinner's analysis and then discusses how radical behaviorism differs from methodological behaviorism (e.g., cognitive psychology) in these matters (see also Day, 1976; Moore, 1992). Actually, you may want to read the first part of Moore (1980, pp. 459-465) *before* reading Skinner; it might provide some assistance.

Causal status. The "causal" status of private events is usually what interests people the most. That those events *are* causal is an assumption that runs deep in Western philosophical traditions and related folk psychologies, as well as in modern psychology – both non-experimental (e.g., humanism, phenomenology) and experimental (e.g., cognitive psychology). In behavior analysis, private events – as both behavior and environment -- may be either epiphenomena or they may be causal, but where they are causal, they are not uncaused causes

nor reducible to the physiology. Moore (1984, 1992) addresses this point in another paper, where, like Skinner, he points out that the causal status of private events are ultimately tied to public contingencies (see Hayes & Brownstein, 1986; Overskeid, 2000). Still, they may function as causes, although Skinner was not entirely unambiguous on this point.

For good analyses of these private relations, see Roger Schnaitter's (1978) "Private Causes" and Jerry Zuriff's (1979), "Ten Inner Causes." As for research topics concerning the tacting of private events, see Sundberg (1991, p. 88). For an example of such research, see Lubinski and Thompson's (1987) an animal model of the interpersonal communication of private states between pigeons. For a more recent treatment of these issues, especially with respect to issues regarding cognition and emotion, see the special section of the 2000 issue of *The Behavior Analyst* with articles by Anderson, Hawkins, Freeman, and Scotti (2000), Dougher and Hackbert (2000), Moore (2000), and Wilson and Hayes (2000). For a response to these articles, see Calkin (2002). For a recent dialog of private events, see Palmer et al. (2004) -- "Dialog on Private Events." Moore, J. (1992). On private events and theoretical terms. *The Journal of Mind and Behavior, 13*, 329-346. Our next reading is a recent article that summarizes some of these issues by Emmanuel Tourinho (2006), "Private Stimuli, Covert Responses, and Private Events: Conceptual Remarks."

Measurement. A recent turn in the analysis of private events comes from a new research methodology in cognitive psychology called "protocol analysis," pioneered by Ericsson and Simon (1993). For a review of their book, see Hayes (1986; see also Hayes, White, and Bissett, 1998). For an argument on its usefulness in behavior analysis, see John Austin and Peter Delaney's (1998), "Protocol Analysis as a Tool for Behavior Analysis." For some reservations about its usefulness, see Tom Chritchfield and Kimberly Epting's (1998) reply to Austin and Delaney (1998), "The Trouble with Babies and the Value of Bathwater: Complexities in the Use of Verbal Reports as Data." For another research program that "teaches" private events as self-instructions, see Duarte and Baer (1994), Fjellstrom, Born, and Baer (1988), Grote, Rosales, and Baer (1986), and Grote, Rosales, Morrison, Royer, and Baer (1997).

Consciousness and Phenomenology

One of the important topics that falls under the purview of private events is consciousness and phenomenology. Indeed, for some psychologies, consciousness and private, phenomenological experience are the essence of psychology; everything else is secondary (e.g., behavior). Their research methods are purely descriptive -- phenomenological. These psychologies generally view behaviorism as either denying or dismissing consciousness and private experience. As you will have gleaned from reading Skinner (1957) and Moore (1980) this week, this view of behaviorism – at least, Skinner's radical behaviorism – is wrong. For the topic of consciousness, we begin with Hank Schlinger's (2008) article, "Consciousness is Nothing but a Word." Actually, I would argue against this phrasing. If "consciousness" is a tact, then it is a things and its relations. Next, we turn to Schlinger's (2009) article, "Auditory Imaging," which brings us closer to the topic of verbal behavior. You might also see Moore's (1994) chapter, "On Introspection and Verbal Reports." This reviews some of his analysis of private events and speaks to issues that are raised in protocol analysis, but also extends them into the topic of consciousness. By the way, the relations spoken of as "consciousness," which

includes verbal behavior under the control of private stimuli, are of social origin. You might think about what this means; we may discuss it in class.

The received view among phenomenologists notwithstanding, some if their non-mainstream has an affinity to Skinner's radical behaviorism in that consciousness is "direct experience," not something mediated or represented in the mind. For a history and the origins of consciousness, see Julian Jaynes' (1976) *The Origins of Consciousness and the Breakdown of the Bicameral Mind*; it has been read sympathetically by some behavior analysts. For a more interbehavioral account, see Smith (1997; see also Nickel, 1997). For a more direct comparison and contrast between phenomenology and behavior analysis, we will read Willard Day's (1969) article, "Radical Behaviorism in Reconciliation with Phenomenology" and then Amado Giorgi's (1975) "Convergences and Divergences between Phenomenological Psychology and Behaviorism: A Beginning Dialog." For other sympathetic material, see Kvale and Grenness (1967), Morf (1998), Wann (1964), and Woolfolk and Sass (1988).

One other topic that comes up in this material is "memory." Again, we will put it off until later in the course because not all memory is verbal. In some cases, as mentioned last week, memory is the field of discriminated operant behavior – nonverbal (e.g., looking for a pair of clean socks in your clothes dryer; see, e.g., Branch, 1977; Kritch & Bostow, 1993; Marr, 1983; see also Watkins, 1990) and verbal (e.g., answering "Frederick with a 'k'." when asked what is the most common misspelling of Skinner's name). In other cases, memory – actually, remembering -- is a form of problem-solving, and thus often verbal, as in trying to remember someone's name or where you put your car keys (see, e.g., Delaney & Austin, 1998; Palmer, 1991). We will touch on this later in the course.

Cites and Citations

For readers interested in the scientific and literary reference citations Skinner listed in this chapter, see Lee (1941), Michotte (1946), Ryle (1949), Stendhal (1936), and Suetonius Tranquillus (1939). For material in *Verbal Behavior* that corresponds with material in *Notebooks, B. F. Skinner* (1980), see 130,1f (73.1, 227.2, 335.1), 132,2 (71.1), 136,1 (122.1), 136,2 (143.1, 209.1, 264.1, 354.1), 138,3ff (353.2), 141,1f (68.1, 132.2, 227.2), 142,2 (212.1), 142,2f (24.1, 28.2, 145.1, 339.2), and 143,1 (98.1).

Take-Home Assignment

Please read Chomsky (1959, pp. 50-51) on Skinner's analysis of tacting private events. Then, on the basis of the assigned readings, critique his critique in one APA page or less.

Term Paper

No assignment.

Discussion Questions and Objectives

1.   What are private stimuli? Give some examples. How do private stimuli differ from public stimuli, and how are they similar to public stimuli? (130-131)

2.   What two problems does the existence of verbal behavior under private stimulus control raise in the analysis of verbal behavior? (130.2-130.3)

3.   What is the point of the description of how a blind person learns the names of objects, since private stimuli are not involved in this example? Be able to provide an analogy between this example and the first two ways of learning control by private stimuli. That is, be able to say that the blind person is like the child learning to say "Hurts" -- and what is like the tactile aspects of the objects for the blind person and what is like the visual characteristics of the objects for the sighted person, etc. (131.2)

4.   Be able to explain the point of the discussion of "sharp pain." If "sharp" were metaphorical, how could a pain be similar to a sharp object? (It is possible.) Here, Skinner is suggesting that it is probably metonymical. What is the accompanying stimulus and what are the defining features? Make an analogy between this metonymy and saying "dog" when seeing a dog collar. (133.2)

5.   In general, describe and give examples of the four ways in which a reinforcing community with no access to a private stimulus may generate verbal behavior with respect to it? (131-133)

6.   What are the limitations of each of the four ways of establishing private stimulus control? Do not just memorize Skinner's phrases for these limitations. Think up some example that illustrates the limitations. (133.2)

7.   In psychological experiments, why should a subject's private reports of private stimuli be interpreted cautiously? (133-134, 139).

8.   The insert material on pages 134-135 consists of three paragraphs. Each makes a point and then illustrates and supports the point with examples of arguments. The third makes a rather complex point consisting of two main subpoints. Know this material.

9.   Starting 134.1, Skinner is discussing problems or confusions or misunderstandings that result from a failure to understand how private stimulus control is developed and a failure to appreciate its limitations. The difficulties are introduced in general terms in 134.1. In 135.1, the first sentence expands on the general difficulty surrounding such terms. This type of difficulty is then illustrated by the example of "I am hungry." Be able to state the general point being made and to find other examples that are similar -- for example, work over such expressions as "I am angry" or "I am happy." Also, be able to explain how Skinner deals with "beautiful" in terms of the analogy at the end of 136.2. Try to find other examples of this process.

10.   Explain why the tacts "beautiful" and "familiar," although appearing to describe the properties of things, are at least partly under the control of private stimuli. (136)

11.   Describe a hypothetical experiment that might be done to demonstrate that a private event by a public stimulus could acquire some control over a verbal response conditioned to that public stimulus.

12.   On 137.1, 138.1, and 138.2, Skinner discusses cases where the tendency to explain verbal behavior in terms of private stimuli may be incorrect. He supplies other interpretations than the usual ones. Be able to give his interpretations of "afraid" as the "reversal of the process," etc., and of the jumping bean example. What is the main point of 138.1 and 138.2?

13.   In Skinner's terms, what are the "pathetic fallacy" and "projection," and what accounts for these phenomena? Why is it wrong to assume that all instances of these phenomena involve private events? (137-138)

14.   Animistic verbal responses may or may not be under the partial control of private stimuli. Explain. (138)

15.   Be able to give examples of self-tacts and also self-intraverbals and self-echoics (see 64-65, and note especially the point in 56.1). What would self-mand be? Would it have any value to the mander? (see 440)

16.   Be able to state Skinner's point about self-awareness in 139.1, 140.2, and the second paragraph of the inset material on 134 in regard to the social origin of awareness.

17.   Suppose a person were raised in an environment that did not reinforce tacts. Discuss whether such an individual would have any "self-knowledge," "self-concept," or "self-awareness." (134-135, 139, 140)

18.   What is the main point of 139.4: "I see red" as contrasted with simply saying "red" as a tact?

19.   For students familiar with Blough's psychophysical experiments on pigeons: How did Blough teach pigeons to emit covert responses equivalent to "I see a light" and "I do not see a light," even though the experimenter could not independently verify the occurrences of these private events? Discuss how this relates to Skinner's treatment of verbal responses to current behavior. (139-140)

20.   What are the main points of 141.1, plus the bottom half of 58? What is automatic self-reinforcement? Distinguish this self-tact from giving yourself a present when you finish some difficult task.

21.   What are the two reasons why verbal behavior becomes covert? (141.3) Why might this be truer of verbal than nonverbal behavior?

22.   What are the main points of 142.2-142.4 with respect to responding to past events?

23.   Be able to distinguish between profiting from the past and reacting to the present. (143.1)

24.   In 143.3, another reason is suggested for why verbal behavior becomes covert. Put this with the other two, and then read 435.2-437.0.

25.   Be able to give and recognize examples of responses to the variables that control behavior. (143.3, 143.4, 145.1)

26.   Explain, and give examples illustrating, how Skinner accounts for each of the following types of verbal responses to the speaker's own behavior: (a) responses to current behavior, (b) responses to covert behavior, (c) responses to past behavior, (d) responses to potential behavior, (e) responses to future behavior, (f) responses to variables controlling behavior, and (g) responses to the level of probability of behavior. (139-145)

27.   What value does Skinner see in this effort to understand a speaker's responses to their own behavior? (145.2, 146.1)

28.   Discuss how a study of verbal responses under the control of the speaker's own behavior could bring about methods for developing "a better 'memory for past events,' a better manipulation of one's own behavior in problem-solving and productive thinking [plus lead to] therapeutic advantages which the layman would describe as an increase in the awareness of, and understanding of, oneself." (146)

Quiz Questions and Answers

1.   (a) List the six main types of receptor systems and all subsystems. (b) Which subtypes are purely private? (c) Which subtypes are "sort of private and sort of public"?

> (a) Photo, phono, chemo (olfactory and gustatory), mechano (surface touch, deep touch, kinesthetic, and vestibular), thermo (surface and deep), free nerve endings (surface and deep pain). (b) Deep touch, deep thermo, and deep pain. (c) Kinesthetic and surface pain.

2.   Give the names of the first two ways of bringing verbal behavior under the control of private stimuli and describe each carefully, but without using any examples. Your description should also be sufficient to distinguish between the two ways.

> The first is "common public accompaniment:" Some publicly available events are commonly accompanied by private stimuli. These events function as stimuli for the verbal community, on the basis of which they engage in verbal behavior regarding the relevant private events. The learner's behavior comes under the control of the private stimuli, sometimes, even though the teacher only has access to the public accompaniment of these private events. The second is "collateral responses:" Some private stimuli are often accompanied by public stimuli arising from behavior of the person experiencing the private stimuli -- perhaps they generate the relevant behavior (in an unlearned manner) or possibly they are learned as responses to the private stimuli. Note that this arrangement is just like the common public accompaniments except that these public accompaniments arise from the learner's behavior, whereas the public stimuli above do not.

3.   Why does verbal behavior become covert?

> Verbal behavior becomes covert for three reasons: (a) ease of execution, (b) punishment, and (c) simple response weakness. It may also be pointed out that verbal behavior is likely to remain in some strength at the covert level because it can have useful effects on the speaker as listener (e.g., a kinesthetic listener, or something other than auditory).

4.   (a) Describe the example involving the blind man and include in your description all the features essential to making the point that Skinner was making with this example. (b) What was the point of the example? (c) Give an original example of each of the two ways you described in Question 2 above. (d) Indicate for each of your two examples above which parts are analogous to which parts of the blind man example. (e) Why does the blind man learn his task much better than we learn to talk about private stimuli?

> (a) A blind man learning the names of a tray of objects (e.g., pyramids, cubes, spheres, etc.) from a sighted person. The sighted person identifies the objects from their visual characteristics and the blind man learns to identify them from their touch (and possibly kinesthetic) characteristics.

> (b) That the teacher and learner need not be reacting to the same stimuli.

(c) A person learns to say "I am drunk" under the control of private stimulation (e.g., visual, kinesthetic, etc.) by someone else observing the person consuming a large quantity of alcohol or at least a sufficient quantity. A person could also learn it by the teacher observing loud slurring speech, staggering, etc.

(d) In each example, the private stimuli (coming from visual aberrations, internal sensations, auditory difficulties, etc.) are analogous to the tactile stimuli that permit the blind man to identify the objects; the visual aspect of the objects that the sighted person reacts to are analogous to the visual evidence that the person had drunk a lot and the auditory features of the drunk person's vocal behavior or visual aspects of his staggering, etc.

(e) Because the correlation between tactile and visual aspects of objects is much higher than the correlations between the common public accompaniments or the collateral responses and relevant private events.

5.	In lecture, I presented a system for understanding the possible multiple interpretations of reports of private events. The system involved six possible translations of "I am hungry" and I numbered these possibilities 0, 1, 2, 3, 4, and 5. The numbers 1 through 4 correspond to Skinner's four ways that verbal behavior is brought under the control of private stimuli. Skipping 3 and 4, provide examples of "I am drunk" for 0, 1, 2, and 5. Please number your answers (0), (1), (2), and (5), and let your numbers 1 and 2 correspond with Skinner's first and second way of bringing verbal behavior under the control of private stimuli.

(0) "I feel my insides behaving peculiarly," "My vision is unusual," etc. (1) "I have just drunk a lot of booze." (2) "I am staggering," "I am slurring my speech," etc. (5) "Take me home," "Let me out of some unpleasant task," "Give me some special consideration," etc.

6.	How does a deaf signer learn to describe accurately (in sign language, of course) to someone else that he is covertly signing?

The answer has three components, though not necessarily in order. First, the deaf signer learns to describe the signs he makes overtly; for instance, others ask a child in sign language what he just signed. The signing is overt and publicly available visually. Second, private kinesthetic stimuli arising from his signing motions are available at the same time as the public visual stimuli. The teacher cannot react to these kinesthetic stimuli, but they are always present and the learner can certainly feel them. Third, when the signing becomes covert the visual stimuli are no longer available. The kinesthetic ones are though, but at a smaller magnitude, and on the basis of these the learner can describe his covert behavior.

7.	(a) Describe the method for bringing verbal behavior under private stimulus control that is called "common properties," but do not use any examples. (b) Give an example of "common properties" where the extension is generic.

(a) We learn some verbal responses under the control of public stimulus features; the private stimuli that share some properties in common with these public events simply evoke the same verbal behavior. This is simply tact extension, and may be generic, metaphoric, or metonymic. Skinner discusses this as though it is mostly metaphoric, but I think that much is generic, particularly with geometric, temporal, and extensive.

(b) We learn to say "sudden" with respect to a variety of public events that illustrate rapid changes. When a private stimulus then has some sudden aspect (e.g., beginning, ending, changing in quality, etc.), then the term "sudden" simply occurs as an example of generic extension.

8.   From *Notebooks*, what is the therapeutic benefit of therapy that is often referred to as a type of "encounter"?

Answer: Improved social behavior.

Name: _____

Reading Evaluations

Topic 6

Controlling Variables: The Tact II: Private Stimuli

	Ranking for the assignment (1-7)	Rating for the course (1-5)
Skinner (1957)	_____	_____
Moore (1980)	_____	_____
Tourinho (2006)	_____	_____
Schlinger (2008)	_____	_____
Schlinger (2009)	_____	_____
Day (1969)	_____	_____
Giorgi (1975)	_____	_____

(The lower the number, the higher the rating.)

_____

Which of this week's readings, topics, or concepts need further review or clarification? That is, what else can I help you with?

VERBAL BEHAVIOR

ABSC 931

Topic 7

Controlling Variables:

Special Conditions Affecting Stimulus Control and the Audience

Assigned Reading

Skinner, B. F. (1957). *Verbal behavior* (Ch. 6: Special conditions affecting stimulus control, pp. 147-171). Englewood Cliffs, NJ: Prentice-Hall.

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Recommended Reading

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Commentary

This week's assignment covers two primary topics -- (a) special conditions affecting stimulus control and (b) the audience – and many secondary topics. In general, they all concern variables that supplement and distort the primary verbal operants covered thus far (e.g., mands, intraverbals, tacts). These variables account for, in part, variability in what we speak.

Special Conditions Affecting Stimulus Control

We begin with Skinner's (1957, pp. 147-171) chapter, "Special Conditions Affecting Stimulus Control." It covers (a) the nature of generalized reinforcement and how distortions of verbal operants arise; (b) nongeneralized reinforcement, including the listener's operant and respondent behavior; (c) special reinforcement from speakers themselves; and (d) the effects of punishment on verbal behavior.

Believing. Skinner (1957) also touches on other topics, but more briefly. One of them is the nature of belief or, rather, believing-as-behavior. Not much behavior-analytic work has focused on this topic, yet it is an important one. It drives home the point about problems that accrue from using psychological nouns, as opposed to verbs and adverbs, and it allows us to distinguish between behavior analysis and traditional psychology. One overarching approach to beliefs, especially socially acquired beliefs, is what is today known as the "social construction of knowledge" (see Guerin, 1992). We will not delve directly into that material, but instead take up a piece of it, as found in Bernard Guerin's (1994), "Attitudes and Beliefs as Verbal Behavior." This is our second reading.

Clinical implications. Some special conditions affecting stimulus control lead to inappropriate and maladaptive verbal behavior that is sometimes needs intervention. Our third reading addresses such behavior. This is Sigrid Glenn's (1983) article, "Maladaptive Functional Relations in Client Verbal Behavior" (see also Ferster, 1972, 1979; Layng & Andronis, 1984; Lowe & Chadwick, 1990). Among the inappropriate and maladaptive functional relations she addresses is "lying." For more on this, see Mac Parsons's (1989), "Lying." For a non-human analog, see Lanza, Starr, and Skinner's (1983) "'Lying' in the Pigeon." See also Sato and Sugiyama's (1994) chapter, "Lying."

Verbal conditioning. Skinner (1957) also reviews some of the literature on verbal conditioning (see, e.g., Greenspoon, 1955), especially where it is related to verbal interchanges in clinical settings. For reviews of this literature, see Holz and Azrin (1966), Kazdin (1978), and Krasner (1958). For the classic study of a therapist's conditioning of client verbal behavior, see Truax (1966). The clinician's verbal behavior can also be conceptualized more formally in terms of Skinner's analysis and as rule-governed behavior. For recent attempts to do this, see Branch (1987) and Zettle and Hayes (1982).

Reading. The last section of Skinner's (1957) chapter discusses reading and the reader, a topic that he touched on in his material on textual behavior, as well as our coverage of stimulus equivalence (e.g., Matos & Oliveira, 1992; Sidman, 1972; Vargas, 1986). For further coverage, you might see Roy Moxley's (1986) chapter, "A Functional Analysis of Reading" (see Johnson, 1986, for commentary; see Moxley, 1992, for a response). For experimental analyses of reading-related topics, see Goldiamond (1962) and Lee and Pegler (1982). For more applied research, see Daly (1987), McDowell (1968), Neville (1968), and Tenenbaum and Wolking (1989). If you are interested in research topics concerning reading, see Sundberg (1991, p. 91).

The Audience

The next reading is Skinner's (1957) chapter, "The Audience" (pp. 172-181). Here, he describes the general characteristics of audience control, negative audiences, speakers as their own audiences, and additional supplementary variables. Related introductory material may be found in Peterson (1978), Segal (1975), and Winokur (1976). We will expand on this with two additional articles. First, we will look more closely at audience effects per se in Joe Spradlin's (1985), "Studying the Effects of the Audience on Verbal Behavior." Second, we will review a specific study on this topic: Ken Silverman, Steve Anderson, Ann Marshall, and Don Baer's (1986), "Establishing and Generalizing Audience Control of New Language Repertoires." This

is a long article, so give yourself time to read it. Of related interest, you might see Joe Spradlin and Dick Saunders's (1984), "Behaving Appropriately in New Situations: A Stimulus Class Analysis," which returns us to the topic of stimulus equivalence and relates it to audience control. For some research from another tradition, see Jones, Collins, and Hye-Won (1990).

Cites and Citations

The scientific and literary reference Skinner cited in this chapter are Conrad (1923), Diven (1937), Dryden (1949), Greenspoon (1955), Houseman (1945), Lecky (1869), Mandler and Kaplan (1956), Milton (1950), Proust (1914-1927), Skinner (1953), Tolstoy (1931), and Trollope (1953).

For material in *Verbal Behavior* that corresponds with material in *Notebooks, B. F. Skinner* (1980), see: 147,2 (62.1), 148,2 (315.1), 148,3 (209.2), 152,1 (177.1), 152,3 (177.1), 155,3 (11.2), 157,1 (29.1, 45.1, 155.2, 168.2, 199.2, 216.2, 223.1, 244.1, 315.2, 329.1), 159,1 (10.2, 78.1), 159,2f (87.1), 159,3f (133.2, 268.1, 186.1), 160,1 (106.2), 161,1 (105.2, 195.2, 237.2, 291.2), 162,2 (209.1), 164,1f (283.2, 327.1), 166,1f (48.1), 166,3 (59.2), 167,1 (60.1, 166.1), 167,2 (290.1), 168,2 (146.1), 169,1 (293.1), 170,2 (310.2), 173,3 (5.1, 274.1), 175,2 (230.2), 176,1 (230.2, 274.1), 177,2f (54.2, 357.2), 178,1f (19.1, 31.2, 31.3, 47.1, 290.1), and 183,0 (357.2).

Discussion Questions and Objectives

1.   What is the difference between verbal responses called "objective, valid, true, and correct" and those called "subjective, prejudiced, biased, or wishful"?

2.   What is the behavioral difference between the term "objective" and the terms "valid, true, and correct"? Likewise, what is the behavioral difference between the terms "biased and subjective" and the terms "untrue and incorrect"?

3.   Describe how Greenspoon's experiment illustrated how generalized conditioned reinforcement may be used to strengthen particular verbal forms of verbal behavior. (148-149)

4.   The three main kinds of positive consequences that can distort stimulus control of the tact are: (a) special reinforcement from the operant behavior of the listener; (b) special reinforcement from the listener's emotional behavior; and (c) special reinforcement from a change in the strength of the listener's reactions. Explain and give examples of each of these. See also the main headings and related explanatory material on 148, 151, and 163.

5.   Explain how special measures of generalized reinforcement can lead to the following distorted tacts: (a) overestimation of the size of the fish the speaker caught; (b) "Today's my birthday and I got a lot of presents," said to an adult by a child, even though it was not the child's birthday and the child received no presents; (c) exaggerations of battles and heroic acts in the songs of troubadours; and (d) fiction writing by the literary artist.

6.   What are the main points regarding threat and confession? (150.2)

7.   Be able to describe and give examples illustrating the two main kinds on nongeneralized reinforcement. Note, here, that "operant" is being contrasted with "emotional"; thus, "emotional" is at least part respondent. (151, 154)

8.   What is an "impure" tact as opposed to a "pure" tact? Give examples. (151)

9.   The material in 151.3 provides an important supplement to the notion of generalized conditioned reinforcement presented earlier. What are the several main points of this paragraph?

10.   What is Skinner's treatment of "communication" and related points? (152.2)

11.   Be sure you understand and can illustrate the first sentence of 154.2 about how the listener's emotional responses does not explain the reinforcement of the mand.

12.   Speculate on the evolution of poetry from verbal behavior acting in an operant fashion. (154-155)

13.   Starting with 155.1 and going through 158.4 are several paragraphs where relatively specific points about emotion are made at the beginning of each paragraph and then explained and exemplified in the remainder of the paragraphs. Organize and learn this material. The radical

behaviorist position often deals only slightly with this topic. It is interesting and important to see that Skinner does with it here.

14.   Likewise for the section, "The strength of the listener's reaction." What is "belief" and what kinds of events seem to control such tacts as "They believe..."? How might beliefs be heightened? (159-161)

15.   Tentatively, how might we classify or explain hypnosis? (160)

16.   How is stimulus summation (i.e., the presentation of more than one stimulus controlling the same response) sometimes used in verbal behavior? (161)

17.   What is the important distinction between an evocative and a repertoire altering effect in 162.3?

18.   Note carefully Skinner's analysis of some very important verbal responses in 162.4. These responses should be considered mands if they function in the manner suggested in the paragraph.

19.   Note again the concept of automatic reinforcement in 168.1. Review the definition of the concept and be able to give these and other examples.

20.   Give some reasons why people talk to themselves. Why is such verbal behavior often highly idiosyncratic? (163-165)

21.   Describe the main points about self-reinforced behavior and its distortions in 164.2, 165.1, and 165.2.

22.   Note the typical Skinnerian treatment of punishment in 166.2. Be familiar with this theoretical orientation. Note that the suppressive effect of punishment is explained in terms of two processes, and again that automatic reinforcement is appealed to.

23.   Be able to describe some of the effect of punishment on verbal behavior. (167-168)

24.   What accounts for "rationalization"? (p. 168)

25.   An important analysis of reading appears in 169.1-170.2. Be sure you can distinguish textual behavior from nontextual responses by the reader. What is the "short-circuiting" that is referred to in this section? Note again that the "listener" is not usually behaving in an essentially verbal manner. Be able to explain the point of the passages at the bottom of 170.

26.   When a person responds appropriately to written stimuli, textual responses sometimes occur and sometimes do not. Explain why and give examples of each case. (169-170)

27.   Explain why it is generally more difficult for a reader to understand the "poem" on 170 than it is for someone listening to the poem.

28.   Review Peterson's material on the audience effect (78-82).

29.   Note the definition of the audience in 172.2.

30.   What is the difference between the listener function and the audience function of a stimulus? Why are the listener and audience almost always the same person or persons? What is the advantage, than, of using the two different terms -- listener and audience? (172)

31.   Describe examples illustrating the following points: (a) Verbal behavior usually occurs only in the presence of a listener; (b) most repertoires contain mands which specify the appearance or attention of an audience; and (c) audiences which control the largest subdivisions of a verbal repertoire are the communities which establish the reinforcing contingencies of the so-called "languages"; (d) within a single language community, many jargons, patois, cants, and technical vocabularies are controlled by special audiences; (e) different animal audiences control different subdivisions of the repertoire of the speaker; and (f) another function of an audience is to select a subject material. (172-175)

32.   In the middle of 174, Skinner makes an important point, and in the process contradicts ordinary semantic theory. Be able to make this point and to state how the two pairs of terms differ in behavioral terms.

33.   Language theorists have asserted that a proposition is "free to be expressed in any one of many forms." Why has it seemed this way to them, and why does Skinner disagree? (174-175)

34.   What is the difficulty in defining a proposition as "something that may be said in any language"? How does Skinner resolve this difficulty? (174-175)

35.   How does Skinner answer the argument that an idea must exist in some nonverbal form, since it may be expressed in so many different ways? (175)

36.   Why does Skinner say there are no true synonyms? (175)

37.   In the middle of 175, the paragraph begins "A third function of an audience..." What are the three functions? Be able to give examples of audience control that illustrate each of the three functions.

38.   Why is identifying an effective audience generally more difficult than identifying the stimuli that control echoic, textual, intraverbal, and tacting behavior? (175-177)

39.   What verbal function is often served by uniforms and titles? (176-177)

40.   Give and explain in Skinnerian terms an example in which you have unintentionally presented yourself as an audience for an unexpected, and perhaps unwanted, subdivision of verbal behavior. An example which is familiar to all psychologists frequently occurs when we mention our field of specialization to a new acquaintance. At least one famous psychologist is said to tell people met casually on airplanes, etc., that he is an insurance salesman.

41.   Why are we less inclined to write to a friend than to speak to him if he suddenly appears? What measures may be taken to increase the strength of letter writing. Why, in Skinner's analysis, do these measures work? (177-178)

42.   What is a negative audience? Illustrate with examples? (178-179)

43.   The scientific community is a negative audience for much verbal behavior that is positively reinforced by the literary community; and the literary community is a negative audience for much verbal behavior that is positively reinforced by the scientific community. Explain.

44.   What is "repression," according to Skinner? (179, 180)

45.   Critically discuss Skinner's treatment of "the speaker as his own audience." How can we empirically study the manner in which the speaker serves as his own audience? (179-181)

46.   In his spare time, a shop clerk writes for ten years. No one but himself sees his work. Eventually, he produces the Great American novel. Explain how this is possible in terms of the speaker as his own audience. (180-181)

47.   Discuss, with examples, how such stimuli as places and verbal stimuli may acquire an audience effect. What practical implications does this have for the writer in controlling his own behavior? (181-184)

48.   Abstract out the main point or two from each of the last four sections.

Quiz Questions and Answers

1.   An impure tact need not be distorted, although such would not be surprising. Explain.

       "Impure" simply means that the response occurs in part as a mand, that is, a mand
       variable is partly responsible for its strength. Thus, a person says something about a
       situation and says it in part because the response is likely to result in some benefit for that
       person, but the response appears to be simply a tact. Such impurity need not result in
       distortion, although it often does. Thus, people might say that it is raining very hard
       because it benefits them in some way -- but it might be raining very hard.

2.   Some friends ask you about a course they are considering taking. You condemn the
course as very difficult and not worth all the effort, and your statement is a distorted tact (except
that the stimuli are not present -- an issue discussed later). The course is actually not that
difficult and the content is moderately worthwhile. (a) Make up a set of circumstances such that
your response above illustrates distortion due to one of the two types of nongeneralized
reinforcement. (b) Do the same, but for the other type of nongeneralized reinforcement.

       (a) Distortion due to the operant behavior of the listener: Speakers are trying to get other
       people to take a course with them, but the course is one that the listener is actually in
       favor of taking. (b) It is a course taught by an instructor that the listener is very fond of,
       and the speaker is angry with the listener and will be reinforced by any anger,
       disappointment, displeasure at knowing that this person teaches a lousy course.

3.   "Anger" is described by Skinner as, at least in part, an emotional predisposition (see
establishing operation). An emotional predisposition is not equivalent to an establishing
operation, however, but to the effects of an establishing operation on operant behavior. (a) What
is the establishing operation responsible for the emotional predisposition called "anger"? (b)
What are the two characteristic establishing operation effects in the case of anger?

       (a) Interference with ongoing operant behavior, removal of one's reinforcement, aversive
       social stimulation, etc. (b) An establishing operation alters what functions as
       reinforcement. Signs of displeasure on the part of another person become reinforcing,
       while signs of pleasure become punishing for the person who is angry at that person.
       Also, all the behavior that has in the past evoked such signs of displeasure becomes
       strong, while behavior that has evoked signs of pleasure becomes weak.

4.   If we say to someone, "Cheer up" when we see that they seem depressed, and if it works
(i.e., they do, in fact, cheer up), we cannot explain their behavior as an example of ordinary
mand compliance, as when we say to someone, "Close your eyes." (a) Why not? (b) How could
we explain the favorable result of such a "mand" -- which Skinner describes as a magical mand.

       (a) Because the change in their momentary emotional state cannot be shaped by its
       consequences, like the "close your eyes" can. That is, children learn to close their eyes on
       command because when they do good things happen, and when they do not, bad things
       happen -- good or bad consequences in the presence of the mand "Close your eyes."

Cheering up, however, is emotional behavior which is not susceptible to reinforcement of punishment. (b) It probably results from our doing something else besides saying "Cheer up" -- such as smiling, acting cheerful ourselves, etc. -- which produces stimuli that have in the past been paired with cheerful circumstances (i.e., respondent conditioning) and these stimuli elicit the emotional change.

5.   How does Skinner illustrate the fact that "Conditioned emotional responses to parts of a literary work often contribute an effect which is to some extent independent of the prose meaning of the work"?

Skinner discusses the various terms from T. S. Eliot's Gerontion -- dry, hot, windy, etc. He also discusses the Shakespeare poem that doe not mean much. And he discusses the rearranged poem which has all the same words, but in an order that does not make sense (by Lord Chesterfield for his son). Any one of these will do.

6.   What are the essential features of "Proustian recall"?

"Proustian recall" refers to the evocation of some memory or some emotional effect that is extraordinarily vivid, rich, complete, etc., even though the past event had not been "thought of" for years. There is also the implication that it is evoked by an unusual combination of circumstances or by stimuli that have never had the opportunity to lose their effects, but have simply not been contacted since the earlier event, which itself evoked the strong emotion.

7.   When we say that our belief in a speaker's words depends on the characteristics of our history with that speaker or similar speakers, what do we mean behaviorally by the term "belief"?

Our tendency to act on what the speaker says.

8.   In addition to the two evocative effects on a listener that can lead to tact distortion (i.e., the two described in the answer to Question 2), distortion can also be produced because it may alter a listener's repertoire in some way that is to the advantage of the speaker. Give an example which illustrates this effect, and explain it carefully.

A speaker distorts the inappropriateness of some behavior, such as getting drunk and insulting the hostess of the party (and the listener was not very drunk, nor was the hostess insulted very much) in order to decrease the future alcoholic consumption of the listener.

9.   What are "nontextual responses of a reader"? Confine your answer to operant behavior.

The text may consist of instructions to perform some act, in which case the nontextual responses are to perform the act. It may consist of information on the basis of which some future (or present) action can be based (not an instruction to perform the act, but information relevant to the outcome, etc.) and then to act on the basis of this information would be nontextual behavior. Other examples can also be given, so long as they are not

emotional or other respondent effects.

10.   A listener may stimulate a speaker prior to the emission of verbal behavior, and also after the verbal behavior has been emitted. Which of these is the "audience" effect being discussed in Chapter 7?

Prior to the speaking.

11.   What are the three different functions of an audience?

(a) To get verbal behavior to occur at all; (b) to determine the sub-language or form of the response, given that there are more than one equivalent responses available in the speaker's repertoire; (c) to determine the topics talked about.

12.   What is the main way that the audience relation differs from the tact relation?

The audience, like the tact, is a nonverbal stimulus, but it controls a large group of responses instead of just a single response form or a relatively small class of responses.

13.   A certain event will evoke the response "reward" in the presence of one type of listener, and "reinforcement" in the presence of another type of listener. Likewise, another event will evoke "motive" as opposed to "establishing operation." For most semantic purposes, the difference between (a) _____ and _____ is greater than the difference between (b) _____ and _____. From Skinner's point of view, however, the only difference is that the variables that control _____ rather than _____ because _____. And then Skinner goes on to say that they type of control is the same.

(a) reward and motive; (b) reward and reinforcement; (c) reward rather than motive is specific to these responses, while the variable that controls reward rather than reinforcement controls a large group of responses.

14.   From *Notebooks*: Cognitive psychologists often make a point of the fact that when you finally recall a forgotten name, you know it is right. How does Skinner interpret this fact in terms of his approach to speaking, listening, etc.?

That one simply functions as a better listener that speaker -- really, two separate repertoires to some extent. It is not surprising that one is more effective than another.

15.   From *Notebooks*: From Skinner's point of view, what is the possible therapeutic benefit of an extensive recall of earlier events? (He would certainly reject the notion that it amounts to uncovering repressed memories.)

Such recall permits the recaller to react to past events in terms of the present repertoire or context; that is, to see earlier events in terms of all the things one has learned since those events took place. This might be especially useful when the early events reacted to by a child and had some serious effects on the child's life, but now the child grown up can see

those events in the light of adult experience and react differently.

Name: _____

READING RATINGS

Topic 7

Controlling Variables:

Special Conditions Affecting Stimulus Control, and the Audience

	Ranking for this week (1-5)	Rating for the course (1-5)
Skinner (1957)	_____	_____
Guerin (1994)	_____	_____
Glenn (1983)	_____	_____
Spradlin (1985)	_____	_____
Silverman et al. (1986)	_____	_____

The lower the number, the higher ranking or rating.

_____

Which of this week's readings, topics, or concepts need further review or clarification? What else can I help you with?

VERBAL BEHAVIOR

ABSC 931

Topic 8

Controlling Variables: The Verbal Operant as a Unit of Analysis

Assigned Reading

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Recommended Reading

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Commentary

Up to this point in the course, we have analyzed verbal behavior in terms of Skinner's (1957) classes of operant behavior defined in terms of their controlling variables. Other than one final class of verbal behavior – the autoclitic -- the remainder of Skinner's book is a synthesis and extension of this material, with behavioral interpretations about how the operants and the variables combine to yield complex, everyday verbal behavior.

The Unit of Analysis

This week, our first reading is Skinner's (1957, pp. 185-226) chapter, "The Verbal Operant as a Unit of Analysis." It is devoted to (a) a defense of the operant-as-unit-of-analysis over the sentence-or-word-as-unit-of-analysis (see also Chase, 1986; Moore, 2000), (b) the place of the general behavioral processes in verbal behavior, and (c) a clarification and refinement of the definition of "verbal behavior," distinguishing it from social behavior more generally.

Definition. This last point is sometimes contentious, but part of the problem concerns what we mean by definition and the purpose of definitions. Recall that, for Skinner, verbal behavior was a subclass of social behavior – behavior mediated by the behavior of other people whose behavior has been "conditioned precisely in order to reinforcement behavior of the speaker" (p. 225; see Peterson, 1978). In relational frame theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001), verbal behavior is "framing relationally" (see also Hayes, Fox, Gifford, Wilson,

Barnes-Holmes, & Healey, 2001, pp. 43-45 on "verbal behavior"; Hayes, 1994; Hayes & Hayes, 1989, 1992). Everything else is social – not verbal – behavior. On the topic of definition in general, we read Moore (1984). With respect to the definition of verbal behavior in the context of RFT, we read Matt Normand's (2009) "Much Ado About Nothing? Some Comments on B. F. Skinner's Definition of Verbal Behavior." For a further consideration of this, see Sam Leigland's (1997) article, "Is a New Definition of Verbal Behavior Necessary in Light of Derived Relational Responding?" This week, we return to what Skinner was up to in defining verbal behavior in David Palmer's (2008) article, "On Skinner's Definition of Verbal Behavior."

A related issue is whether verbal behavior is a purely human activity or may be found (or established) in nonhumans. The various "ape language" projects have addressed this issue empirically (see Hixson, 1998; Holland, 1992), as have several studies with pigeons and parrots (e.g., Pepperberg, 1981). For an introduction to some of this literature, see Epstein, Lanza, and Skinner (1980), Lubinski and MacCorquodale (1984), Michael, Whitley, and Hesse (1983), and Sundberg (1985). There are, as well, some conceptual treatments. For these, see Catania (1986), Catania and Cerutti (1986), and Parrott (1986a, 1986b).

Functional independence. Our third reading addresses the functional independence of Skinner's verbal operants with the classic and perhaps clearest experimental demonstration to date. This is Lamarre and Holland's (1985) "The Functional Independence of Mands and Tacts." For a discussion, see Rehfeldt, Ziomek, and Garcia (2006; for some research, see Baer & Detrich, 1990; Carroll & Hesse, 1987; Hall & Sundberg, 1987; Ribeiro, 1989; Sigafoos, Doss, & Reichle, 1989; Sigafoos, Reichle, Doss, Hall, & Pettit, 1990; Stafford, Sundberg, & Braam, 1988; Twyman, 1996). This independence also holds for other functional units of verbal behavior, for instance, tacts and intraverbals (e.g., Partington & Bailey, 1992), reading and spelling (e.g., see Lee and Pegler (1982), speaking and listening (e.g., Lee, 1981), and speaking and writing (see Moxley, 1990). The independence notwithstanding, a growing body of literature is today focused on how the effects of training one verbal operant affects other verbal operants (e.g., Arntzen & Inger, 2002; Egan & Barnes-Holmes, 2009; Miguel, Petursdottir, & Carr, 2005; Petursdottir, Carr, & Michael, 2005; Wallace, Iwata, & Hanley, 2006).

The relation between speaking and listening is an important one in psycholinguistics, and is typically discussed as the relation between receptive and productive (expressive) language. See Spradlin (1967) for a discussion of the independence of these repertoires and its implications for language training (see also Dixon, 1978; Guess, 1969; Guess & Baer, 1973; Lohdi & Greer, 1989). As we shall see from the Skinner (1957) assignment, further evidence for the independence of the verbal operants comes from research on speakers who have been brain damaged (e.g., aphasia; see Baker, LeBlanc, & Raetz, 2008; Sidman, 1971; Sidman, Stoddard, Mohr, & Leicester, 1971). For a preliminary analysis of such damage in terms of Skinner's taxonomy, see Sundberg, San Juan, Dawdy, and Arguelles (1990).

The Evolution and Development of Verbal Behavior

Phylogeny. Our next readings focus on the evolution of verbal behavior and the verbal community. The first of these is Skinner's (1986) article, "The Evolution of Verbal Behavior," which offers an analysis of how verbal behavior and its supporting community may have co-

evolved, both phylogenically and ontogenically (see also Catania, 1985). For some recent genetic evidence that supports Skinner (1986) view, see Balter (2002). As for whether the genetic change was continuous (i.e., quantitative changes in anatomy and physiology; see Gibson & Jessee, 1999) or discontinuous (i.e., qualitative change; see Pinker, 1994), the matter remains undecided. For recent reviews, see Holden (1998, 2004; see also "The Evolution of Language" (2004). *Science, 303*, 1315-1335).

Much has been made, of course, of nativistic influences on language acquisition, most notably by Chomsky (1957, 1980; see Lenneberg, 1967), and now Pinker (1994), which puts him at odds with Skinner about the nature and process of phylogenic contributions to verbal behavior. This issue is but one of the many Chomsky raised in his review of *Verbal Behavior* (Chomsky, 1959, pp. 54-58), to which we turn again. After this, we consider Chomsky's nativism in two articles by David Palmer: "Chomsky's Nativism: A Critical Review" (Palmer, 1985/2000) and a follow-up on it, "Chomsky's Nativism Reconsidered" (Palmer, 2000). For further analyses of the behavior-analytic perspective on the biological contributions to language, see Holland (1992), Mabry (1995), and Sulzbacher and Oller (1972). For more recent nonbehavior-analytic perspectives on biological contributions to the form and function of verbal behavior, see Corballis (1999) and MacNeilage and Davis (2000).

Ontogeny. Our next reading is another of Skinner's appendixes to *Verbal Behavior* – "The Verbal Community." In elaborating on it, we also have Mark Sundberg's (2010) PowerPoint slides from his presentation last May at the meeting of the Association for Behavior Analysis – "Skinner's Analysis of the Verbal Community." Copies of the slides are available in my department mailbox. For an interesting current account of the novel emergence of sign language – the evolution of language in our very midst – see Seigal's (2004) review of a report by Senghas, Kita, and Ozyurek (2004; see also Corballis, 1999; Helmuth, 2001).

Take-Home Assignment

Please read and critique Chomsky (1959, pp. 54-58).

Term Paper Assignment

None.

Cites and Citations

Cites. For readers interested in the scientific and literary reference citations that Skinner listed in this chapter, see Barrie (1890), Coleridge (1816), DeLaguna (1927), DeQuincy (1899), Ferster and Skinner (1957), von Frisch (1950), Huxley (1954), Machen (1927), Moore (1901), Paget (1930), Parry (1935), Power (1929), Rousseau (1952), Skinner (1953), Stendhal (1955), Tinbergen (1951), and Tooke (1857).

Citations. For material in *Verbal Behavior* that corresponds with material in *Notebooks, B. F. Skinner* (1980), see 188,2f (217.2), 191,1 (17.1, 30.1), 195,3 (17.1, 141.3), 200,1 (26.1), 200,2 (127.1), 201,3f (355.1), 203,2 (248.1), 205,1 (110.1), 206,4f (283.1, 339.2), 207,2 (84.1),

208,2f (283.1, 307.1, 339.2), 209,3f (355.1), 211,2 (355.1), 223,1 (230.1), 461,1f (304.1), 461,2 (328.1), 462,1f (174.1), 464,2f (29.2), 465,2(144.1, 177.1), 466,2 (141.1, 171.2, 190.2, 345.1), 467,1 (90.1), 469,1f (171.2), 469,2 (356.2), and 469,3 (190.1).

Discussion Objectives and Questions

1.   Be able to provide a brief summary of the prior material covered in 185.1-186. Then make the points of 186.2 and 187.1, and review 10.1 through 11.2.

2.   Summarize the essential features of each of the following types of functional relations in verbal behavior: (a) mand, (b) echoic, (c) textual, (d) intraverbal, (e) tact, and (f) audience (185-186).

3.   "Classification is not an end in itself." What is Skinner's purpose in classifying verbal behavior?

4.   In the section from 187.2 through 198 Skinner contrasts the traditional unit of analysis (i.e., the word and its meaning) with his unit, the verbal operant. The traditional approach is described in detail in 187.2. Be able to state it and to state each of the four ways that this notion can appear (see the four headings of this section).

5.   (a) The traditional linguistic point of view is in disagreement with Skinner's analysis of the different functional relations in verbal behavior. In the traditional view, the word is the appropriate unit of verbal behavior, regardless of the controlling conditions. People who hold this view would make the following assertions: (i) the same word, with the same meaning, may be used in different ways (e.g., asking for something and denoting it) (187-190), (ii) the same word, with the same meaning, may be either written or spoken (191-195), (iii) the meaning of a word is the same for both the speaker and the listener (195), and (iv) it is possible to express the same meaning (i.e., the same thing) in different languages (195-198).

        (b) Explain Skinner's alternative interpretation for the kinds of observations that give rise to each of the above assertions. (Note: Your answers should follow a simple formula: That Skinner believes that each of the functions is acquired separately, although interactions may then occur due to further conditioning).

        (c) For each part of the question above, explain how the effects of certain types of brain damage (e.g., aphasia, 190, 194, 195, 218-219) confound upholders of the traditional view, and support Skinner's analysis. (Note: The reasoning being used here is that if certain behaviors are destroyed by some well defined physiological damage, while other behaviors are left intact, then this suggests that the former behaviors may function together in some sense as a unit or distinct class relatively independent of the latter behaviors.)

6.   Most of the first section (187.3-190) is concerned with the mand-tact transfer. The issue is stated, and the two approaches (i.e., Skinner's and the traditional) contrasted in 187.3.

7.   The circumstances that give rise to the belief in spontaneous transfer or spontaneous development of one operant (the mand) when another has been learned (the tact) are described in the beginning of 188.2, and explained behaviorally in the last half of the paragraph. Be able to give this explanation. Note that for a stimulus selection based language (as opposed to a topography-based language) the issue is much simpler.

8.   Briefly outline an experiment that might be done to determine whether a response of a given form, established both as a mand and a tact, would on a given occasion transfer automatically from one type of operant to another (189).

9.   Two relations between the mand and the tact that might account for cases of easy transfer from one to another are described in 189.2 and 189.3. Know these two connections.

10.   Our current educational system seems to be based on the assumption that by learning certain principles or facts from a textbook that one should be able to identify these principles or facts *automatically* in actual situations. According to Skinner's analysis why is this assumption probably false. (Even to behavior analysts, it sometimes comes as a surprise that students who have learned all the correct intraverbals about the principles of behavior still describe the behavior they observe in the lab or in everyday life in traditional terms).

11.   What about spontaneous transfer between other kinds of operants? (190.1)

12.   How does evidence from the field of brain injury contribute to Skinner's argument? (190.2)

13.   The discussion of the same response in different media is quite complex and not easy to organize into main points. Read this section carefully. There are several nice analyses of complex human behavior. What are the points about hieroglyphs (191.2), about "second" and "2nd" (191.3), deaf mutes (192.1), and "a second variable" and a "certain variable" (192.3)? What can be said about the effect of reinforcement for a response in one medium on the corresponding response in another medium (192.3, 194.1)? The first sentence of 193.2 is a good clue to his goal in much of this and the other sections. What is the point of the discussion of pointing (193.2-194.2)? What is the evidence from brain injury cases (194.3)? The last sentence of the section (195.1) is also a good summary of what he is trying to accomplish in this section.

14.   It sometimes seems that the spoken form of language is more "basic" than the written form. Why is this view incorrect and what may be responsible for it (192)?

15.   Probably all of us have experienced at one time or another having said one word to ourselves or aloud and unintentionally writing a different word. In Skinner's view, what does this demonstrate (192)?

16.   Briefly outline an experiment to determine whether a response made in one medium will transfer automatically to another medium (193).

17.   What are the main points of the section on the same response spoken and heard (195.2)?

18.   Explain why, from Skinner's analysis, the methods used in this course should be more effective than the lecture method (195).

19.   What, behaviorally, does it mean "to say the same thing in different languages" (195.3, first sentence)?

20.   What is the basic issue in sentences 3, 4, and 5 or 195.3; in 196.2; and in the first half of 197.1.

21.   Why does the problem not arise for echoic and textual behavior (196.1)?

22.   Two simple explanations are given in 196.3; a third in 197.2; and a fourth in 198.1.

23.   The first three sentences of 199.1 clarify an important distinction between most other approaches to language (e.g., semantic theory) and Skinner's approach in terms of the verbal operant. Sentence 5 permits a division of the psychology of language into two parts and sentence 6 indicates their relations to this text (Part II versus Parts III, IV, and V). Note also the often repeated advantage of this approach in sentence 4. This section (199.1) provides an overview that is useful since one can easily get lost in the details.

24.   Most accounts of verbal behavior begin with classification and end there. Terms such as ideas, tensions, abilities, faculties, motives, etc. are frequently offered as explanatory concepts, but they really only classify behavior. What feature of Skinner's treatment, lacking in traditional accounts, allows us to move from classification to a functional analysis (199)?

25.   Skinner's objective is to show that a functional analysis of verbal behavior is possible, and to suggest the form that such an analysis might take. Why, then, his concern with classification? How does classification help achieve that goal?

26.   From 200.1 through 201.3, Skinner gives examples of the kinds of variables that strengthen verbal behavior without respect to form. Be able to give some of them.

27.   The general effects of such variables on verbal behavior are given in 202.1 through 202.3, with an excursion into clinical psychology thrown in (202.3-203.1). Know the three effects, their clinical significance, and also the effect of the emphasis on speed (203.2).

28.   The major significance of intermittent reinforcement -- completely overlooked prior to Skinner's (1938) *The Behavior of Organisms* -- and the way it alters the topic of motivation is indicated in 204.2.

29.   Why are some people more talkative and others taciturn or silent (204)?

30.   From 204.3-206, Skinner gives a number of important contrasts between verbal and nonverbal behavior, all of which derive from the fact that the reinforcement for verbal behavior is *indirect*, whereas that for nonverbal behavior is direct. The contrasts go a long way toward explaining the "mystery" and "power" of language. The distinction given in 204.3 deals with this sort of nonphysical or nonbehavioral "feel" of verbal behavior. Section 205.1 deals with the intellectual effectiveness of verbal behavior; that is, why we are so much smarter than nonverbal organisms. An effect that weakens verbal behavior (as compared to nonverbal behavior), but that makes it more resistant to extinction is presented in 205.2. Another weakening effect is presented in 205.3. Two strengthening effects are presented in 206.1. These points are a more essential part of the William James Lectures given in 1947, but they seem to have gotten somewhat lost in

this book. Nevertheless, they still seem to be of major theoretical significance.

31.   Why is verbal behavior more likely than nonverbal behavior to be intermittently reinforced, and to suffer delayed reinforcement, and what are the consequences of this (205-206)?

32.   Distinguish between extinction and forgetting (206-207).

33.   Distinguish between three ways of weakening behavior (206.2-207.1). Note the term "true" in 207.1. An important fact about behavior is presented in the third sentence of 207.2.

34.   Why are echoic and textual behavior least likely to be "forgotten" (207.3)? Note also the role played by tact minimal repertoires.

35.   Why are proper names most likely to be forgotten (207-208)?

36.   Why are classical studies of memory useful? What explicit or implicit criticisms of such studies does Skinner make (208-209)?

37.   An important secondary principle is stated in 209.3, and explained in terms of more basic principles (i.e., least effort).

38.   The section beginning on 209 should have been called "Relaxation of the Contingencies Determining Form and the Resulting Deterioration of Form." The whole section makes a simple point.

39.   Mention some ways in which the form of verbal responses change after conditioning, and some possible reasons for this (209-212).

40.   Note the restriction on the term "motivation" in 212.1. Compare this with 204.2.

41.   What are the effects on verbal behavior of: (a) deprivation, (b) certain drugs, (c) senility (212-214).

42.   What are the main points of the sections on "Emotion" and "Damaged Verbal Behavior"?

43.   Give and explain an example of an emotional response which is (a) not verbal, (b) partly verbal, and (c) completely verbal, but derived from a nonverbal response. (214-215)

44.   The third sentence of 220.1 gives the general reason for the cessation of verbal behavior; several more specific reasons are given in the later section. Learn the general reason and several of the specific reasons.

45.   Give examples illustrating how each of the following factors lead to the cessation of verbal behavior: (a) a verbal response may change the level of the appropriate deprivation and (b) only one instance of the response is reinforced by the verbal community. (220-223)

46.   Why does repetitious speech tend to occur: (a) when talking about a complex situation, (b) when writing a book, (c) when talking to an inattentive listener, and (d) when talking to babies? (221)

47.   Review Peterson's definition of verbal behavior and study the section 224.2-226 very carefully. Be able to explain the main points and the relevance of the examples.

48.   What is Skinner's refined definition of verbal behavior? What sorts of responses are now excluded from the definition he offered previously? (224-226)

49.   Which of the following behaviors are verbal and which are not, and why: (a) bees communicating to each other the location of honey, (b) engaging in good table manners, (c) the behavior of a computer, (d) the behavior of a computer programmer, (e) playing a game, (f) nursing a sick patient, (g) cooking for someone, (h) setting up a traffic light, (i) buying something, (j) building a house, (k) driving a car, (l) shooing a fly, (m) handing a person a glass of water when requested, (n) crossing the street to avoid meeting someone you do not like, (o) dancing, (p) giving someone flowers, (q) giving a concert, and (r) praying.

50.   What is a "language"? How does the field of linguistics differ from a behavior analysis of verbal behavior? (461.1)

51.   The general assumptions underlying 461.2 are quite different from those of some other current approaches.

52.   A nice analysis of purpose is presented in 462.3. Compare this with Skinner's (1974) treatment in *About Behaviorism*. (264.2)

53.   With specific reference to instinctive cries and verbal behavior, discuss the parallel between natural selection and operant conditioning. (462-463)

54.   Discuss the possibility that verbal behavior arose from instinctive cries. (462-465)

55.   Read Skinner's (1974) *About Behaviorism*, 98-100.0. Now read *Verbal Behavior*, 463.1-464.1. Abstract out the main points regarding the origin of human language. Note that we might expect a gestural language to emerge before vocal language.

56.   Based on the material in 464.2-467.2, be able to describe the possible origin of mands. What is the general purpose of this section? What are the general points made? Note that mand compliance must be developing along with mands.

57.   How might tacts arise? (467.3-468.2) Note especially lines 9ff of 468.2.

58.   What is the main point of 469.1?

59.   Discuss how verbal behavior may have arisen and become transformed into the extremely complex product it is today. (464-470)

Quiz Questions and Answers

1.   What observations contribute to the plausibility of the traditional unit, "the word and its meaning," in the case of (a) the same response form in different types of operants and (b) the same response form in different media?

> (a) Under many circumstances we appear to acquire a response as a tact, for example, and then have it available as a mand -- or acquire it as an echoic and have it as a tact, mand, etc. (b) when we acquire a response form in the vocal form, we often seem to be able to write it without further training -- likewise the reverse -- and not only write it, but also write it under the control of the proper variables.

2.   A functional blending of mand and tact might be expected to result under some conditions. Why? (Skinner gives two reasons).

> The events which reinforce a mand often resemble the stimuli which control a tact of the same response form; the presence of the reinforcing event (i.e., the possibility of tacting something) is an optimal condition for a successful mand.

3.   Without using examples, give a careful description of the following: (a) a topography-based mand, (b) a stimulus selection based tact, (c) stimulus selection based mand compliance with respect to a stimulus, and (d) topography based mand compliance with respect to a stimulus.

4.   How would you explain, behaviorally, the occurrence of a mand where, for that speaker, the consequence being manded has never functioned as a mand before?

> This is the magical mand. It might be explained in the following way: (i) Most speakers eventually have an extensive history where a response form functions as an effective mand, as well as being the same response form for a tact controlled by the reinforcer for the mand. We are often successful in manding in a way that is very close to tacting or to making an intraverbal response in the sense of "naming the reinforcer." (ii) When some establishing operation or establishing stimulus comes to strength so that some event that has not been manded before becomes a form of reinforcement, and assuming that a relevant tact or intraverbal is in the speaker's repertoire, this response becomes strong along with some generalized mand forms, such as "Would you please hand me the..." or "May I..." It is a form of generalization involving larger units of behavior than single response forms.

5.   How does evidence from the field of brain damage cast doubt on the existence of the traditional unit? Explain carefully.

> Brain injured people seem to lose their verbal repertoire in terms of the elementary verbal operants; that is, a person may be able to tact, but not mand, to read but not tact, etc. But if underlying language is a single unit (e.g., the word and its meaning) and if this is intact, as indicated by successful manding, then why can't injured people also tact? After all, the successful mand indicates that the meaning of the word is still known.

6.   In the section, "The Same Response in Different Media," Skinner makes several points. What was the point of the discussion of (a) hieroglyphs and (b) deaf mutes?

> The tendency to believe that it really is the same thing when we speak it and when we write it is not so great when there is no point-to-point correspondence between stimuli and response. The notion that the vocal response that produces the sound heard when someone says "dog" is the "same thing" as the visual stimuli consisting of the letters d-o-g is not so great when it is the vocal response "percent" and the visual stimuli "%." (b) The notion that written behavior is really secondary, and is merely a way of representing the vocal behavior, is refuted by the notion that some deaf mutes have a language consisting completely of writing and they never speak. This point could be better made by reference to sign language, but at the time Skinner wrote *Verbal Behavior* not much was known generally about sign language.

7.   What does it mean behaviorally "to say the same thing" in technical and commonsense language?

> The same controlling variables will produce a technical response in the presence of one type of audience, and the commonsense response in the presence of the other.

8.   Saying the same thing in different languages is not difficult to explain, but there is a type of observation regarding a bilingual speaker that is more difficult to explain in behavioral terms. What is it?

> Learning something in one language and then having it available in another.

9.   "A functional relation is more than a mere connection. The stimuli which control a verbal response not only determine its form, and thus supply an equivalent for meaning, they also _____."

> Increase the probability that the response will be emitted

10.   When variables strengthen verbal behavior without respect to form -- that is when any form of verbal behavior will be reinforced or avoid punishment -- the behavior is likely to differ somewhat from ordinary verbal behavior. How? (Skinner gives three ways.)

> See Skinner 202.1, 202.2, and 202.3.

11.   From Skinner's perspective what is meant by the term "motivation"? How does the discovery of the effects of intermittent reinforcement "clean up" the area of motivation?

> (a) This term refers to operations such as deprivation and aversive stimulation (and also emotional operations); it also refers to the effects on behavior of these operations. these effects are those of the establishing operation: (1) altering the effectiveness of some event or object as a form of reinforcement and (2) altering (momentarily) the behavioral repertoire regarding behavior that has in the past been followed by these events or

objects.

(b) Some cases of differences in response intensity, persistence, frequency, and other features of behavior are due to the schedule of reinforcement, and therefore should not be called "motivational." Prior to his discovery, it was common to fail to make this distinction and to include schedule effects under the heading of motivation. (It is still common among most traditional and eclectic psychologists and certainly among laypeople.)

12.   The fact that verbal behavior is reinforced indirectly contributes to the nonbehavioral or nonphysical "feel" of verbal behavior as contrasted with nonverbal behavior. How? In one sense, verbal behavior is likely to be weaker than nonverbal behavior, and in another sense it is likely to be stronger. Explain.

(a) It is responsible for the fact that the energy level of the response is not related to the magnitude of reinforcement. (b) It is weaker in that it is less likely to occur because of delayed and intermittent reinforcement, but stronger in the sense that it is more resistant to extinction due to intermittent reinforcement.

13.   What is the refined definition of verbal behavior? How does getting a horse to turn by showing it a sugar cube fail to fit the refined definition? Is making a loud noise in order to attract someone's attention verbal or not according to the refined definition?

(a) Behavior that achieves its effect on the world through the behavior of someone else, and when the listener, in reinforcing the speaker, is behaving in ways that have been conditioned precisely in order to reinforce the behavior of speakers (i.e., indirect reinforcement plus the listener is behaving in ways that have been taught in order to create a means of control). (b) The horse is following the cube of sugar as a result of inadvertent relations between the visual and the gustatory aspects of these objects and the necessity of moving the head and body in such a way as to come closer to the cube. (c) It is probably not verbal because the person who responds is not exhibiting behavior that was taught in order to permit this type of control -- the person is just reacting to sounds because of a history where when something makes a loud noise it is likely to be important to see it.

14.   A physiologist studying the biochemistry of salivary gland secretion in humans obtains his salivary samples by asking his subjects to come to his laboratory right before lunch and then making them look at pictures of food while he collects their saliva with a suction tube. In other words, he engages in the behavior of showing them pictures of food in order to get them to salivate. (a) Would the behavior of showing the subjects pictures of food be considered verbal behavior by the earlier definition of verbal behavior? (b) Assuming that it did fit the earlier definition, would it fit the revised definition? Explain why and be specific.

(a) It would fit the earlier definition because it is clearly behavior which is reinforced through the behavior of another person -- the scientist is reinforced by obtaining the saliva, which only occurs if the subject salivates, hence "showing the pictures" is verbal

by this definition. (b) I would not fit the refined example, however. The reason is that the listener who reinforces the putative listener (the salivator is the listener and the shower of pictures is the speaker) did not learn to salivate to such pictures in order to provide this means of control over salivators; this learning took place as the incidental result of the fact that visual aspects of food usually accompany or precede the gustatory aspects which are the unconditioned reinforcers.

15.   Why does Skinner think it unlikely that verbal behavior arose from instinctive cries?

16.   Why might early verbal behavior have been gestural? Give two reasons, one related to the question above and one related to onomotopoetic responses.

17.   Explain carefully how the gesture "come here" (e.g., cupping the hand and moving it towards oneself) might have arisen as a mand from nonverbal behavior.

Name: _____

READING RANKING AND RATINGS

Topic 8: Controlling Variables:

The Verbal Operant as a Unit of Analysis

	Ranking for the Assignment (1-6)	Rating for the Course (1-5)
Skinner (1957)	_____	_____
Palmer (2008)	_____	_____
Lamarre & Holland (1985)	_____	_____
Palmer (1986, 2000)	_____	_____
Skinner (1986)	_____	_____
Sundberg (2010)	_____	_____

The lower the number, the higher the ranking or rating.

_____

Which of this week's readings, topics, or concepts need further review or clarification? That is, what else can I help you with?

VERBAL BEHAVIOR

ABSC 931

Topic 9

Multiple Variables: Multiple Causation, Supplementary

Stimulation, and New Combinations of Fragmentary Responses

Assigned Reading

Skinner, B. F. (1957). *Verbal behavior* (Ch. 9: Multiple causation, pp. 227-253; Ch. 10: Supplementary stimulation, pp. 253-292; Ch. 11: New combinations of fragmentary responses, pp. 293-309). Englewood Cliffs, NJ: Prentice-Hall.

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Recommended Reading

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Commentary

Behavior is, without fail, multiply controlled and had multiple effects. It is the emergent product of two variables -- the biological organism and the physical environment -- in the context of three others -- their history of past interactions (e.g., reinforcement history), the current context (e.g., establishing operations), and the media of contact between them (e.g., auditory, visual). Behavior is also multiply controlled by more than one stimulus and its generic functions at any one time (e.g., reinforcers, establishing operations, discriminative stimuli, eliciting stimuli). It also produces multiple effects at any one time (e.g., eliciting stimuli, reinforcers, discriminative stimuli, establishing operations). This week's reading focuses on these multiple controls and multiple effects. For our first (loooooooong) assignment, please read the next three chapters in Skinner (1957, pp. 227-309): Chapter 9 on multiple causation (pp. 227-253), Chapter 10 on supplementary stimulation (pp. 253-292), and Chapter 11 on new combinations of fragmentary responses (pp. 293-309). No new concepts are introduced here. Rather, the previous ones are extended and additional considerations are provided. After this, we will read a new manuscript by Jack Michael, David Palmer, and Mark Sundberg (in submission) on multiple control and multiple effects – "The Multiple Control of Verbal Behavior."

Supplementary Stimulation

As for the material on supplementary stimulation, three other Skinner papers add nicely to the topic and provide a good feel for some of the research Skinner engaged in while working on his book. In two studies, Skinner examined alliteration and assonance as "intentional" poetic devices as opposed to echoic behavior probabilistically evoked by a speaker's preceding verbal behavior. These are covered in Skinner (1939), "The Alliteration in Shakespeare's Sonnets: A Study in Literary Behavior," and Skinner (1941), "A Quantitative Estimate of Certain Types of Sound-patterning in Poetry." In one other, "The Verbal Summator and a Method for the Study of Latent Speech," Skinner (1936) described how nonsensical formal probes can evoke "meaningful" verbal behavior in a manner not dissimilar to a Rorschach Test (see also Estes, 1940). For a history of the verbal summator, see Alexandra Rutherford's (2003), "B. F. Skinner and the Auditory Inkblot: The Rise and Fall of the Verbal Summator as a Projective Technique."

New Combinations of Fragmentary Responses

For further material on new combinations of fragmentary responses, we will read Motley's (1987) "What I Meant to Say." It provides some examples of "verbal slips." Although this analysis is not behavior-analytic, it is easily interpreted that way. Moreover, it suggests research that might be conducted from this perspective. If you are interested in this and related topics, see Sundberg (1991, pp. 92-93). Our fourth reading is an interesting interpretation of delusion and hallucinations in terms of multiple variables -- T. V. Joe Layng and Paul Andronis's "Toward a Functional Analysis of Delusional Speech and Hallucinatory Behavior" (see also Burns, Heiby, & Tharpe, 1983; Glenn, 1983). I think you will enjoy it.

The reading in Skinner (1957) this week also delves again into brief discussions of awareness and understanding, yielding some insight into radical behavioral epistemology (i.e., the origins and nature of knowing). For this, Parrott (1984) adds further clarification from an interbehavioral perspective (see also Lodhi & Greer, 1989). For supplementary material, see Peterson (1978) and Winokur (1976).

Cites and Citations

If you are interested in the scientific and literary reference citations Skinner listed in this material, see Allport (1942), Carroll (1941), Dodgson (1934), Empson (1930), Estes (1940), Fielding (1926), Fowler (1930), Freud (1938), Grose (1785), Houseman (1945), Jung (1918), Lowes (1930), Maurer (1944), Moore (1901), Murray (1938), Ogden and Richards (1923), Pearson (1922), Pound (1932), Prescott (1926), Richards (1929), Riding and Graves (1927), Rylands (1928), Shakespeare (1941), Shakow and Rosenweig (1940), Sheridan (1910), Skinner (1936, 1939, 1953), Taylor (1951), Trollope (1864), Wells (1906), Woodworth (1934), and Wordsworth (1926).

For material in *Verbal Behavior* that corresponds with material in *Notebooks, B. F. Skinner* (1980), for Chapter 9 see: 227ff (19.1), 228,3f (160.2), 228,4 (197.1), 230,3f (5.1, 217.1), 231,1 (278.2, 294.1, 329.2), 233,2f (322.1), 235,1f (31.3, 47.1, 156.2), 235,3 (48.3, 278.2), 236,2 (290.1), 236,3f (78.2), 237,2f (89.1, 198.2, 259.1, 291.3, 316.1), 237,3 (260.1), 240,1 (70.1, 214.1), 241,2 (261.1), 243,1 (141.3), 243,5 (300.2), 245,2 (301.2), 249,2 (135.1), and 250,1 (24.1); for Chapter 10, see 254,2f (24.1, 152.1, 186.1, 208.1, 215.1, 224.3, 268.2), 255,1f (50.1, 300.2), 255,2 (95.3, 300.2, 212.1), 256,1 (391.2), 256,2f (284.2), 257,1 (95.2, 132.2, 212.1), 257,2f (349.1), 258,1f (160.2, 312.1), 259,2f (41.1, 72.2, 130.1), 259,3 (343.1), 264,2 (130.1), 266,2 (296.1), 270,2 (296.2), 271,2 (11.1, 13.2, 22.1, 37.1, 55.2, 256.2, 267.2, 337.1), 271,3 (195.2), 271,3f (78.1, 134.1), 274,3 (209.1), 275,1 (77.1), 276,3 (273.1), 277,1f (77.1, 93.3, 351.2), 278,2 (122.1), 281,0 (271.1), 282,1 (23.2, 28.1), 284,2 (109.1), 284,3f (247.2), 285,2f (336.1), 286,1f (2.2, 10.1, 44.1, 94,2, 128.2), 286,2 (70.1), 290,1 (7.1), 292.2 (286.2); for Chapter 11, see 293,3 (277.1), 294,1 (28.2, 57.2), 295,1f (56.1, 58.2, 169.2), 295,3 (94.1), 296,2 (169.2, 254.1), 297,2 (86.1, 256.2, 277.1), 298,1 (137.2, 149.1, 169.2, 307.3, 343.3), 299,2f (14.2, 56.1, 94.1, 137.2, 149.1, 169.2, 275.2) 299,3 (268.2), 300,0 (307.3), 300,2 (307.3, 343.3), 300,3 (7.1, 303.2), 301,1 (12.1), 301,2f (7.1, 13.2, 86.1, 91.1), 301,4 (89.1), 303,2

(89.1), 303,3 (316.1), 307,1 (317.1), 307,2 (141.3), 308,1 (260.1, 296.2), and 308,2f (109.1).

Take-Home Assignment

Chomsky (1959) never addressed multiple control in his review of Skinner (1957), which is unfortunate, because this is where some of the power of Skinner's system shows through. This means, then, that there is no Chomsky (1959) assignment this week. I would encourage you, though, to work on your summative Chomsky assignment.

Term Paper Assignment

(a) The introduction to your paper, no more than three-quarter's of a page long; (b) your references without abstracts; (c) your last graded assignment; and (d) the description of your topic and the outline, revised as edited or requested.

Discussion Questions and Objectives

1. What are the two facts of multiple control (227.1)? What does Peterson call them? Use the audience relation to illustrate both of these facts, and also be able to illustrate each as Skinner does in 227.2 and 227.3.

2. The facts of multiple causation do not violate any principle of scientific method. Explain (220).

3. What two types of verbal behavior do not show a single variable in control of many forms of response? Elaborate briefly to demonstrate your understanding of this point (227-228).

4. What is an "attitude" or "opinion"? Give an example in Skinner's terms (228).

5. Be able to make the behavioral translation in 228.2 and also define "thematic group".

6. What is the well-established principle and what is algebraic summation (228.4)?

7. Two types of multiple control were previously dealt with. What were they (229.1)? How does the audience effect differ from what will be discussed in the present section (see first sentence of 229.2)? What are the two kinds of evidence (229.2)?

8. Give different examples of each of the following types of multiple audiences, and state in Skinner's terms the probable effects they will have on the speaker's behavior: (a) increase in the size of a positive audience; (b) increase in the size of a negative audience; (c) two audiences that control different responses; and (d) a negative audience in combination with a positive audience 230-232).

9. Mockery, fable, satire, and allegory are all under the control of multiple audiences. Explain (233-234).

10.   How is the impure tact an example of multiple control (235.3)?

11.   How is euphemism a form of multiple control (235.3)?

12.   Explain how the "Freudian slip" shows the effect of multiple causation (235).

13.   How is "Mrs. Coiler" multiple control (236.3)? What is the multiple control in the example of "The borers from within..." (237.2)? You have to know two different words that sound alike -- auger and sugar -- and also that this example came during World War II when people within a country who were saboteurs could be referred to as "borers from within" in reference to sinking a ship (i.e., the ship of state). Find at least two good original examples that Skinner could have used in the section "multiple tacts and intraverbals."

14.   Explain the multiple causation possibly involved in the following samples of verbal behavior: (a) those candy eggs will lay you out flat (instead of "make you ill"); (b) accidents are bound to occur, no matter how mindful (instead of "careful") you are; (c) the sugar-beet business is operating in the red (instead of "at a loss"); and (d) the sugar-beet business turned sour (instead of "went bad") (236-238).

15.   Be able to give Skinner's examples of the nonvocal pun, and find an original example (239.3). Distinguish between "good" and "poor" puns in behavioral terms (240.1). Give an original example of a good and poor pun. The distinguishing feature of the example in 240.2 through 241.1 is the existence of multiple main thematic sources. Review this concept from Peterson and find a good original example. Explain how literary borrowing exemplifies multiple control (241.2-243.1). What is the multiple control described in 243.2? Find an original example.

16.   What do we mean when we say that a speaker is aware of the variables determining his response (242)?

17.   A verbal response may be strengthened as an echoic or textual response on the one hand, or as a tact or intraverbal response on the other. The source of strength in the former case is classified as _____; in the latter case it is classified as _____ (243).

18.   The first part of the answer to the question above may be easier to recall because of a formal source of strength. Can you detect this possible source? Outline an experiment to test whether it does function in this manner (cf. Keller's experiment on 243).

19.   How does verbal art help the speaker to avoid punishment (243)?

20.   How is multiple causation involved in being "reminded" of something? Give an example (243-244).

21.   How is formal strengthening involved in the poetic devices of rhyme, rhythm, and alliteration (246-249)?

22.   How is formal strengthening evidenced in such sayings as "wear and tear" and "as

pleased as Punch" (245)?

23.   Review Peterson's distinction between formal and thematic sources (39, 42). Read the section from 246-252. No special objectives.

24.   Explain why it is not possible to conclude, merely from looking at a sample of verbal behavior apart from its controlling conditions, that formal strengthening is involved (249-251).

25.   Note the very important criticism of mentalistic concepts in 253.1. Add this to the three-part criticism given in 6.1 and 6.3.

26.   Note the concept of establishing operation is especially critical in the analysis of 253.3.

27.   Why might verbal behavior be weak (254.2)?

28.   Be able to define, exemplify, and classify examples of each of the four types of supplementary stimulation -- this is a long objective. Review the relevant Peterson material. Be sure you understand all the examples (254.1-267).

29.   Define and give an example of each of the following: (a) prompt, (b) probe, (c) formal prompt, (d) thematic prompt, (e) formal probe, (f) thematic probe (255-267).

30.   Suppose you have bet a large sum of money that you can cause a given individual at a given time to say the word "chair." It is stipulated that he is not to be told your intention, and you are not allowed to ask him to emit the response. You are reasonably free to arrange conditions as you please. How would you proceed in order to be as confident as possible that the response "chair" would be emitted (253-254)?

31.   How are prompts typically used in getting grade school children to memorize poems (255-256)?

32.   How do operant conditioners use prompts in teaching retarded children to tact?

33.   Why do we frequently echo even erroneous prompts (256)?

34.   How do advertisers use both echoic and textual prompts (257)?

35.   Describe the verbal summator and the kinds of behavior it tends to produce. How do the responses of children differ from those of adults (260-264)?

36.   Why do rhythmically repeated, nonvocal auditory patterns frequently evoke echoic responses (259-260)?

37.   Why does the verbal summator enable the experimenter to discover verbal predispositions which could not always be discovered in the normal behavior of the subject (263-

265)?

38.   How is Skinner's recommended use of "projective" tests different from their traditional use, and how is it similar (260-267)?

39.   What is the main point of the section on awareness (267.1-268.1)?

40.   In 268.2, the effects on the listener studied up to now are reviewed before introducing a new effect. What are the old ones? Reorganize them in terms of material given early in the semester on the effects of a stimulus (e.g., evocative, repertoire altering, respondent, operate, etc.)

41.   The new effect on a listener involves supplementation of behavior already in the listener's repertoire. The process is not completely described in any short passage. Read the section from 268.2-280.2. A number of important points are made: What is "surprision" and why is it so (see last section of 268.3)? What is the point of 269.1? Does it seem reasonable to you? Be able to explain what each of the following examples shows: (a) the name of the animal at the zoo (269.2): (b) "Look at that wretched cur." What is eisegesis (270.2)? (c) "I'm just too danced out." For this analysis you must consider a covert responses made by the young man (271.1); (d) "speak of the devil" (271.2). The relation called "multiple variables" by Peterson is illustrated in the last half of 270.1.

42.   When a speaker and listener are not affected by the same variable, the process may occur anyway and is a form of *mis*understanding or eisegesis. Note that failing to understand and misunderstanding are *not* the same thing (270.2-271.2).

43.   Under some conditions -- at the right place on the continua -- the result of the present process is a form of reinforcement for the listener. What is the continuum and where on it does reinforcement for the listener lie (271.3-272.1)? Note again the contrast with the previously discussed effects on the listener in the last sentence of 271.3.

44.   Several factors contributing to effective supplementation are given in 272.2.

45.   One function of verbal behavior is to "communicate" something, that is, to get the listener to respond appropriately to something that directly controls only the speaker's behavior. Another function may be summed up as follows: (i) The speaker strengthens behavior that is weak, but present, in the listener's repertoire. The listener participates in the speaker's behavior by emitting the same behavior controlled more weakly by the same variables and (ii) the effect of the speaker is reinforcing to the listener to the extent that weak verbal tendencies in him are strengthened; it is non-reinforcing if such tendencies are not strengthened or are already strong. Discuss how (i) and/or (ii) apply to each of the following: (a) someone tells us the answer to a puzzle we have almost solved for ourselves; (b) someone tells us the answer to a puzzle we have worked on for several hours without getting close to a solution; (c) the listener or reader supplies a small piece of verbal behavior that has been obscured in a talk or book; (d) eisegesis; (e) listening to someone we disagree with; (f) listening to a talk laden with cliches; (g) listening to a talk containing much obscure detail, unrecognized literary allusions, etc; and (h) listening to

stimulating speaker (268-273).

46.   An analysis of one form of "enjoyment of reading" is in 273.1; this is distinguished from other sources of such enjoyment as described in Chapter 6. But why doesn't the reader behave without the help of the text (273.2-274.1)? Why might a reader seek out the works of a writer (274.3-275.1)? Be able to give several of the techniques described in 275.2-276.3.

47.   If we read a poem or book largely to say what we tend to say anyway, why do we bother with the tactful material? Why do we not just speak without its help (273-274)?
48.   Why are "universal" books not likely to be "favorite" books (275)?

49.   Why are autobiographies and novels written in the first person especially popular (275)?

50.   Explain the function of each of the following devices used by speakers and writers: (a) putting a great deal of conversation in a novel; (b) frequently saying "naturally" and "of course"; (c) frequent repetition; and (d) emphasizing important aspects of a situation (275-277).

51.   What are the several different kinds of "understanding" (277.1-277.2)? The most interesting "understanding" is reviewed in detail in 279.4. The main point of the entire section is briefly summarized in 280.1 and a very complex suggestion is made in 280.2.

52.   Describe the general process by which we come to understand something (277-280).

53.   What seems to be the function of such stylistic tricks as rhyme, rhythm, alliteration, and assonance (282-285)?

54.   Why is humor preoccupied with taboo subjects, in particular sex, and with having aversive effects upon the listener or others (286-287)?

55.   Discuss whether the book *Verbal Behavior* is primarily informative or a supplementary source os strength. See 11, 455-456 of the book and 841 of MacCorquodale, K., B. F. Skinner's *Verbal Behavior*: A retrospective appreciation. *Journal of the Experimental Analysis of Behavior*, 1969, *12*, 831-841.

56.   The rest of the chapter is of interest to anyone with a background in literature. The section on humor is especially interesting.

57.   Review 123.1 after reading 293.1, 293.2, and 294.1, and exclude some cases from the present process. In selecting original examples, be sure you make the same exclusions. 295.1 gives an organization of the conditions that contribute to or increase the likelihood of fragmentary recombination. Know them.

58.   Fragmentary recombination results in a blend of some sort. These blends can be classified in terms of the size (e.g., phrase, word, smaller than the word). Be able to give some original examples that are of each of these kinds. Such blends can also be classified in terms of the elementary operant verbal relations that contribute to the blend (e.g., the tact, mand,

intraverbal, etc.). Be able to give original examples illustrating each (295.3-302.2).

59.   Give different examples of each of the following types of blending, being sure to identify the contributing responses: (a) the blended response contains approximately equal parts of the contributing responses; (b) one of the contributing responses predominates in the blended response; (c) the blended response occurs at the level of the word; (d) the blended response occurs at the level of the phrase; (e) the blended response is written; (f) haplogical blending; and (g) blending below the phonetic level (295-298).

60.   Give examples of each of the following types of blends, and indicate possible controlling variables: (a) mixture of two or more tacts under control of the same stimulus; (b) mixture of a tact and an intraverbal; (c) mixture of two or more intraverbals; (d) mixture of an echoic with another verbal response; (e) mixture of a textual with another verbal response; (f) blend due to a self-echoic tendency; (g) blend due to a "negative" variable (299-303).

61.   Still another way of classifying blends is in terms of the effects on the listener or, even better, the appropriateness of the blend to the current situation. The categories are (a) nonsense; (b) standard form, but not appropriate to the current situation; (c) standard form that derives some strength from a third source (and is thus somewhat more appropriate to the current situation than (b)); (d) standard form which is quite appropriate to the current situation, and thus an especially well-chosen term since it is a blend of relevant elements and also the standard form for the situation -- I cannot think of any like this right now, but I included it for completeness; and (e) neologism (a nonstandard form that is allowed to stand or be accepted without disapproval, and may be effective in the situation and even catch on to become a popular term. Why a nonstandard form will be allowed to stand is probably related to the lack of a common form to the situation <u>and</u> a situation that occurs fairly often. Be able to give examples and to recognize and analyze examples of all of these types (303.1-304.4).

62.   What is the main point of "Formal distortion and the unit operant"?

Quiz Questions and Answers

1.   (a) Briefly describe, without examples, each of the two facts of multiple control, *in the terms that Peterson uses*. (b) Give an example of audience control of a textual response. (c) Explain how your example illustrates both of the "facts of multiple control."

>   (a) *multiple variables* -- the same response is usually controlled by more than one independent variable; *multiple responses* -- each variable typically controls more than one response. (b) Let's consider the textual response controlled by "lead" (written on the chalk board). In the presence of the first lieutenant one might say "lead" (rhymes with "seed"), but in the presence of the chemist one might say "lead" (rhymes with "red"). (c) Multiple variables: The response "lead" (rhymes with "seed") is controlled both by the first lieutenant (an audience variable) and by the visual stimulus of the letters on the chalk board ("lead"); multiple responses: the visual stimulus "lead" controls both the rap that rhymes with "seed" and the response that rhymes with "red".

2.   Explain why it is reasonable to consider mand-compliance-with-respect-to-a stimulus a form of multiple control; and if we consider such behavior to be verbal, indicate which of the elementary verbal relations are illustrated by the *mand complier's* behavior.

> In order to point correctly to an object when someone says "show me the cat," one must be controlled both by their verbal stimulus of "cat" (an auditory stimulus resulting from the mander saying "cat") and by the nonverbal stimulus of the cat (or the picture of the cat). The correct point can only occur if both the stimuli control where one points. If we consider such behavior verbal, then one component should be called intraverbal (control by "cat") and then other a tact relation (control by the cat, itself).

3.   (a) Give your original (not mine and not Skinner's) example of a poor pun, and (b) indicate the main thematic source, and (c) the secondary source.

> One is asked why is it so hard to raise frogs for a profit. He says "I don't know." The answer is then given "So many of them *croak*." The main thematic source is the someone that strengthens "die." The secondary source is the intraverbal relation between "frogs" and "croak" (the sound that frogs make). (It is a bad pun because it is given in a riddle form, when there is no other reason to discuss frogs -- it was all just an excuse (not a very good one) to exhibit multiple control of "croak".)

4.   (a) Give your original (not mine and not Skinner's) example of a nonvocal pun, (b) indicate the various sources of strength for the critical topography, and (c) identify each as verbal or nonverbal.

5.   Give the terms for each of the four types of supplementary stimulation, and arrange them in a two by two table, labeling the margins so as to define and distinguish each type from the others.

6.   How does Skinner describe the multiple control in the spider example (i.e., What will the spider do? Suspend his operation?) as an example of the effect of multiple variables on a speaker's verbal behavior (assume that the speaker is reading the text out loud)?

> (a) As the speaker gets to the phase,"suspend his operations," he finds that he is making this response for two reasons besides the textual control. One is the multiple strengthening involving the cessation of activity (i.e., the other is the intraverbal relation between "spider" and "suspend." That is, the speaker is making the multiply controlled response, and it is the speaking behavior that is multiply controlled.

7.   What does a spider get for its crime?

> A suspended sentence, of course. Assume that a main thematic source (somewhat of an assumption in a contrived pun) is related to the possible outcomes of the spider's trial. That is, the same variable also strengthens other terms (sic) about sentences, for instance, "60 days hard labor" and "life imprisonment." Given this, then "spider" strengthens the

control of "suspended" over our "noticing" behavior, that is, over out recognizing the appropriateness of some kind of identifying response (or vague topography). For that matter, both variables could be said to have this effect.

8.   (a) The section "Strengthening Verbal Behavior in the Listener," the situation may be represented thusly: V1 -----> R1 -----> SD -----> R2, where V1 also -----> R2. V1 is the visual stimulus; R1 is the response made by the first speaker (for example the person who actually names the animal at the zoo); the SD is the auditory response-product of the R1 vocal response. This SD, of course, is the stimulus that causes the second speaker to make the echoic response, R2. (a) Imagine that you are the second speaker at the zoo, that is, the person who makes the echoic response. Explain how your reaction to the help provided by the first speaker depends upon the strength of the V1 -----> R1 relation. Consider three cases: (i) zero strength, (ii)moderate strength, and (iii) high strength.

> (i) Zero strength: My reaction would be surprise that it was called by that term, possibly appreciation for the unasked animal naming lesson. (ii) Moderate strength: I would be grateful for the help: I would probably have the feeling that I could almost have made the response without help; I might say, "Oh, yes! That's right. An aardvark. I remember now." (iii) Very Strong: I would have probably said "I know that" in a tone of voice that implied disapproval for assuming that I did not.

(b)   Imagine the diagram so that it represents the case where you read a humorous anecdote or joke. Let R2 be your textual response to the punch line of the joke. Indicate what V1, R1, and the SD consist of in this instance.

> The diagram does not need to be modified, only interpreted differently. V1 is the build up of the punch line -- the verbal material (or pictures, if such are involved) that makes the punch line possible. The SD is the textual material (or a visual SD) that gives the punch line. R1 is kind of irrelevant, but if included would consist of the writing behavior that produced the textual stimulus of the punch line. The relation between V1 and R2 is critical. If it is too strong, then the punch line is "telegraphed" and thus not very interesting. If the relation is too weak, the reader will not "get" the joke. The best values are in the low moderate, or quite low but not absent, range.

(c)   Now modify the diagram so that it represents a case of eisegesis. Again, identify the things that all of the symbols stand for in this case.

> For eisegesis, you have to add another variable, V2, which is the variable that actually summates with the echoic prompt. In the *Lord Jim* example, V1 is the real dog in the crowd; V2 is Jim's situation and Jim, himself; and R2 is "wretched cur" as spoken by the man in the crowd. This is eisegesic because although R2 is multiply controlled, the variable which the echoic prompt supplements is not the one controlling the original speaker.

9.   The effect discussed above is the "new" effect of a verbal stimulus on a listener. What are the various old effects of a verbal stimulus on a listener? (Just indicate symbols for the various

effects, and organize these symbols into a table or matrix of some sort, as in the treatment of various stimulus effects covered earlier in the book.)

> Arrange them according to evocative and repertoire altering effects, and as operants and respondents. Then put in CE, CC, SE, SD, Sr, and Sp as appropriate.

10.   (a) In what sense might an infrahuman can be said to "understand" something said by a human? (b) But there is probably no current infrahuman analog to the most important kind of human understanding. What does the latter consist of?

> (a) In the sense of behaving appropriately. That is, the verbal stimulus functions as CE, CS, SD, etc. appropriately. (b) This consists of a tendency to say the same thing for the same reason that controlled the producer of the verbal stimuli that are being understood.

11.   Excluding the neologism (e) and the "especially well chosen term" (d), give your original examples of the other three types of blends (where we are classifying in terms of appropriateness to the present situation). That is, give you original examples of the types earlier lettered (a), (b), and (c). For each example identify the variables responsible for each of the components of the blend, and then show what the blend consists of.

12.   Prepare a table with margins so labeled that they define each cell as one of the four types of supplementary stimulation, and then label each cell appropriately as "formal probe," "formal prompt," etc.

	Supplementers know what response they want speaker to make	Supplementers do not know the specific response the speaker should make
Supplement has point-to-point correspondence with the response	Formal Prompt	Formal Probe
Supplement has no point-to-point correspondence with the response	Thematic Prompt	Thematic Probe

13.   Identify each of the following as one of the four types of supplementary stimulation: (a) Rorschach ink blot test, (b) verbal summator, (c) word association test, (d) the screen with text on it that a television newscaster reads from (the viewers are supposed to believe that the person is speaking spontaneously).

> (a) Thematic probe, (b) formal probe, (c) thematic probe, (d) thematic prompt.

14.   Why might it sometimes be <u>incorrect</u> to refer to the example of 12(d) above as a case of supplementation?

> If the newscasters are simply reading the written words, then it is simply textual behavior and not an example of multiple control. If they have studies the news to some extent, then the printed words might function as supplements (prompts) for their behavior.

15.   Skinner lists several factors that control the effectiveness of supplementation (Ch. 10); for example, it is helpful if the speaker and listener speak the same sub-language, have a common vocabulary, and have similar intraverbal tendencies. He mentions three other factors. Describe one of these.

> Same speed of utterance, length of response (long responses are less likely to find correspondence patterns in the behavior of the listener), whether the stimulus is spoken or written.

16. It is often true that "the same thing can be said in several ways," but what does this truth consist of in behavioral terms?

> "The same thing" refers to a common set of variables (or the same variable) and "several ways" refers to a thematic group of responses.

17. (a) Give an example of a mand where the form of the response is controlled by an establishing operation. (b) Give an example of a mand where the form of the response is controlled by an establishing stimulus.

> (a) A tendency to say "food" as a result of being food deprived. (b) A tendency to say "pencil" as the result of someone saying, "I'll give you five dollars for a reasonable sketch of a cat" (and there being nothing to write with).

18. What was the point of the section at the end of Chapter 11 called "Formal distortion and the unit operant"?

> The additional facts of multiple control (Ch. 9), the modus operandi of the practical techniques of Ch. 10, and the functional autonomy of the fragmentary responses entering into recombinations all constitute evidence for the minimal units of behavior described earlier.

19. In a topography-based language, the tact relation can be described without reference to multiple control, but this is not true for a stimulus selection-based language. Explain carefully.

> In a topography-based language, the tact consists essentially of the effect of the nonverbal stimulus in strengthening some particular topography -- just one controlling variable and one topography. In a stimulus-selection based language, the tact consists of the effect of a nonverbal stimulus in strengthening the control of another stimulus (i.e., the one to be selected) over some sort of "indicating" topography, such as touching or

pointing -- two independent variables and one topography, and thus multiple control.

20. How is the usual occurrence of an expression such as "making love" (in reference to sexual intercourse) an illustration of multiple control? Explain this carefully; do not just apply a special term for this type of multiple control.

Assume that some more common response (e.g., one or more of the slang expressions for sexual intercourse) is actually strengthened by the relevant intraverbal or tact variable (or mand), but some aspect of the situation (e.g., the delicate sensibilities of the audience) suppresses this response as it begins to occur and leaves the more euphemistic one as the strongest, although it is not in the absolute sense. This is multiple control in that the resulting response is the joint result of one variable strengthening a class of responses and some other variable suppressing the most common member(s) of the class, leaving the less common member to occur.

21.   Skinner describes the multiple control underlying much humor as illustrating the effect of multiple variables on a speaker's verbal behavior. Two other possibilities are, one, like Skinner's, a convergent effect; the other is a divergent effect. Describe the convergent effect using an original example. Describe the divergent effect.

Name: _____

READING RANKING AND RATINGS

Topic 9

Multiple Variables: Multiple Causation, Supplementary

Stimulation, and New Combinations of Fragmentary Responses

	Ranking for the Assignment (1-4)	Rating for the Course (1-5)
Skinner (1957)	_____	_____
Michael et al. (in submission)	_____	_____
Motley (1987)	_____	_____
Layng & Andronis (1984)	_____	_____

The lower the number, the higher the ranking or rating

_____

Which of this week's readings, topics, or concepts need further review or clarification? That is, what else can I help you with?

VERBAL BEHAVIOR

ABSC 931

Topic 10

The Manipulation of Verbal Behavior:

The Autoclitic, Grammar, Syntax, and Composition

Assigned Reading

Skinner, B. F. (1957). *Verbal behavior* (Ch. 12: The autoclitic, pp. 311-330; Ch. 13: Grammar and syntax as autoclitic processes, pp. 331-343; Ch. 14: Composition and its effects, pp. 344-367). Englewood Cliffs, NJ: Prentice-Hall.

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Recommended Reading

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Parrott, L. J. (1984). Listening and understanding. *The Behavior Analyst, 7,* 29-39.

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Commentary

Up to this point in the book, Skinner has addressed the "primary" verbal operants, their multiple controls and effects, and their interactions, but his overall analysis of verbal behavior remains incomplete. Many facets of verbal behavior have not been accounted for, specifically, "secondary" verbal behavior that describes the speaker's primary verbal behavior. Also

unaccounted for are grammar, syntax, and composition. These topics comprise this week's readings. They include probably the most difficult material in *Verbal Behavior.*

We begin with the next three chapters in the book. In Chapter 12, "The Autoclitic," Skinner describes the general features of autoclitic behavior, the basis of which is speakers' reacting to their own (primary) verbal behavior by emitting collateral (secondary) verbal behavior about it: "The term 'autoclitic' is intended to suggest behavior which is based upon or depends upon other verbal behavior" (Skinner, 1957, p. 315; see also Smith, 1983; Vargas, 1982). The function of autoclitic behavior is to enable listeners to interact more effectively with the environment responsible for the speaker's verbal behavior. Autoclitic activity thereby occurs in situations in which the speaker might (a) tact conditions under which verbal behavior is emitted, (b) mand specific responses of the listener, and (c) group or arrange responses in an order that increases their effectiveness for the listener. The chapter also includes a discussion of negation, assertion, and quantifying autoclitics. In Chapter 13, "Grammar and Syntax as Autoclitic Processes," Skinner (1957) covers just what the title suggests, and in the process discusses relational autoclitics and predication. In Chapter 14, "Composition and its Effects," Skinner deals with (a) the nature of sentences, (b) larger segments of verbal behavior, (c) composition (e.g., punctuation; see Lee, 1983), and (d) the role of autoclitic behavior in producing changes in the behavior of the listener. Of particular importance here are his analyses of instruction (education) and knowledge (Skinner, 1957, pp. 344-367; see also Hineline, 1983; Parrott, 1984).

Now that we have read Skinner's (1957) chapters on grammar and autoclitic processes, we turn to material that supplements and extends it. First, we shall read two papers by David Palmer that address structure, functions, and grammar: "The Speaker as Listener: The Interpretation of Structural Regularities in Verbal Behavior" (Palmer, 1998) and his more recent "Verbal Behavior: What Is the Function of Structure?" (Palmer, 2007). For material on how this relates to conditioning the behavior of the listener, se Schlinger (2008a, 2008b). John Mabry's (1993) "Some Comments on Skinner's Grammar" also elaborates on Skinner's analysis, which Nathan Stemmer (1994) thoughtfully replied to, which is commented on by Mabry (1994). For further reading, you might see Charlie Catania's (1980) "Autoclitic Processes and the Structure of Behavior." It offers a generic analysis of autoclitic behavior in terms of the more familiar language of the three-term contingency and the more familiar setting of the operant chamber. It helps clarify some of the Skinner reading (see also Catania & Cerutti, 1986). On quoting as autoclitic behavior, see Borloti (2007)

Our fourth reading is Chase, Ellenwood, and Madden's (2008) article, "A Behavior-Analytic Analog of Learning to Use Synonyms, Syntax, and Parts of Speech." It basically brings stimulus equivalence to bear on grammar and generativity. In the past, I have assigned Lazar's (1977), "Extending Sequence-Class Membership with Matching to Sample," which also demonstrates how grammatical ordering can be acquired through stimulus equivalence without directly reinforcing it (i.e., how verbal material that was never before spoken may be ordered). This latter character of "generative grammar" is part of the basis for the rejection of Skinner's analysis of verbal behavior – because it purportedly cannot account for novel, grammatical utterances. Lazar (1977) offers some behavior-analytic evidence about how such behavior might occur (see also Lazar & Kotlarchyk, 1986; Zuriff, 1976). For an experimental demonstration of

the acquisition of autoclitics, see Howard and Rice (1988). For how autoclitic activity may affect reading, see Hubner, Austin, and Miguel (2007).

All of this material makes good sense in light of Skinner's task. Some of the specifics, though, are difficult to get a hold of (see Place, 1983). In any event, please read the material carefully and in order. For additional introductions to and primers of this material, see Catania (1992), Peterson (1978), Whitley (1983), and Winokur (1976). If you are interested in research topics concerning autoclitics, see Sundberg (1991, pp.91-92).

Cites and Citations

For readers interested in the scientific and literary reference citations Skinner listed in this chapter, see Carnap (1937), Gardner (1932), Lee (1941), Quine (1941, 1942), Russell (1940), Sapir (1921), Skinner (1953), Smith (1940), Stendahl (1955), Thackery (1925), Thoreau (1927), and Tooke (1857).

For material in *Verbal Behavior* that corresponds with material in *Notebooks, B. F. Skinner* (1980), for Ch. 12 See 3 11ff (353.2), 313,1 (282.1), 313,3 (240.2), 314,1 (312.2), 315,1 (217.2, 350.2), 315,2f (278.3), 316,1 (220.2, 257.1, 350.2), 318,1) (257.1, 289.2), 320,1f (320.1, 350.1), 321,1f (4.1, 350.2), 321,3 (289.2), 320,1f (320.1, 350.1), 321,1f (4.1, 350.2), 321,3 (289.2), 322, 3f (204.2), 326, 1f (275.1), 322.1), 329, 1f (275.1); for Ch. 13 see 331ff (328.1, 334.1), 331,2 (163.1), 332, 1f (131.2), 333, 1ff (123.2, 133.1, 313.1), 340,2 (60.1, 62.1, 73.1, 230.1), 341,2f (275.1); and for Ch.14 see 345,2 (131.2), 349,3 (317.1), 355,2 (4.1), 357, 1f (231.1), 348,2f (267.1), 360,1f (339.1), 362,1ff (96.2, 115.2, 213.1, 215.1, 274.2, 304.2, 312.2, 314.2, 341.2), 363, 1f (197.2), 365, 1f (197.2), 365,1 (268.1), 366,1 (106.2).

Take-Home Assignment

Please read Chomsky (1959, pp. 53-54) on the autoclitic. Then, on the basis of Skinner (1957) and the other assigned reading, critique his analysis.

Discussion Questions and Objectives

Chapter 12: The Autoclitic

1.   Any feature of the environment can become as SD for verbal behavior, and the verbal behavior of another person is no exception. Echoic behavior and taking dictation are, by definition, controlled by SDs arising from the immediately preceding verbal behavior of another speaker; textual behavior and copying a text are similar except that the verbal behavior which produced the SDs may have occurred long before the current speaker is affected by them. Intraverbal behavior is controlled by SDs resulting from immediately preceding or from temporally remote verbal behavior, depending on whether the stimulus is auditory or visual (although the development of recording devices renders this distinction is less clear.)

        The verbal behavior of others may also enter into the tact relation, and here we get closer to the topic of the present chapter. Of course, the tact is defined as verbal behavior controlled by an immediately preceding *nonverbal* stimulus, but another person's speech has many nonverbal aspects, as well as its verbal ones: Its temporal ("quick") and intensive ("loud") properties are clearly nonverbal at times and have the same relation to our own behavior as the temporal and intensive properties of nonverbal events. More subtle aspects of another person's verbal behavior, particularly in relation to its controlling variables, also control a great variety of verbal responses, for example, "discourteous," "cleave," "uncalled for," "crazy," etc. are all tacts controlled by relatively complex relations between another person's verbal (or nonverbal) behavior and its controlling variables. Whether the controlling stimuli in these cases should be considered tacts or intraverbals, is not important since the intraverbal relation is very close to the tact anyway in many cases. We will generally consider such responses tacts, both here and in the discussion of autoclitic behavior.

        In the section from 138-146, Skinner discusses verbal responses to one's own behavior. Most of his examples involve one's own nonverbal behavior, but once it has occurred, there is no reason why a person's own verbal behavior cannot be a controlling variable for further verbal behavior, in all of the same relations that prevail when the controlling SDs result from someone else's verbal behavior. We can read or copy what we, ourselves, have just written; we can make self-echoic and self-intraverbal responses, and we can write down what we have just said, as a form of self-taking dictation. Likewise, we can tact the loudness or our own verbal behavior. No special problems are raised by the existence of this type of "secondary" verbal behavior, which we will call "*simple secondary verbal behavior*." The relevant stimuli occur prior to the verbal behavior, just as in verbal behavior controlled by other events in the environment, and are generally just as public or observable as those other events. The reinforcement of such self-verbal behavior is the same as the reinforcement of verbal behavior controlled by verbal behavior of other speakers (reread 151.3) and the advantages to the community of this repertoire are similar to those of other verbal repertoires and provide the reason for the evolution of such secondary verbal behavior. The verbal behavior which serves as the controlling SD for the secondary verbal behavior will be called "*primary verbal behavior*." Be able to define, recognize, and give five examples of this simple secondary verbal behavior and to identify primary verbal behavior which at least partially controls it.

2.   Autoclitic verbal behavior is another type of secondary verbal behavior. Be able to describe its three main features in contrast with simple secondary verbal behavior. The three are (a) its temporal relation to the primary response – autoclitics can occur before, during, or after the primary, but simple secondary verbal behavior always occurs after its primary response; (b) the fact that quite often the controlling variables for autoclitic verbal behavior are private stimuli functioning as SDs or SEs, whereas for simple secondary verbal behavior they are often public; and (c) the nature of the reinforcement for the secondary response. With simple secondary verbal behavior, the reinforcement is the generalized conditioned reinforcement relevant to any tact, or the action the listener takes regarding the tact, but with the autoclitic the reinforcement is always related to the effectiveness of the *primary verbal behavior* or the particular reaction to the *primary verbal behavior* or the particular reaction to the *primary response*. Study lines 26-29 of 313; lines 7-24 of 344; and 314.2.

3.   How has the analysis, up to this point, reduced the role of the speaker as a casual agent determining his own verbal behavior (311-312)?

4.   A number of good behavioral translations are made in 311.2. Be able to give the behavioral version when given the mentalistic one, and vice versa. 312.1-312.3 consider the types of behavior not yet considered and which will be taken up in the next three chapters. What is the basis of Skinner's unwillingness to attribute these more complex types of behavior to a controlling self or personality (312.4)? How does he interpret the concept of the self in terms of two levels of repertoires (313.1)?

5.   We now turn to such problems as the organization of verbal behavior. These problems are very difficult, and it might be tempting to appeal to an inner self or personality which organizes verbal behavior. Why would such a "solution" not be satisfactory (312-313)?

6.   Explain why tacting our own behavior requires no special treatment. Why, possibly, has it seemed to many psychologists that it does require a special treatment (314)?

7.   What is an *autoclitic*? Give several different examples, and explain why each is an autoclitic (315).

8.   Descriptive autoclitics are essentially autoclitic tacts (as continued with autoclitic mands). To explain them, you must generally describe some stimulus conditions controlling them, or some events leading to the stimulus conditions which control them (reread 144.3-145.1). Often, however, the stimulus conditions are private and quite complex. The various subtypes are described in the sections from 315.1-319.2. Be able to describe the first two types (315.1 and 315.2) and to give some examples and to recognize examples; also find a few more from the later sections that you can give as examples and can explain. I find the ones in 318.2-318.3 especially interesting. Note especially "true" and also quotation marks. In all of this material, however, remember that one cannot identify a functional relation on the basis of form alone.

9.   Discuss example of each of the following types of descriptive autoclitics: (a) autoclitics which inform the listener of the type of verbal behavior they accompany, (b) autoclitics that

describe the state of strength of a verbal response, (c) autoclitics that describe the relations between responses and other verbal behavior of the speaker of listener, (d) autoclitics that indicate the emotional or motivational condition of the speak (313-321).

10.   What is a descriptive autoclitic? Give several different examples, and provide sufficient discussion to indicate that you understand why they are so classified (313-321).

11.   Briefly explain why descriptive autoclitics are set up by the verbal community (314-315).

12.   With respect to othe autoclitic function, how are the following sentences different: (a) "It is true that I was absent." And (b) "My remark, 'I was absent' is true" (319-320).

13.   So far the concept of secondary verbal behavior, both simple and autoclitic, has been confined to verbal behavior controlled by stimuli – tacts, in other words. What about the possibility of secondary mands? Skinner uses the term "self-mands" since this clearly implies a mand that has speakers, themselves, as listeners – telling yourself to do something (like "Get up, you lazy creep; it's time to go to school"). In the present case, we wish to consider a mand that specifies some behavior on the part of the listener, behavior with respect to the speaker's primary verbal behavior. There is no question that we frequently make such responses, as when we tell someone to "take heed to what I just told you" or to "Ignore my last remark." In each case the secondary response is a man, the form of which is controlled by an establishing operation or establishing stimulus. The distinction between simple secondary mand and autoclitic behavior us more difficult than with the secondary tact, since the reinforcement for a secondary mand seems inevitably related to the altered response of the listener to the primary response. Skinner made no mention of simple secondary mands – perhaps because the discussion of simple secondary verbal behavior (not by this name, though) occurred in the chapter on the tact – or perhaps because, as suggested above, all simple secondary mands are also autoclitcs and thus the distinction is not necessary. Perhaps a distinction could be based on the temporal characteristics of the effect. Let us call a secondary mand "simple" if the reaction to the primary response has already taken place by the time the secondary response comes along, as in both of the cases given above. Call is autoclitic when the secondary response is so closely related to the primary response that it alters the listener's reaction to the latter before it has a had a chance to develop fully. Still, this seems to be a matter of degree and it is probably a distinction that serves no purpose. In any case, Skinner introduces autoclitic mands in the section "mands upon the listener" (321) and you should be able to describe, identify, and explain this type of verbal behavior.

14.   Discuss several different examples of autoclitics which specifically mand the listeners (321-322).

15.   What different general types of controlling conditions seem to account for the different responses: (a) "I don't think he has gone" and (b) "I think he has not gone"?

16.   Without respect to the autoclitic function, how are the following sentences different: (a) "I hesitate to say he is a liar" and (b) "He is a liar is said with hesitation" (320)?

17.   What is a *qualifying autoclitic* (322)?

18.   Qualifying autoclitics are a much more important type of autoclitic mand from Skinner's point of view. Be able to give and to explain the variables controlling the several types of qualifying autoclitics. *What do they "qualify"*? Explain qualifying autoclitics in the way you would explain any mand, by showing that the form of the response is determined by some establishing operation or SE, or by showing a unique relation between the form of the response and the nature of the characteristic reinforcement for that response. The several types of qualifying autoclitics are (a) negation; (b) assertion (note especially lines 32-35 of 327 for the essential features of an assertion); a third type (c) explained in lines 6-23 of 328; and several miscellaneous types in lines 23 to the end of the section of 329. Note that the same response form (probably) can be a descriptive autoclitic, qualifying autoclitic, or even primary verbal behavior and thus not autoclitic at all. It could also be a part of a larger unit and have no autoclitic function. This is nothing new. We have not generally been able to identify functional relations as to their types by simply looking at the form of the response.

19.   Why is negation considered to be a qualifying autoclitic? Illustrate your answer with several well-explained examples (322-326)?

20.   What special problem is the analysis of verbal behavior is raised by such responses as, "There is no orange juice on the table"? What solution does Skinner propose to this problem (322-323)?

21.   Plausibly reconstruct the manner in which a child learns to say correctly "not" (323-324).

22.   In terms of possible controlling conditions and the autoclitic function, what are the differences between these seemingly identical responses: (a) "Jones is ill," (b) "Jones is not well," (c) "'Jones is well' is false" (324-325)?

23.   In connection with negation be sure to distinguish between "true" autoclitic negation and standard forms which appear to be autoclitic but are not really (325, bottom half).

24.   Closely related to the issue of objective 23 is a very important point made in the paragraph. Skinner affixes such as "-less" may not indicate any autoclitic activity in a given instance, and why, in fact, genuine negation may be as rare as genuine metaphorical or metonymical extension (325-326).

26.   Distinguish between the temporal and autoclitic functions of "is" (326).

27.   Contrast and compare the manner in which the autoclitics "no," "yes," and "is" function (326-327).

28.   Why is assertion considered to be a qualifying autoclitic? Illustrate your answer with several well-explained examples (326-329).

29.   Give examples of the following functions of assertive autoclitics: (a) indicates that the response is emitted as a tact, (b) indicates that the response is emitted as an intraverbal, (c) indicates that certain limits of stimulus control have been respected, (d) indicates the kind or

degree of extension of a tact, and (e) indicates probability or correspondence between a future event and the controlling stimulus (327-328).

30.   In a scientific analysis of verbal behavior, what problem is raised by such responses as "All swans are white"? How does Skinner deal with this problem (329)?

31.   What is a *quantifying autoclitic*? Give and explain several different examples (329-330).

32.   Why are "a" and "the" considered to be autoclitics (329-330)?

33.   Be able to give and interpret a couple of the examples given under "Quantifying Autoclitics" (329-330).

Chapter 13 Grammar and Syntax as Autoclitic Processes

34.   Skinner's reason for not going into detail on grammar and syntax is in the last sentence of 331.1. Be able to explain the role of automatic reienforcement in the development of grammatical practices. Also, bee able to describe two meanings of the term "rule" – the cognitivist's and Skinner's.

35.   Note the intermingling of different controlling variables, all for the same minimal response, in 323.3 (the last sentence refers to the function described in 331.1.). Note the different variables controlling response order of VB in 332.4. These are interesting in considering a child's production of longer verbal responses or sentences. There are apparently many environmental factors which can lead to groups of responses occurring in a meaningful arrangement – one need not "teach" the organism to compose longer units, at least of some sorts.

36.   Explain, with examples, five non-autoclitic functions (or controlling variables) or ordering verbal responses. Hints (i.e. "thematic prompts"): (a) patterning, (b) order of relevant stimuli, (c) order of verbal stimulation, (d) relative strength of responses, and (e) rhetorical effect (323-333).

37.   Explain, with examples, various non-autoclitic functions of placing a final "s" on English verbs (332).

38.   Be able to give examples of tagging and grouping as relational autoclitic (333.1-334.2).

39.   Explain the autoclitic function, besides assertion, of placing a final "s" on English verbs (333).

40.   What are the functions –autoclitic and non-autoclitic – of the final "s," "'s," and "s'" on common English nouns (333)?

41.   Explain, with examples, how prediction involves "a relational autoclitic to which has been added an autoclitic of assertion" (334-335).

42.   Illustrate with an example how the autoclitic or order is especially important (in English) when prediction involves more than two terms (335).

43.   How does a functional analysis of verbal behavior differ from a linguistic or grammatical analysis in terms of its treatment of units? Illustrate with respect to relational autoclitics (335-336).

44.   How are autoclitic "frames" established, and how do they function? Give an example (336).

45.   Briefly outline an experiment to test Skinner's speculations about autoclitic frames (336).

46.   Discuss examples of how autoclitic behavior may be disturbed by various factors (338-340).

47.   Explain the autoclitic function of: (a) "but" (as in "All but Henry left the room."); (b) "and" (as in "This is for you and me."); (c) "'if" (as in "If it does not rain, we shall go."); (d) "all" (as in "All honest men are happy."); and (e) the order of the words in "Had we but world enough hand time, we could go through the proper motions" (341-342).

48.   Why are the above autoclitics called "manipulative," as opposed to "relational"?

49.   Why is autoclitic behavior regulated by convention? Discuss, with examples, the arbitrary nature of convention in regulating autoclitic behavior. (To put the point in more familiar terms" Good grammar, ,though necessary, is purely arbitrary.) (340-343).

50.   What, according to Skinner, was Tookke trying to do? How close did he come to the present analysis (340-343)?

51.   Explain Skinner's statement: "Many instances of verbal behavior which contain grammatical or syntactical autoclitics may not represent true autoclitic activity" (343).

Chapter 14 Composition and Its Effects

52.   What is the function of autoclitic behavior, and why is it maintained? (pp. 344-345)

53.   Chapter 14 is an attempt to explain behaviorally the occurrence and nature of larger units of verbal behavior (e.g., sentences, paragraphs, etc.). Good examples of his analysis are 345.2, 347.1-347.2, 348.1, 349.2, and 351.1-352.1. 356.2-356.3 also makes an important point.

54.   Explain how autoclitic behavior is usually not directly concerned with the emotional effects of speech (344-345).

55.   What are sentences? Why are the standard definitions of a sentence not helpful in an analysis of verbal behavior (345)?

56.   Explain how the sentence, "The man is hungry," might be generated by adding autoclitics to available verbal operants (345).

57.   What other explanations might account for the emission of "The man is hungry" (346)?

58.   What is composition (346)?

59.   Why will formal evidence alone not show whether sentences have been composed (346)?

60.   Explain, with examples, the types of variables which tend to reduce the number of autoclitics in an utterance (347).

61.   Assume that Sam rented a leaky boat and that this constitutes an important stimulus complex. Speakers at different levels of sophistication might emit the following responses. Describe what plausible variables may each be responding to: (a) "Sam rent boat – boat leak," (b) "Sam rented a boat – boat leaked," (c) "Sam rented a boat. The boat leaked," (d) "Sam rented a boat. It leaked," and (e) "Sam rented a boat, but it leaked" (347).

62.   What evidence is there that the discriminations and differentiations involved in autoclitic behavior are particularly difficult (348-349)?

63.   Between now and the next class, observe the verbal behavior of others and yourself carefully. Note errors in sentence construction involving autoclitics.

64.   Give examples of the use of autoclitics in advertising and/or in humor (349).

65.   Explain the steps that may be taken to speculatively reconstruct the process of composition in a sample of behavior. Why is such an analysis necessarily superficial (349-352)?

66.   Vocal verbal behavior has only one important dimension – time. What does this imply about the composition of such behavior (353)?

67.   What accounts for the relatively high frequency of unusual, and not necessarily effective, word orders in literature (354)?

68.   Written verbal behavior can be two dimensional. What advantage does this give it over vocal verbal behavior (354-355)?

69.   Give some examples of autoclitics that enjoin the listener or reader to compose verbal behavior having specific properties (355).

70.   Explain, with examples, why punctuation is considered autoclitic behavior (355-356).

71.   Explain how relational autoclitics may be used to achieve effects similar to those of (a) respondent conditioning and (b) operant conditioning (357-362).

72.   Review the different functions of a stimulus. Note that the repertoire-altering effects involve the stimulus functioning to condition new behavior in the listener – not unlike the expression used to head the section beginning on 357. The conditioning we have dealt with already, however, is quite different. A stimulus has been described as developing new CS-CR relations (the CC effect of the more recent terminology) where the new CS is present at the moment of the stimulus change; new EO and SD-R effects (where the EO, ,SD, and R all occur contiguous with the stimulus and the relevant Eos are present with the stimulus change). None of these repertoire-altering effects, or the evocative effects are unique to the verbal processes. In the present section, however, Skinner considers a very important and truly unique verbal relation, one that is responsible for much uniquely human intellectual behavior. The new process is first described in 357.3. Be able to describe it and to contrast it with the process of 357.2, as well as the repertoire-altering effects already considered. What is the point of the James Joyce quote?

73.   The operant version of this new process is given in 358.2. Be able to describe it and to give examples. Note that in both operant and respondent versions, a repertoire is altered in that a stimulus change acquires a new function as a result of a complex verbal process. But note that the stimulus that acquires the new function need not be verbal itself.

74.   What is a conditional mand? A conditional tact? Give examples (359-361).

75.   Plausibly reconstruct, with examples, the general manner in which we learn to respond appropriately to conditioned mands and conditioned tacts (361-362).

76.   Be able to describe behaviorally and to give examples that illustrate each of the following: conditional mand, conditional tact, autoclitic frame, ostensive definition, purely verbal definition, and predication (357-362).

77.   Throughout this section (357-362), the role of the autoclitic (as behavior by the speaker and as a stimulus for the listener) is emphasized. Underline every occurrence of "autoclitic" in this section and then from these scattered references construct a clear statement of the role of the autoclitic process in conditioning the behavior of the listener.

78.   Some cognitive behaviorists (e.g., Bandura, Mahoney, and Meichenbaum) feel that one must depart from behavioral approaches to deal with much complex human behavior and must add internal cognitive processes. One example that is often cited is what is called "observational learning," which it is claimed cannot be dealt with from Skinner's narrow behavioristic perspective. An especially clear example of observational learning is the one given at the end of 359.1.

79.   The next section (362-367) relates the common sense term "instruction" to the present process, and at the same time considers various uses of "know," "knowledge," and "communication." Read this section carefully.

80.   What is "instruction"? What is "knowledge"? How do we know that someone knows something (e.g., that there is gold in the Klondike) (362-364).

81.   Be able to give several of the conditions that limit the instruction of the listener. (365-367)

82.   What is the immediate effect of being instructed? Why is this effect not to be confused with "knowledge" (363-364).

83.   Why is it misleading to say that knowledge is "communicated" in a speech episode? What is a better way to state what happens (364)?

84.   What conditions is successful instruction subject to (365-366)?

85.   What is hypnosis? Does Skinner explain hypnosis? Does he "instruct" us about it? Explain (366).

86.   The section on conditioning the behavior of the listener can be related to Skinner's later treatment of the distinction between rule-governed and contingency-shaped behavior. You might want to check this out.

Quiz Questions and Answers

1.   From *Notebooks*: (a) What was Skinner's nonverbal analog of an autoclitic? (b) What point was made by the discussion of the nonverbal analog? (c) How does Skinner relate consciousness and the autoclitic?

> (a) Drying one's hands before trying to open a stiff door. (b) Does one have to emit the primary response before the autoclitic can occur? His example argued against this – the contingencies strengthen both the tendency to open the door and the tendency to dry one's hands. (c) One cannot be conscious without having something to be conscious of, which is like the distinction between primary and secondary verbal behavior. The autoclitic is a special case of consciousness: You cannot have an autoclitic response without having some primary behavior that relates to it.

2.   Why is Skinner unwilling to attribute more complex verbal behavior to a controlling self or personality? Explain carefully.

> The controlling self will then have to be explained. And, being hypothetical and inside, it is a more difficult thing to work with than the environment and behavior.

3.   An autoclitic tact differs from simple secondary verbal behavior in three ways. Describe each of these differences and illustrate each by comparing the simple secondary response "loudly" (as in "I said that loudly.") controlled by the loudness of one's own prior verbal behavior with the autoclitic tact "I think" (as in "I think its raining."). Let part (a) of your answer be your first difference, explained, and discussed in terms of two examples. The let part (b) be the next difference, explained, and discussed in terms of the two examples, etc. etc.

> (a) Order of occurrence: Simple secondary must occur after primary; autoclitic can occur before, after, or during (if possible). Thus, "loudly" must occur after the prior response has occurred since it has no loudness prior to that. In contrast, "I think" can occur before, after, (or during, if it is not a vocal "I think," but instead a gesture or facial expression).

> (b) Control by private or public events: The simple secondary is often controlled by public stimuli, the autoclitic often by private stimuli. In the present case, the loudness of the previous response is clearly public, although relative; loudness is not an absolute feature of the environment. The weakness of the "raining" or the weakness of its control by environmental variables is something that could only be reacted go by the speaker himself.

> (c) The nature of the reinforcement: Simple secondary is the ordinary reinforcement for any form of tact – in the present case, why the listener would be interested in the loudness of your prior response is not clear – possibly if you acknowledge the loudness you will not be lamed for it as much, possibly the speaker asked, in connection with whether some third party could have heard it or not, etc. With the autoclitic, the reinforcement is the altered reaction of the listener to the primary response – the autoclitic tact, the more

effective reaction of the listener. In the present case, the listener will possibly not behave regarding the rain without   checking for some other source of information.

4.   Autoclitic mands _____ the listener _____.
Autoclitic tacts_____ the listener_____. (Note that each second blank space requires several words.)

Autoclitic mands enjoin the listener to behavior in some particular way *regarding the primary response*. Autoclitic tacts inform the listener about some aspect of the primary response or its controlling variable, etc.

5.   (a) Assume "vice versa" (make up your own example) is an autoclitic mand, and then describe the controlling variable. (b) Now assume "vice versa" (using the same example) is an autoclitic tact and then describe the controlling variables.

"He does not need me and vice versa." (a) As a mand, I am manding that the listener reverse the main terms and react accordingly. We could say that the response form is controlled by an establishing stimulus that makes this reinforcing for the speaker. (b) As a tact, vice versa is controlled by the fact that the reversed order is also characteristic of the environment being tacted.

6.   Briefly describe the first two types of descriptive autoclitics and give two examples of each, describing the controlling variables for the autoclitic in each example. (Note that you are being asked for a description with *two* examples, then another description with *two* examples.) Let part (a) of your answer be the first type, describe and then exemplified with two examples; then let part (b) be the second type, described, and exemplified with two examples.

(a) Informs the listener of the kind of verbal operant it accompanies: "I *see* it is going to rain" – "I see" is controlled by the fact that the primary response is emitted (or was emitted) as a textual response. In "*I ask you*, what time is it?," "I ask you" is controlled by the fact that the primary response is a mand (for verbal action).

(b) Describes the state of strength of the primary response: "I *think* it's raining" is controlled by the weakness of the control over "raining" by whatever variables are responsible for that response. "I *know* he's left" is controlled by the strength of the primary response or its controlling variables.

7.   Briefly describe each of the two main kinds of qualifying autoclitics and their controlling variables. Give an example of each.

Negation- "It's not raining." "Not" is controlled by the establishing stimulus responsible for the speaker wanting the listener to cancel any reaction to "raining." Put another way, it controlled by the fact that it would be reinforcing for the speaker if the listener did not assume it was raining. *Assertion-* "It is raining" is controlled by the fact that the speaker would be reinforced if the listener reacted to "raining" as a nonextended tact.

8.   Briefly describe each of the two types of qualifying autoclitics concerned with tact extension, give the controlling variables and illustrate each with an example.

> "It's a *kind* of apple" is controlled by the fact that the apple in question is really an apple, although perhaps an unusual example. This qualifying autoclitic indicates generic extension. "It is apple-like" (or "like an apple") indicates that the primary tact is extended metaphorically; it is controlled by the metaphoric nature of the extension – it is *not* a real apple, but has some of the properties.

9.   Give an example where a response form that often functions as a qualifying autoclitic does not serve an autoclitic function at all.

> You might say that something is "not unlikely" where there was no tendency to emit "unlikely," but rather the whole phrase is just an idiosyncratic synonym for "likely."

10.   How is the interpretation of the autoclitic function related to the community's practice of reinforcing large units of verbal behavior?

> The large units often contain autoclitic responses, but once the large unit functions as a unit, then the controlling variables for its parts are irrelevant. (Like "not unlikely" above).

11.   A cognitivist is likely to say that a child has learned the rule for the formation of the past tense and mean something quite different from what Skinner would mean is he said the same thing. Carefully explain these two different uses of "rule" and exemplify your explanation by referring to this example (the child and the past tense).

12.   It was suggested that children acquire rather complex grammatical practices even before they start attending school, and that studies have not revealed very much deliberate instruction in such practices by the children's caretakers or by the other children. One possible interpretation involves possibly innate grammatical "structures." What is a more "environmentally" oriented interpretation?

13.   Ignoring phonemic order in different responses (like in "tip" and "pit") and ignoring rhetorical order, give three other factors that can determine the order of primary verbal responses as a person emits a sequence of responses. (Also ignore the order or relational autoclitic).

14.   Explain how tagging and grouping (in English) can serve relational autoclitic function. Illustrate your explanations with examples. (They need not be original.)

15.   Distinguish carefully between repertoire altering effect of an unconditioned conditioner and that of a rule relating to the same response. (Note that this answer deals with respondent behavior.) Consider all essential differences and give an original example of a plausible unconditioned conditioned and a rule accomplishing the same sort of conditioning.

16.   Similarly distinguish carefully between the repertoire altering effect of conditioned reinforcement and a rule. (Note that here we are dealing with the operant relation and the development of a new SD.)

17.   Give an original example of a conditional tact.

18.   Give an example of a purely verbal definition as a way of conditioning the behavior of a listener, and indicate all the ways that such a definition might alter the listener's repertoire.

19.   What is the role of the autoclitic in conditioning and the listener?

20.   In addition to the speaker's prestige and the listener's belief in the speaker, briefly describe three other factors that limit the instruction of the listener.

21.   Distinguish between conditioning the listener (as in this unit) and Skinner's later concept of rule-governed behavior.

Name:_____

Reading Evaluations

Topic 10

The Manipulation of Verbal Behavior:

The Autoclitic, Grammar, Syntax, and Composition

	Ranking for the course (1-4)	Rating for the course (1-5)
Skinner (1957)	_____	_____
Palmer (1998)	_____	_____
Palmer (2007)	_____	_____
Chase et al. (2008)	_____	_____

The lower the number, the higher the ranking or rating.
_____

Which of this week's readings, topics, or concepts need further review or clarification? That is, what else can I help you with?

VERBAL BEHAVIOR

ABSC 931

Topic 11

The Production of Verbal Behavior I:

Self-Editing, Special Conditions of Self-Editing, and

Self-Strengthening of Verbal Behavior

Assigned Reading

Skinner, B. F. (1957). *Verbal behavior* (Ch. 15: Self-editing, pp. 369-383; Ch. 16: Special
conditions of self-editing, pp. 384-402; Ch. 17: Self-strengthening of verbal behavior, pp.
403-417). Englewood Cliffs, NJ: Prentice-Hall.

Epting, L. K., & Critchfield, T. S. (2006). Self-editing: On the relation between behavioral and
psycholinguistic approaches. *The Behavior Analyst, 29*, 211-234.

Palmer, D. C. (1991). A behavioral interpretation of memory. In L. J. Hayes & S. C. Hayes
(Eds.), *Dialogues on verbal behavior* (pp. 261-279). Reno, NV: Context Press.

Skinner, B. F. (1981). How to discover what you have to say: A talk to students. *The Behavior
Analysis, 4*, 1-7.

Vargas, J. S. (1978). A behavioral approach to the teaching of composition. *The Behavior
Analyst, 1*, 16-24.

<u>Recommended Reading</u>

Bodkin, M. (1934). *Archetypal patterns in poetry: Psychological studies of imagination*.
London: Oxford University Press.

Dashiell, J. F. (1928). *Fundamentals of objective psychology*. Boston: Houghton Mifflin.

Delaney, P., & Austin, J. (1998). Memory as behavior: The importance of acquisition and
remembering strategies. *The Analysis of Verbal Behavior, 15*, 75-91.

Dickens, C. (1938). Letter to Dr. Stone. In W. Dexter (Ed.). *The Nonesuch Dickens: Vol. 12.
The letters of Charles Dickens* (p. 269). London: Nonesuch Press.

Elbow, P. (1973). *Writing with power*. New York: Oxford University Press.

Epstein, R., & Joker, V. R. (2007). A threshold theory of humor response. *The Behavior Analyst, 30*, 49-58.

Ferster, C. B., & Skinner, B. F. (1957). *Schedules of reinforcement*. New York: Appleton-Century-Crofts.

Fowler, H. W. (1930). *A dictionary of modern English usage* (p. 164). London: H. Milford.

Freud, S. (1938a). *The basic writings of Sigmund Freud* (p. 718). (A. A. Brill, Ed. and trans.). New York: Modern Library.

Freud, S. (1938b). *Psychopathology in everyday life* (A. A. Brill, Trans.) (p. 70). Harmondsworth, Middlesex: Penguin/Pelican.

Galsworthy, J. (1931). *The creation of character in literature* (The Romanes Lecture). Oxford: Clarendon Press. [p. 392]

Hadamard, J. S. (1945). *An essay on the psychology of invention in the mathematical field*. Princeton: Princeton University Press.

Holland, J. G. (1957). Technique for behavioral analysis of human observing. *Science, 125,* 348-350.

Housman, A. E. (1945). *The name and nature of poetry*. Cambridge, England: Cambridge University Press.

Hudson, W. H. (1946). As cited in D. Erasmus, *The praise of folly* (L. F. Dean, Trans.). Chicago: Packard.

Hyten, C. M., & Chase, P. N. (1991). An analysis of self-editing: Method and preliminary findings. In L. J. Hayes & S. C. Hayes (Eds.), *Dialogues in verbal behavior* (pp. 67-81). Reno, NV: Context Press.

Kritch, K. M., & Bostow, D. E. (1993). Responses to past events: Intraverbal relations, or tacts to private stimuli? *The Analysis of Verbal Behavior, 11*, 1-7.

Lacour-Gayet, G. (1930). *Talleyrand, 1754-1838*. Paris: Payot.

Lecky, W. E. H. (1869). *History of European morals from Augustus to Charlemagne* (Vol. 2, p. 296). London: Longmans, Green.

Marouzeau, J. (1939). Dire "non." In *Melanges de linguistique offerts a Charles Bally [A collection of linguistic offerings by Charles Bally]*. Geneva: Georg.

Moxley, R. A. (1990). On the relationship between speech and writing with implications for behavioral approaches to literacy. *The Analysis of Verbal Behavior, 8*, 127-140.

Parsons, J. A., Taylor, D. C., Joyce, T. M. (1981). Precurrent self-prompting operants in children: "Remembering." *Journal of the Experimental Analysis of Behavior, 36*, 253-266.

Poe, E. A. (1881). *The mystery of Marie Roget, and other tales*. London: Chatto and Windus.

Poincare, H. (1913). Mathematical creation. In *The foundations of science: Science and hypothesis; The value of science; Science and method* (G. B. Halsted, Trans.). New York: Science Press.

Porritt, M., Burt, A., & Poling, A. (2006). Increasing fiction writers' productivity through an internet-based intervention. *Journal of Applied Behavior Analysis, 39*, 393-397.

Prescott, F. C. (1926). *The poetic mind* (p. 34). New York: Macmillan.

Ridley, M. R. (1933). *Keats' craftsmanship: A study in poetic development*. Oxford: Clarendon Press.

Romains, J. (1937). *Men of good will: Vol. 6. The depths and the heights* (G. Hopkins, Trans.). New York: Knopf.

Rosett, J. (1941). Synthetic conceptions in neuropsychology. *Scientific Monthly, 53*, 417-426. [p. 390]

Russell, G. W. (1932). *Song and its fountains*. London: Macmillan.

Skinner, B. F. (1934, January). Has Gertrude Stein a secret? *Atlantic Monthly, 153*, 50-57.

Skinner, B. F. (1953). *Science and human behavior*. New York: Macmillan.

Trollope, A. (1936). *The last chronicle of Barset* (2 vols.) (pp. 324, 248). London: Dent (Everyman's Library).

Welsh, T. M. (1987). Teaching writing functionally: A review of Peter Elbow's *Writing with Power. The Behavior Analyst, 10*, 109-110.

Wilde, O. (1949). *The importance of being earnest*. London: W. Heinemann.

Woodhouse, R. (1936). As cited in C. L. Finney, *The evolution of Keats's poetry* (Vol. 2) (p. 532). Cambridge: Harvard University Press.

Vaughan, M. E. (1991). Discussion. In L. J. Hayes & S. C. Hayes (Eds.), *Dialogues on verbal behavior* (pp. 82-84). Reno, NV: Context Press.

Wallace, I., & Pear, J. J. (1977). Self-control techniques of famous novelists. *Journal of Applied Behavior Analysis, 10*, 515-525.

Zoellner, R. (1969). Talk-write: A behavioral pedagogy for composition. *College English, 30*, 267-320.

Commentary

Our topics this week are the self-editing and self-strengthening of verbal behavior. Skinner (1957) introduced these topics this way:

> Verbal responses are described and manipulated by the speaker with appropriate autoclitics which augment and sharpen the effect upon the listener. They are also examined for their effects upon the *speaker* or *prospective listener*, and then either rejected or released. The process of *editing* is an additional activity of the speaker. (p. 369)

Two points are worth considering here. First, think of editing as meta-autoclitic activity. Second, whereas the controlling variables over autoclitic behavior are generally positive (i.e., reinforcement), those that control editing are generally negative (i.e., aversive control).

Self-Editing

We begin with Skinner's (1957) three chapters on the production of verbal behavior. This will comprise the bulk of the reading. In Chapter 15, "Self-Editing," he describes self-editing as a phenomenon that needs accounting for (not a phenomemon that does the accounting) and briefly describes the conditions under which it develops. He also discusses the rejection and release of verbal behavior and related material on the effects of punishment. In this context, we shall also read Epting and Critchfield's (2006) article, "Self-Editing: On the Relation between Behavioral and Psycholinguistic Approaches," which compares and contrasts the approaches. For some suggestions about how to conduct research on self-editing, see Hyten and Chase (1991; see Vaughan, 1991).

Special Conditions of Self-Editing

In Chapter 16, "Special Conditions of Self-Editing," Skinner (1957) covers (a) non-editing as a function of special conditions (e.g., defective self-observation, responses to controlling variables, organismic conditions), (b) editing as a function of special audiences, and (c) metaphorical terminology in self-editing (e.g., displacement, concealment, repression/ release). Skinner's (1934) first publication relevant to verbal behavior – "Has Gertrude Stein a Secret" -- is relevant to the first part of this chapter, where he discusses "automatic" writing. You might consult this article for further elaboration. On humor, see Epstein and Joker (2007).

Self-Strengthening of Verbal Behavior

In Chapter 17, "Self-Strengthening of Verbal Behavior," Skinner (1957) deals with how the speaker "finds" verbal behavior appropriate to a particular situation that is not thereafter rejected. After this, he covers (a) techniques for self-strengthening (e.g., manipulating stimuli,

changing the level of editing, changing motivational variables) and (b) building new verbal responses, especially to stimuli that are not physically present.

Memory. These topics are closely related to one we mentioned several weeks ago -- remembering as problem-solving, which in itself is a form of productive thinking. This week we shall cover the topic by reading David Palmer's (1991) chapter, "A Behavioral Interpretation of Memory" (see also Delaney & Austin, 1998; Kritch & Bostow, 1993). For related material on self-prompting, for which some experimental research exists, see Parsons, Taylor, and Joyce's (1981) "Precurrent Self-prompting Operants in Children: 'Remembering'." If you are interested in further research on topics concerning the tacting and probing of private events, see Sundberg (1991, p. 88).

Promoting verbal behavior in oneself. Our next two readings address how to arrange our environments in order to promote more effective verbal behavior, in this case, writing. For this, please begin with Skinner's (1981) article – "How to Discover What You Have to Say: A Talk to Students" -- in which he presents some general techniques of self-strengthening (see also Skinner, 1953, pp. 227-241). For a working example in the life of a novelist, see Wallace and Pear (1977; see also Porritt, Burt, & Poling, 2006).

Promoting verbal behavior in others. Finally, given that composition involves a large degree of editing -- or it should, for most of us -- I though we might read an article on the process of writing, especially one that draws on Skinner's analysis in *Verbal Behavior* -- Julie Vargas's (1978), "A Behavioral Approach to the Teaching of Composition" (see also Moxley, 1990). Julie was Skinner's elder daughter. For related material by an English professor, see Zoellner (1969). For an example of how to teach writing "functionally" through shaping rather than "structurally" through antecedent instructional and imitative control, see Elbow (1973; see Welsh, 1987).

Term Paper Assignment

Please turn in (a) a rough draft of the first five pages of your paper, (b) your references without abstracts, (c) your last graded assignment, and (d) your introduction, revised as edited or requested.

Cites and Citations

The scientific and literary citations Skinner listed in this chapter are these: Bodkin (1934), Dashiell (1928), Dickens (1938), Ferster and Skinner (1957), Fowler (1930), Freud (1938a, 1938b), Galsworthy (1931), Hadamard (1945), Holland (1957), Housman (1945), Hudson (1946), Lacour-Gayet (1930), Lecky (1869), Marouzeau (1939), Poe (1881), Poincare (1913), Prescott (1926), Ridley (1933), Romains (1937), Rosett (1941), Russell (1932), Skinner (1934), Trollope (1864), Wilde (1949), and Woodhouse (1936).

For material in *Verbal Behavior* that corresponds with material in *Notebooks, B. F. Skinner* (1980), see for Ch. 15: pp. 369ff (16.1, 69.2), 369,2 (110.1), 371,1 (282.1, 353.2), 371,2f (31.3, 156.2, 173.1, 200.2), 372,2 (312.1), 376,1 (322.1), 377,0 (74.1, 76.1), 378,0 (12.3), 378,1

(141.2, 284.1), 380,2 (200.2), 381,1 (310.2), 382,1f (131.2, 253.2, 282.1); for Ch. 16: pp. 385,1f (293.1, 310.2), 386,2 (260.1), 386,3 (28.2), 387,0 (12.3), 387,1 (296.2), 387,3 (29.1, 45.1, 155.2, 168.3, 199.2, 216.2, 244.1, 315.2, 329.1), 389,1 (317.1), 392,2 (12.3), 393,2 (204.2), 394,1 (5.1), 396,1f (255.2, 261.1), 396,3 (74.1, 76.1, 255.2), 396,3 (74.1, 76.1, 108.2, 358.1), 398,2 (78.1, 134.1), 398,3 (18.2, 72.1); for Ch. 17: pp. 403,1 (312.1), 403,3f (24.1), 404,0 (215.1, 224.3, 284.2), 405,3 (31.1), 406,1f (50.1), 406,2 (----), 411,1f (402, 133.1), 413,1ff (186.1, 267.1), 413,3 (224.3), 414,2 (---.1), 418ff (190.1, 211.3, 215.2, 274.2), 418,1f (193.1), 418,2 (314.2), 419,1 (173.2), 425,2f (339.1), 429,1 (10.2), 430,1f (115.1), 430,2 (184.2, 305.2, 318.1)

Discussion Questions and Objectives

Chapter 15: Self-Editing (pp. 369-383)

1.   The way the present process differs form that of Part IV of *Verbal Behavior* is mentioned in 369). Remember that autoclitic behavior simply occurs along with primary verbal behavior. The sequence is usually: (1) some variables (EOs, SEs, and SDs) strengthen some primary verbal behavior (both singly and as a form of multiple control); (2) the circumstances and/or some further SEs regarding the listener's reaction to the verbal behavior strengthen autoclitic tacts and mands; (3) both of these strengthenings drag along with them self-intraverbal verbal behavior (which further becomes a part of the multiple control); and (4) the verbal behavior is actually emitted (overtly or covertly) -- tried out for its effect on the speaker, himself, and them further altered, suppressed, emitted as is, etc. Know this sequence and be able to give some examples. See also pp. 382.1. Consider Skinner's examples on pp. 345.2, 347.1-347.2, 349.2, etc. for practice. Make up an example of your own to try analyzing. Try one that is mainly tact; one that is under the control of some nonverbal circumstance directly affecting the speaker at the moment of speaking; and one like his "fact" that Sam rented a leaky boat -- here the causal variables are quite unclear, but it *is* clear that the speaker in that instance is *not* confronting Sam or the leaky boat.

2.   Distinguish self-editing from the autoclitic process, and give an example or two to make the distinction clear (pp. 369ff).

3.   In the section from pp. 369.2-371.1, Skinner gives examples of rejection, going from the most overt, through convert, to rejection *prior even to convert emission.* Be able to give examples of various kinds of rejection. Note on p. 371.1 (and also p. 435.0) that Skinner does *not* take a peripheralist position regarding one's own behavior as a stimulus for further behavior. Add "Plus one more -- what effector organ is involved?" to the last sentence of p. 371.1. Do not omit study of the long footnote on p. 370.

4.   What is the difference between the simple non-emission of a verbal response and the act of withholding it (pp. 369-370)?

5.   Give brief examples of the following, and comment on possible controlling variables: (a) the rejection of written verbal behavior; (b) the withholding of audible speech by means of restraining behavior; (c) revoking a vocal response that has been emitted but not heard; (d) revoking a vocal response that has reached the listener; (e) revoking subvocal behavior before it

has been emitted audibly; (f) audible behavior retreating to the subaudible level; and (g) rejection of verbal behavior even before subaudible emission (pp. 369-371).

6.   The first section establishes that rejection occurs in many forms. Now we see why -- punishment. Note here again Skinner's three-step analysis of the effects of punishment, and also note the close relation of this analysis to that of Freud. A nice capsule analysis of the problem of generating subtle discriminations is given on p. 372.3. Why does good performance develop "slowly, if at all"? What are two ways to improve the procedure? Compare the two in terms of the cost effectiveness for the teacher. Note the last sentence of p. 372.3 and put it with the last part of p. 379.3 in answering the question "Under what conditions does Skinner condone the use of punishment?"

7.   What emotional behaviors are produced by punishment of vocal responses and what is the role of these behaviors in rejection (p. 372)?

8.   Why may we conclude that the emotion of fear or guilt is not essential to the rejection of verbal responses (p. 372)?

9.   Describe how the effect of punishment in reducing the frequency of punished responses by a sort of editing can be demonstrated in a pigeon (pp. 372-373).

10.   What is the effect of punishment on a verbal response? Give an example (pp. 371-372).

11.   Distinguish between rejection of a verbal response as escape behavior and as avoidance behavior. Give examples illustrating the distinction (pp. 371-372).

12.   What is "successful" repression? Why may it be considered more successful than less effective forms of preventing the overt occurrence of a response (p. 372)?

13.   Now, rejection occurs -- due to punishment, but why is verbal behavior punished? Be able to give four or five good reasons. Note carefully "form or theme" weakness on p. 374.1.

14.   Give an example of verbal behavior that is self-punishing (p. 375).

15.   What influence did Freud have on the punishment of verbal behavior (pp. 375-376)?

16.   What are the effects of punishment on verbal behavior (pp. 376.1-376.4)? In connection with the second effect, read pp. 141.1-142.1 and also pp. 434-438.

17.   Give examples of the effects of punishment with respect to: (a) concealing the identity of the speaker; (b) recession to the convert level; (c) talking overtly to oneself; and (d) disguised speech (pp. 376-377).

18.   Distinguish between the effects of punishment in algebraic summation (i.e., in generating a "negative strength" to be assessed in multiple causation) and in editing involving a process of review and revision (pp. 377-378).

19.   What is *paraleipsis*? What is its function (p. 378)?

20.   Be able to give examples of several autoclitics of editing and to explain their controlling variables (pp. 377.1-378.3). P. 379.1 and p. 379.2 deal with quite subtle effects of punishment on verbal behavior, and 379.3-380.1 reconsiders the general value of punishment, concluding somewhat ambivalently.

21.   In governmental discussions concerning the enforcement of integration of U.S. schools, a high official in the Nixon administration became noted for prefacing his remarks with: "Now don't get me wrong, I'm not for segregation," and "Now don't get me wrong, I'm for Negroes and equal rights." Plausibly analyze this behavior in terms of the autoclitics of editing (pp. 377-378).

22.   What is an *autoclitic nervous laugh* or *autoclitic giggle*? What is its function (p. 378)?

23.   Why is moderate use of punishment probably necessary in developing and maintaining desirable verbal behavior (pp. 379-380)?

24.   Why should we avoid the extensive use of punishment to reduce the strength of verbal responses (p. 380)?

25.   Note the important role of *automatic reinforcement* in the release of verbal behavior (pp. 380.2-381.2). Be able to give examples illustrating positive consequences leading to release. Note how this process can constitute *a form of contingency* for correct speech and writing even in the absence of any deliberate instruction or consequation, an therefore also for the acquisition of complex grammatical forms or conventions. But note also that this process must depend upon a great deal of passive exposure to verbal stimuli and would be quite weak with deaf children whose parents sign, or to signing chimps.

26.   Discuss the role of testing -- both subvocal and vocal -- in the release of verbal behavior (pp. 380-381).

27.   P. 382.1 is a good review of the dynamics of verbal behavior. Distinguish ecstatic and euplastic composition. Discuss the time and place differences that may occur between these two activities (p. 382.2 and 3).

28.   Why is the editing of written behavior perhaps easier to study than the coverting of vocal behavior (p. 382)?

29.   Briefly describe, in their order of occurrence, the steps leading to the emission of edited verbal behavior (p. 382).

Chapter 16: Special Conditions of Self-Editing (pp. 384-402)

30.   What are the various reasons why behavior of moderate strength may remain unedited (pp. 384.2-390.1)? What are the two intellectual movements that have fostered sensitiveness to

controlling variables? Try to find a personal example illustrating the kind of analysis that arises from the first intellectual movement. What do we mean by "awareness"? Also see *About Behaviorism* (pp. 144.2-145.1) for a much later set of distinctions (e.g., conscious, unconscious, rational, nonrational, irrational -- the third and fourth of which are related to rule-governed behavior, which was a notion that had not been developed when *Verbal Behavior* was written.

31.   What is necessary in order for a speaker to edit his behavior? Explain (p. 384).
32.   When overt verbal behavior is being executed with great speed, it cannot be edited before it has been emitted. Why not (p. 384)?

34.   Why are deaf persons more likely to talk aloud to themselves (p. 384)?

35.   In what way has the psychoanalytic movement increased the individual's sensitivity to controlling variables (pp. 387-388)?

36.   Give examples illustrating how editing may fail to occur under the following conditions, and comment briefly on possible controlling variables: (a) extremely strong verbal behavior; (b) defective feed-back; (c) defective self-observation; (d) defective responses to controlling variables; and (e) "automatic" verbal behavior (pp. 384-390).

37.   Retrospectively observe your own verbal behavior. Note instances in which you have edited and in which you have failed to edit, and the consequences and possible controlling conditions of each.

38.   What is automatic writing? How is it related to the work of Gertrude Stein? Note the first sentence of 389.3 for an aspect of the autoclitic process -- or possibly just an example of the occurrence of large units. Note also the point of p. 390.1.

39.   Why is automatic writing often ungrammatical, childish, obscene, hackneyed, or trivial, but frequently well composed (p. 389)?

40.   What is the main point of the section of "Speaker and Listener as Separate Personalities" (pp. 390.2-393.3)? What does Skinner say about dreaming in any of his other works? Where?

41.   What accounts for the fact that writers, poets, mystics, etc. often feel that their verbal behavior comes not from themselves, but from another source (e.g., a supernatural being, a muse, or an imaginary person) (pp. 390-392)?

42.   How may we account for cases of "multiple personalities" such as Morton Prince's famous patient, Miss Beauchamp (p. 393).

43.   Describe some of the types of audiences that "release" speakers from their usual editing activities (pp. 394.1-395.3).

44.   Discuss how editing may vary as a function of the following audiences, and comment on possible controlling variables: (a) total strangers; (b) friends; (c) intimate family; (d) oneself; (e)

priest; and (f) psychotherapist (pp. 394-395).

45.   Why is the verbal summator a particularly good device for studying unedited speech (p. 394)?

46.   The essential feature of literature is given in p. 396.1. What are the effects of this feature on "literary behavior" (pp. 396.2-398.3)? Distinguish metaphor from symbol (p. 396.3). Describe several "literary discoveries." Are there any that have occurred since *Verbal Behavior* was written that are prominent or well known? What are they?

47.   Why is a low level of editing tolerated and encouraged in literature (pp. 396-398)?

48.   Why is the character novel a useful and rewarding device to both the writer and the reader (pp. 397-398)?

49.   Discuss the differences between a literary and a scientific metaphor (p. 396).

50.   What is the function of the symbol in literature (pp. 396-397)?

51.   A point is made in p. 398.3 which has an important bearing on our interpretation of various kinds of "abnormal" behavior. See also Skinner's approach to abnormal behavior as it appears in *Science and Human Behavior*.

52.   In the section, "The notion of release," Skinner criticizes a widely prevalent metaphor as misleading. The basic notion is given on pp. 399.1-400.1, and then analyzed. Study each of the numbered sections carefully and be able to say what is considered behaviorally sound and behaviorally unjustified -- (a) "We need not assume..." (b) "But this does not mean that...," etc. This section also gives some indication of how Skinner would analyze much of what is called "neurotic" behavior.

53.   The metaphors of repression and release, although apparently sometimes based on real behaviors, are misleading. Reinterpret the following observations in behavioral terms, and identify possible relevant variables: (a) repressed material may be released by such techniques as psychoanalysis; (b) repressed material may be expressed in substitute forms; (c) repressed material may cause various psychological symptoms -- the goal of psychotherapy being to remove the symptoms by releasing the repressed material, somewhat on the analogy of removing a tumor, etc., and (d) when repressed material is released, as in psychoanalysis, the patient experiences relief (pp. 400-401).

54.   How does Skinner reinterpret the Freudian notion of sublimation (pp. 401-402)?

Chapter 17: Self-Strengthening of Verbal Behavior (pp. 403-417)

55.   What do people do in situations where verbal behavior is demanded (e.g., when silence is aversive), but the form of the behavior is not specific? (That is, do they generate the behavior from "within" themselves?) Give an example (p. 403).

56.   Several reasons why verbal behavior is unavailable are given from pp. 403.1-405.2. Be able to give some of these.

57.   Why is it that although people may not be readily able to emit a response (e.g., to the question "What is that?"), they may nevertheless readily judge it as correct once it is emitted (p. 404)?

58.   Why may the following types of responses be weak: (a) tact; (b) intraverbal; (c) echoic; (d) textual (pp. 406-405)?

59.   What techniques for strengthening behavior do speakers frequently use when self-echoic behavior is weak? Give an example (pp. 404-405).

60.   Give two examples of each of the following: (a) formal self-prompt, (b) thematic self-prompt, (c) formal self-probe, (d) thematic self-probe (pp. 406-408).

61.   Why do fortune tellers use crystal balls, tea leaves, etc. (disregarding the possibility that future stimuli actually are manifested through these devices) (pp. 406-407)?

62.   How is psychoanalysis an example of changing the audience variable in order to strengthen verbal behavior (p. 408)?

63.   Behavioristically, explain in some detail why thinkers seek solitude (pp. 408, 410).

64.   What accounts for the "warm-up" effect in writing? That is, why is the initial part of an essay, etc., often the most difficult (p. 409)?

65.   Be able to describe and give examples of all the techniques of self- strengthening given in the sections and subsections from pp. 405.3-412.3. Organize this material carefully and try to make up sample questions. In p. 409.2, a technique is described which is not clear in terms of the basic behavioral process involved. This is a common type of analysis. What is wrong with it? How is the problem to be solved?

66.   Why do writers frequently suffer form the "abulia" of extinction? How may this condition be remedied or prevented by manipulating audience variables? Illustrate with three distinctly different examples (pp. 403-410, 182).

67.   How may the speaker change the level of editing to encourage his own verbal behavior (e.g., silly or witty behavior) (p. 410)?

68.   A common complaint of university professors -- especially at the graduate level -- is not that students do not learn well enough, but that they do not have many ideas of their own. How might this be related to the level of editing, and what might be done about it (p. 410)?

69.   Give two examples illustrating each of the following ways in which a person may strengthen his own verbal behavior: (a) change the level of deprivation; (b) generate aversive events which he can escape or avoid only by engage in verbal behavior; (c) use aversive self-stimulation; (d) manipulate emotional behavior; and (e) use drugs (p. 412).

70.   (a) What appears to be the basic facts about the phenomenon called "incubation"? (b) What mentalistic explanation has been used to account for these facts? (c) Criticize this explanation. (d) How might incubation be accounted for behavioristically (two processes should be mentioned) (p. 413)?

71.   Rather than using incubation, how might one deal directly with competing variables of the sort that disappear during incubation? Explain briefly, and give an example or two (pp. 413-414).

72.   How are production, editing, and composition interrelated in the development of effective verbal behavior (p. 414.1)?

73.   Discuss the relationship between production and editing (pp. 414-415).

74.   How can one build new verbal behavior? How can one develop or maintain verbal behavior to stimuli that are no longer present (pp. 415.1-416.4)?

75.   What is "attention"? How may a person be taught to "pay attention" to his environment? Explain in behavioral terms (pp. 415-416).

76.   Many psychologists maintain that the term "attention" properly refers to some hypothetical state within the organism. They argue that it cannot be observed behaviorally. How would Skinner reply to this argument (p. 416)?

77.   Give examples illustrating different ways in which well-trained speakers "bridge the gap" between stimuli remote in the past and future verbal behavior (e.g., a spy sent to observe the location of military installations, or a person dialing a number after reading it in a directory some distance from the phone) (pp. 416-417).

78.   Distinguish self-editing from the autoclitic process, and give an example of two to make the distinction clear. (p. 369ff.)

79.   Give brief examples of the following, and comment briefly on possible controlling variables: (a) the rejection of written verbal behavior, (b) the withholding of audible speech by means of restraining behavior, (c) revoking a vocal response that has been emitted but not heard, (d) revoking a vocal response that has reached the listener, (e) revoking subvocal behavior before it has been emitted audibly, (f) audible behavior retreating to the subaudible level, and (g) rejection of verbal behavior even before subaudible emission (pp. 369-371).

80.   Why is verbal behavior rejected? (p. 371)

81.   What is the effect of punishment on a verbal response? Give an example (pp. 371-372).

82.   Distinguish between rejection of a verbal response as escape behavior and as avoidance behavior. Give examples illustrating the distinction (pp. 371-372).

83.   What is "successful" repression? Why may it be considered more successful than less effective forms of preventing the overt occurrence of a response (p. 372)?

84.   Give six distinctly different examples of why verbal behavior is punished (pp. 373-376).

85.   Give an example of verbal behavior that is self-punishing (p. 375).

86.   What influence did Freud have on the punishment of verbal behavior (pp. 375-376)?

87.   Distinguish between the effects of punishment in algebraic summation (i.e., in generating a "negative strength" to be assessed in multiple causation) and in editing involving a process of review and revision (pp. 377-378).

88.   What is *paraleipsis* and what is its function (p. 378)?

89.   Why is moderate use of punishment probably necessary in developing and maintaining desirable verbal behavior (pp. 379-380)?

90.   Why should we avoid the extensive use of punishment to reduce the strength of verbal responses (p. 380)?

99.   Why is the editing of written behavior perhaps easier to study than the covert editing of vocal behavior (p. 382)?

100.   Suppose some situation arises regarding which an adult speaker has some verbal behavior and also has an appropriate but discriminating audience. Describe, using the concepts and terms dealt with prior to the present assignment *and* the material of the present assignment the various factors determining the form of the verbal behavior that is ultimately emitted.

101.   What is a "peripheralist" position regarding behavior as a stimulus?

102.   Skinner suggests several reasons why verbal behavior might be punished. Briefly describe and give examples which illustrate the three bases of punishment which seem to you most important in the control of adult verbal behavior.

103.   How might automatic reinforcement be responsible for a person's acquiring the tendency to make verbs agree with nouns in number (e.g., "The bo*y* run*s*".) Explain the process carefully, omitting no essential components.

104.   Give your own personal example of Proustian recall.

105.   What is the main point of the section on "Speaker and Listener as Separate Personalities" (p. 390).

106.   Skinner considers the metaphors of repression and release unfortunate in that they misrepresent several processes in the act of fusing them into one. He then discusses these several processes that are mis-represented. What are the five most important points in this discussion?

107.   List the various techniques of self-strengthening.

108.   What are the facts that give rise to the notion of incubation as the work of unconscious thought processes?

Name: _____

READING RATINGS

Topic 11

The Production of Verbal Behavior I

	Ranking for this Week (1-5)	Rating for the Course (1-5)
Skinner (1957)	_____	_____
Epting & Critchfield (2006)	_____	_____
Palmer (1991)	_____	_____
Skinner (1981)	_____	_____
Vargas (1978)	_____	_____

The lower the number, the higher the ranking or rating.

_____

Which of this week's readings, topics, or concepts need further review or clarification? That is, what else can I help you with?

VERBAL BEHAVIOR

ABS 931

Topic 12

The Production of Verbal Behavior II:

Logical and Scientific Verbal Behavior, and Thinking

<u>Assigned Reading</u>

Skinner, B. F. (1957). *Verbal behavior* (Ch. 18: Logical and scientific behavior, pp. 418-431).
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    113-122.

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<u>Recommended Reading</u>

Arrington, R. L., & Deitz, S. M. (1986). A second call. *Behaviorism, 14*, 103-106.

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Hackenberg, T. D. (1988). Operationism, mechanism, and psychological reality: The second coming of linguistic relativity. *The Psychological Record, 38*, 187-201.

Hayes, L. J. (1994). Thinking. In S. C. Hayes, L. J. Hayes, M. Sato, & K. Ono (Eds.), *Behavior analysis of language and cognition* (pp. 149-164). Reno, NV: Context Press.

Hayes, S. C. (Ed.). (1989). *Rule-governed behavior*. New York: Plenum.

Hayes, S. C., & Brownstein, A. J. (1986). Mentalism, behavior-behavior relations, and a behavior-analytic view of the purposes of science. *The Behavior Analyst, 9*, 175-190.

Hayes, S. C., & Brownstein, A. J. (1987). Mentalism, private events, and scientific explanation: A defense of B. F. Skinner's view. In S. Modgil & C. Modgil (Eds.), *B. F. Skinner: Consensus and controversy* (pp. 207-218). New York: Falmer.

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Lee, V. L. (1985). Scientific knowledge as rules that govern behavior. *The Psychological Record, 35*, 183-192.

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Leigland, S. (1996). The functional analysis of psychological terms: In defense of a research program. *The Analysis of Verbal Behavior, 13*, 105-122.

Locke, J. (1947). *An essay concerning human understanding* (R. Wilburn, Ed.). London: Dent (Everyman's Library).

Malinowski, B. (1923). The problem of meaning in primitive languages. A supplement in C. K. Ogden & I. A. Richards, *The meaning of meaning: A study of the influence of language upon thought and of the science of symbolism*. New York: Harcourt, Brace.

Marr, M. J. (1986). Mathematics and verbal behavior. In T. Thompson & M. D. Zeiler (Eds.), *Analysis and integration of behavioral units* (pp. 161-183). Hillsdale, NJ: Erlbaum.

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O'Donohue, W., & Szmanski, J. (1996). Skinner and cognition. *Journal of Behavioral Education, 6*, 33-48.

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Smith, L. D. (1986). *Behaviorism and logical positivism: A reassessment of the alliance* (pp. 259-297). Stanford, CA: Stanford University Press.

Terrell, D. J., & Johnston, J. M. (1989). Logic, reasoning, and verbal behavior. *The Behavior Analyst, 12*, 35-44.

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Vaughan, M. E. (1987). Rule-governed behavior and higher mental processes. In S. Modgil & C. Modgil (Eds.), *B. F. Skinner: Consensus and controversy* (pp. 257-264). New York: Falmer.

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Waller, B. (1977). Chomsky, Wittgenstein, and the behaviorist perspective on language. *Behaviorism, 5*, 43-59.

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Wessells, M. (1987b). Wessells replies to Creel. In S. Modgil & C. Modgil (Eds.), *B. F. Skinner: Consensus and controversy* (pp. 124-126). New York: Falmer.

Williams, J. L. (1986). The behavioral and the mystical: Reflections on behaviorism and Eastern thought. *The Behavior Analyst, 9*, 167-173.

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Commentary

The last two topics Skinner (1957) covered in *Verbal Behavior* are (a) logical and scientific verbal behavior and (b) thinking, the latter of which we have discussed to some extent. These are difficult topics from any perspective and are often thought to lie outside the purview of behavior analysis. By now, though, Skinner (1957) has prepared us for this material. Without this instruction, we might have a great deal more difficulty with it.

Logical and Scientific Behavior

Prior to, and after, writing *Verbal Behavior*, Skinner occasionally referred to an "empirical" philosophy of science. However, Chapter 18 in *Verbal Behavior* – "Logical and Scientific Verbal Behavior" – is his only extensive discussion of what such a treatment might be, in particular, regarding (a) the sharpening of verbal and nonverbal stimulus control over scientific behavior and (b) the construction of new verbal behavior (e.g., the manipulation of responses, confirmation, scientific research, evaluation, and scientific methodology). As might be expected, Skinner's treatment stands in contrast to traditional analyses of science, which are largely logical and cognitive in flavor (see Hayes & Brownstein, 1986, 1987; Johnston, 1990; Smith, 1986). In the philosophy of science, however, we find some sympathy for his selectionist or evolutionary account. For example, David Hull's (1988) *Science as a Process* (see Morris, 1990) treats science not as a reified "thing," but as the behavior of scientists -- behavior selected by its consequences. This is an excellent and interesting book, but not an easy read.

Behavior is not only selected by its consequences, but is also "rule governed," both broadly and narrowly. In the broad sense, rule-governed behavior is behavior under the stimulus control of antecedent rules or contingency-specifying stimuli (see Vaughan, 1989). Scientific behavior is no different, as described in Vicki Lee's (1985) "Scientific Knowledge as Rules that Govern Behavior." More narrowly, behavior is rule-governed when it is under the control of the formal rules of logic, both deductive and inductive. Skinner (1957) does not address logic under any headings, but speaks to it more generally. For a more focused account, see Dudley Terrell and Jim Johnston's (1989), "Logic, Reasoning, and Verbal Behavior." Behavior, of course, may be "logical" and "rule-governed" even when it is not controlled by rules, but by contingencies. In this case, behavior has the "quality" of being logical or rule-governed, while not at the same time controlled by logic or rules. We follow up on these points with our next reading -- Skinner's classic article, "A Case History in Scientific Method." For further treatment of Skinner's analysis of scientific behavior, see Fraley (1996), Johnston and Pennypacker (1993), Marr (1986), Moore (1981), Schnaitter (1980), and Smith (1986, pp. 259-297).

As for the secondary literature on Skinner's approach to science, we will read Richard Creel's (1987) overview – "Skinner on Science" -- even if it is quirky, sometimes simplistic, and not beyond criticism (see Wessells, 1987a, 1987b; contra. Creel, 1987b). More sophisticated and philosophical material is available in Bill O'Donohue and Larry Smith's (1992) "Philosophical and Psychological Epistemologies in Behaviorism and Behavior Therapy." For our part, we turn to Mark Burton's (1980) "Determinism, Relativism, and the Behavior of Scientists," which addresses the issue of relativism in scientific knowledge or, more specifically, the "social construction of knowledge," even in science, which we have discussed before. For a more general overview of this perspective, one that draws on Skinner's (1957) account of verbal behavior, see Bernard Guerin's (1992), "Behavior Analysis and the Social Construction of Knowledge." In his own way, Skinner (1957) sometimes resonated strongly (and sometimes not) to this account of knowledge. Tim Hackenberg (2009) spells this our more clearly in our next reading, "Realism without Truth: A Review of Giere's *Science without Laws* and *Scientific Perspectivism*. An important side-issue here is the objective-subjective distinction, in which "science" strives for the "objective." This is true, but science still has its phenomenological side (see Day, 1969b). See also, Williams (1986) on the relation between radical behavioral epistemology and Eastern thought.

Thinking

The last topic Skinner (1957) addressed in *Verbal Behavior* was thinking. Thinking is the aspect of human behavior for which the culture is most likely to invoke mentalistic explanations. It is also the area in which Skinner and behavior analysis have been most often misunderstood -- "thinking" is thought to lie outside the purview of behavior analysis. Thinking is a difficult topic from any perspective, but it must be addressed. For this, please begin with Skinner's (1957, pp. 432-452) chapter on this topic. Here, Skinner covers covert verbal behavior, the difficulties in studying such behavior, how covert behavior is necessary for a complete account of behavior, the characteristics of covert verbal behavior, and why responses become covert. Material on the speaker as listener covers automatic reinforcement and constructive "thinking," that is, thinking that has practical effects on other of the speaker's behavior. Finally, Skinner comments on thinking as verbal behavior. In general, he considers and rejects the idea that thinking can be equated with covert verbal behavior or with verbal self-stimulation or with verbal behavior as a whole. He concludes that thought is *behavior* itself -- verbal or nonverbal, covert or overt -- behavior in all the complexity of its controlling relations. We will want to explore the ramifications of this.

Skinner's first systematic presentation on thinking was his chapter that title in his 1953 book, *Science and Human Behavior* (Ch. 16: Thinking, pp. 242-256), which is our next reading. Here, for Skinner, thinking was not simply a stream of covert verbal behavior, but verbal behavior – covert or overt – that was productive, including decision-making, problem-solving, and remembering. Given this analyses, thinking should be something we can teach. Certainly, this would be Skinner's pragmatic perspective, as seen in our next reading, Skinner's (1968) chapter in *The Technology of Teaching*, "Teaching Thinking" (pp. 115-144). For additional readings on thinking, see Skinner (1974; Winokur, 1976). As for the involvement of rule-governed behavior in thinking, see Maggie Vaughan's (1987), "Rule-governed Behavior and Higher Mental Processes" (see also Hayes, 1989; Skinner, 1969).

The term "thinking," of course, suggests something cognitive, and cognitive psychology is quite different from behavior analysis. For an overview of Skinner on cognition, see O"Donohue and Szmanski's (1996) – "Skinner and Cognition." Some behavior analysts might think (sic) that Skinner was betraying the field by using a cognitive term such as thinking, but the issue is not that simple. Two issues are afoot. First, cognitive terms may be used descriptively. They can describe behavior -- our dependent variable. The problem of understanding what we mean by the "cognitive" terms we speak in our natural language is not new to behavior analysis. Skinner (1945) raised it many years ago (see Day, 1969b; Leigland, 1996). Some behavior-analytic work in this area is being driven by scholars who are analyzing the parallels between Ludwig Wittgenstein and Skinner on these matters, as seen for instance, in Willard Day's (1969a) "On Certain Similarities Between *The Philosophical Investigations* of Ludwig Wittgenstein and the Operationism of B. F. Skinner." Wittgenstein's views have been taken as *one* proper philosophical base for analyzing natural language "referents" to cognition. For this, we will read Deitz and Arrington's (1984), "Wittgenstein's Language-Games and the Call to Cognition" (see also Arrington & Deitz, 1986; Costall, 1980; Deitz, 1986; Morris, 1985; Waller, 1977). For a related paper by Skinner, see his 1989 paper, "The Origins of Cognitive Thought." This pulls together some of my commentary above and offers Skinner's later (although consistent) view on what we mean when we speak of "cognition" (see also Hayes, 1994)

The second issue concerning cognitive terms is that, although they may be used descriptively (i.e., as dependent variables), they are commonly employed by cognitive psychologists and the culture-at-large as explanations (i.e., as independent variables). The possibility ensues then that, by using cognitive terms, behavior analysts may unwittingly find themselves adopting cognitive explanatory models. The argument has been addressed by Phil Hineline (1980, 1983, 1985), especially in his 1984 article, "Can a Statement in Cognitive Terms Be a Behavior-Analytic Interpretation?"

Related to these issues is the "psychology" inherent in English grammar, which promotes a mechanistic psychology at odds with something like the contextualism of contemporary behavior analysis, as I have suggested throughout the semester. For this topic, you might see Tim Hackenberg's (1988), "Operationism, Mechanism, and Psychological Reality: The Second Coming of Linguistic Relativity," which puts some of the differences between behavior analysts and psycholinguists into perspective (see also Williams, 1986). Hackenberg first examines the nature of scientific explanation and describes how linguistic systems (e.g., grammars) inherently parse descriptions of events and activity in a mentalistic manner (see Lee, 1986). Based on these analyses, he then illuminates (a) the mechanistic character of most psychological explanations, (b) the superficially mechanistic nature of behavior analysis, and (c) the misconceptions of behavior analysis as mechanistic, and not contextualistic, because of the linguistic parsing.

Finally, we close out our reading of *Verbal Behavior* with the first of Skinner's (1957) two personal epilogues – "The Validity of the Author's Verbal Behavior" (pp. 453-456).

Cites and Citations

If you are interested in the scientific and literary reference citations Skinner listed in this

chapter and in his epilogue, see Locke (1947), Malinowski (1923), Moore and Anderson (1954), Russell (1940), Sells (1936), Shelley (1908), Thorndike (1898), and Tooke (1857). For material in *Verbal Behavior* that corresponds with material in *Notebooks, B. F. Skinner* (1980), see 432ff (72.1, 96.2, 211.3, 328.1, 355.3), 434,1ff (68.1), 436,1 (334.2), 441,0 (193.2), 442,2 (24.1, 50.1, 311.1), 446,1 (230.1), 449,1f (173.1, 312.2), 449,3f (40.2), 450,1 (133.1), 451,1 (131.2).

Study Questions and Objectives

Chapter 18: Logical and Scientific Verbal Behavior (pp. 418-431)

1.   Paragraph 418.1 provides a simplified behavioral characterization of *literature* (lines 1-7), *science* (lines 7-14), and *logic* (lines 16-19). Study this paragraph carefully, in combination with the first sentence of 418.2. As you are reading this chapter, remember that this is a book about *verbal* behavior. 418.2 is somewhat puzzling -- but perhaps is clear in terms of the distinction between rule-governed and contingency-shaped behavior (see *Contingencies of Reinforcement*, p. 160).

2.   Distinguish the following in terms of the contingencies of reinforcement that maintain them: (a) literary behavior, (b) ordinary verbal behavior, and (c) logical and scientific verbal behavior (418, 429-430).

3.   The canons, laws, and prescriptions of scientific methodology are to be distinguished from scientific behavior itself (418). Discuss.

4.   About eight practices for sharpening nonverbal stimulus control over verbal behavior are described on 419.1-420.3 (in terms of the material presented earlier). Outline and learn this material and be able to supply examples of each practice from the field of psychology. 420.3 is somewhat puzzling. Remember that "instruction" refers to 362.1-365.0.

5.   Give brief examples illustrating how and why the scientific community sharpens the precise stimulus control of *relevant* aspects of a situation. (Hint: Note that chemical elements are specified according to weight, rather than color; that whales are classified as mammals rather than fish; that speech is considered to be operant behavior rather than a mental act.) (419).

6.   Discuss the fate of metaphorical, metonymical, and solecistic extensions in science (419-420).

7.   Why does scientific and logical writing under the control of nonverbal stimuli contain many autoclitics (descriptive, qualifying, and relational) (420)?

8.   Similar material regarding verbal stimuli is presented on 420.4-422.2, considerably fewer practices are described. Find an example for 421.1 (in parentheses). 421.2 is especially important. Be sure you can give an example from the field of behavior analysis. Note that 422.1 is an empirical analysis of logic -- which is sort of contrary to the traditional dichotomy between logic and science or between analysis and synthesis.

9.   Why does the scientific community tend to eliminate lay terms from its vocabulary (e.g., note in psychology the term "operant" rather than "purposeful act" or "voluntary behavior") (421)?

10.   What is the purpose in science of intraverbals such as definitions and rules of logic (421-422)?

11.   What is mathematics largely concerned with (423)?

12.   Show how counting is an example of an intraverbal sequence that leads to effective action (423).

13.   Show how solving for x in the equation $\underline{2x} + \underline{4} = 10$ is an example of manipulating verbal responses according to a set of rules (423-424). How is editing related to this process?

14.   What does Skinner mean by "constructing new verbal behavior?" Be able to give several original examples within the science of behavior. An important notion is in the last half of 424.2.

15.   Show how arriving at the conclusion "All mice are mammals" is an example of manipulating verbal behavior according to a set of rules -- given the definitions of "mouse" and "mammal" (424).

16.   Briefly, how did Moore and Anderson provide evidence that a subject can learn to manipulate verbal behavior skillfully according to a set of rules -- even though he does not know what the rules are (424-425)?

17.   What sort of autoclitics usually accompany the logical manipulation of verbal responses? Why (425)?

18.   The purpose of the logical manipulation of verbal responses is that listeners may be able to take effective action to their final arrangement, whereas they could not do so to their original form. Illustrate this with an example.

19.   How do we confirm constructed verbal behavior? The general process of confirmation is described in 425.2. Specific practices are given from 425.3-427.1, and the various processes are exemplified in 427.2. Be able to describe and exemplify various forms of confirmation. Do not forget the main point of 428.1. What does Skinner mean by "instruction" (425.3)?

20.   How is the manner in which a theory such as evolution is confirmed different from the manner in which a theory describing the orbit of a planet confirmed (426-427)?

21.   Briefly describe the process by which a theory is constructed and then proved deductively (427).

22.   Why is a great deal of caution, and much confirmation, of utmost importance in the construction of theories (426, 427-428)?

23.   In addition to the construction and confirmation of verbal behavior, what else does scientific research consist of (428.2 and 428.3)?

24.   How is the process of confirmation in science similar to the way that process is engaged in everyday behavior (425-428)?

25.   Empirical science is only in part concerned with the construction and confirmation of verbal behavior. Discuss the importance of these other aspects of science: (a) instrumentation and (b) experimental manipulation.

26.   What is the main point of the section "Evaluation" (428.4)?

27.   What do we mean when we say that a verbal response is "right" or "true" (428)?

28.   The process of scientific evaluation is complicated by a number of factors. What are they, and what effect does this have on the behavior of scientists (428-429)?

29.   Skinner advocates that the logical and scientific verbal community itself be subject to study. What questions concerning it would he like to see answered (430)?

30.   Go back to 418.2 and note the distinction being made. The section "Scientific Methodology" is a consideration of the second half of the distinction. Be able to describe the various steps and the examples of 430.2.

31.   Speculate briefly on the historical development of the logical and scientific verbal community (429-430).

32.   What three steps lead to a methodological inquiry into logic (430)?

33.   What three steps lead to a methodological inquiry into science (430)?

34.   Skinner asserts that the sort of methodological inquiry he advocates has not yet been undertaken. Discuss (430-431).

35.   430.3 is a somewhat famous statement of the relation between scientific method and the science of behavior, namely that the former is a subdivision of the latter and is thus essentially an empirical subject matter.

Chapter 19: Thinking (pp. 432-452)

1.   Be able to describe the place of verbal behavior in group coordination. Consider, first, tacts and mands and mand compliance (432.1 and 432.2) and, second, verbal behavior controlled by verbal stimuli (432.3). What is "word of mouth" transmission? Sentence 2 of 432.2 is an important general statement.

2.   Discuss with examples the reinforcing contingencies which shape and maintain verbal

behavior in co-operative enterprises and in the transmission of culture. Discuss in terms of mands, tacts, and echoic, intraverbal and textual behavior (432-433).

3.   Describe carefully several important functions of verbal behavior in addition to group coordination (433.1).
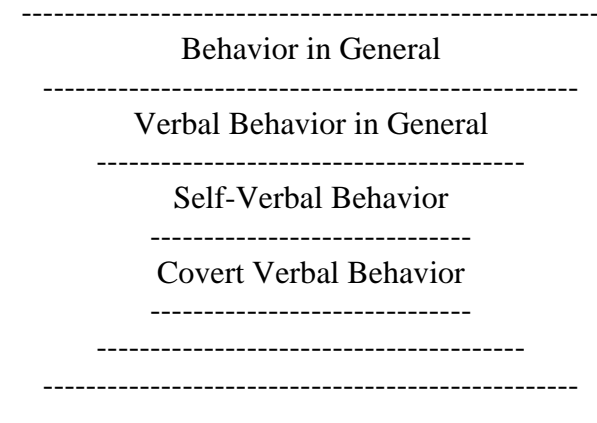
4.   "Once a speaker also becomes a listener, the stage is set for a drama in which one man plays several roles." Explain (433).

5.   Skinner gives a behavioral interpretation of the traditional activities of thinking in 433.2, last sentence. He will elaborate on this considerably. It will facilitate your understanding of his treatment if you take it to be an examination of four possible behavioral interpretations of "thinking." After the first, each interpretation is broader than the preceding one in that it includes that one and something more. These interpretations can be represented by a set of concentric circles as shown below. At this point, however, go to some traditional text and see how thinking is dealt with there. Also read rapidly through *About Behaviorism*'s chapters 7 and 8. Also *Technology of Teaching*'s pages 116 and 117, plus skim the remainder of that chapter. See also *Science and Human Behavior*'s chapter called "Thinking."

6.   Why is it that we do not very effectively discuss the activities (i.e., covert verbal behavior) sometimes labeled "thinking" (434)?

7.   Give two examples that appear to illustrate that covert verbal behavior is sometimes like overt verbal behavior, except that it occurs on a smaller scale (434).

8.   In 434.1, an important point is made about the possibility of how improved methods of observation might make overt what is at present covert, and the relevance of this technological development to the present discussion. Note the similarity of this point to that made in the second paragraph on page 130. Be able to state this general point in answer to an appropriate question. See 141.1-142.1 and 376.2 for other references to covert behavior.

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    --------------------------------------------------------
                      Behavior in General
        ----------------------------------------------------
                    Verbal Behavior in General
            --------------------------------------------
                      Self-Verbal Behavior
                ------------------------------
                      Covert Verbal Behavior
                ------------------------------
            --------------------------------------------
        ----------------------------------------------------
    --------------------------------------------------------
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9.   Some people say, "I thought behaviorists were suppose to deal only with observable events. Covert verbal behavior is certainly not observable, at least to anyone besides the behaver. Therefore, why even consider it as a part of the field of behavioral analysis?" Be able to explain

Skinner's answer to this type of question, using 434.2 as your source, and also the first paragraph of 130. Regarding the first sentence of 434.2, in what sense? This willingness to consider private events is one of the main features distinguishing radical from methodological behaviorism, but Skinner's book was written before this issue was well articulated. Note, however, in the beginning of Chapter 17 of *Science and Human Behavior* Skinner's general approach to the importance (or lack of it) of this topic.

10.   What is the peripheralist position? What is the point of the "bubble, bubble" example, and especially the point of the following sentence?

11.   Discuss the difficulties in assuming that covert behavior is always executed by the muscular apparatus responsible for the overt form (434-435).

12.   There is some tendency to start talking physiologically -- that is, mentioning muscles and neural events, for example -- when discussing covert behavior. What is Skinner's approach to the relevance of physiological factors to an understanding of covert behavior (435.1)?

13.   Why does verbal behavior become covert? A first, rather simple reason is given in 435.3. A second reason is in 436.1 (at this point, read page 141 and the top half of 142). Why do we have more covert behavior than a cat? See especially lines 10 and 11 of 436.1 and lines 10-12 of 141.1). A third and final reason is given in 436.2. Know these reasons.

14.   How does Skinner argue for the primary significance of the third reason for covertness (see first part of 436.3)?

15.   Cite evidence (from general observation) indicating that avoidance of punishment, rather than convenience, is a more likely explanation of much covert behavior (436-437).

16.   Discuss why verbal behavior which is usually covert becomes overt (435-437).

17.   What favorable influence did the theory that thinking was subaudible speech have? What unfavorable influence did it have (437-438)?

18.   The main argument against equating thinking with covert verbal behavior (the smallest of the concentric circles) is given in the first four sentences of 437.1 and in the entire 438.1. Know this argument. What favorable influence did the identification of thinking with covert verbal behavior have (438.1)?

19.   In addition to equating thinking with covert speaking, some psychologists have identified it with various controlling relations or changes in these relations. These processes have often been assigned mentalistic terms, and thinking has sometimes been described as composed of these various mentalistic processes. Skinner translates these into behavioral terms and simply considers then to be basic behavioral processes and certainly not equivalent to thinking (at least at this point in the argument). Know the mentalistic terms, their behavioral translations, and why they are not "thinking" (437.2).

20.   Discuss why Skinner does not consider "learning," "memory," "discrimination," "generalization," "abstraction," and "reasoning" to be behaviors -- either overt *or* covert. What then (in each case, and in general) are they (437-438)?

21.   In 438.2, Skinner introduces the next possible interpretation of thinking (the second concentric circle). Be able to give the entire definition of self-verbal behavior: "Verbal behavior which automatically affects. . ." What is the meaning of "automatically" in this context? We tend to view thinking as sort of magical or surprisingly effective, etc. Several reasons why self-verbal behavior might have these qualities are given in 438.3.

22.   Why is it not surprising that verbal self-stimulation has been regarded as possessing special properties and has even been identified with thinking (438-439)?

23.   Why may the writer be productive for long periods of time with little or no apparent contribution form the external verbal community (439)?

24.   Having rejected the view that thinking is subaudible (i.e., covert) speech, Skinner next considers the view that is it verbal self-stimulation. Discuss how the two views are related and how they are distinct (438-439, 447).

25.   Why is it that when people talks to themselves, either aloud or silently, they are excellent listeners in the sense of Chapter 10 (268-288) (438-439)?

26.   Self-verbal behavior can be relatively unimportant, as in 439.1; more justifiably identified with thinking when it is a form of self-reinforcing fantasy, as in 439.2; but really seems to deserve this identification when it has clear cut practical value rather than simply emotional or aesthetic effects. These practical effects are described from 440.1-445.2. (Note that 440.1 is where we get the distinction between two kinds of automatic reinforcement.) Why does it seem that a self-mand should be useless? Be able to explain in detail why enjoining oneself to get out of bed in the morning may be of some practical value (lines 4 through 10 of 440.2). Why might one suppose that self-manding would eventually extinguish? Why doesn't it (last half of 440.2)?

27.   Discuss soliloquy and verbal fantasy in terms of verbal self-stimulation. Why is this behavior not very practical (439)?

28.   Be able to cite some practical benefits of self-echoic, self-intraverbal, self-textual, self-mand, self-tact, and self-instruction, autoclitic, self-prompt, and self-probe. Remember that we are talking here about instruction as described on 362ff. It may also be helpful to keep in mind the distinction between evocative and repertoire-altering effects of stimuli. Still, although sometimes useful, self-tacts may have a basic flaw. What is it (443.3)?

29.   Why might self-mands be expected to extinguish? Why don't they (440)?

30.   Tacts that speakers present to themselves tend to become impure. Discuss (441-442).

31. In 442.1-443.2, Skinner considers several more complex forms of self- verbal behavior, all related to multiple control. Discuss with examples how verbal self-stimulation is reinforced in "problem solving" (442).

32. Discuss with an example how verbal self-supplementation plays an important role in decision-making (442-443).

33. Discuss how rationalizing is reinforced. Give examples (443).

34. Discuss, with examples, how the ethical terms "ought" and "should" can be identified with contingencies of reinforcement or punishment (443.3).

35. How does Skinner reinterpret the Freudian "superego" and the Judaeo-Christian "conscience" in terms of verbal self-stimulation (443-444).

36. Discuss what a "resolution" is, how it can be made more effective, and why it works -- if it does (444).

37. Skinner's reason for rejecting the interpretation of thinking as self- verbal behavior is given in lines 6-8 of 445.2. Be able to give this. Is all self-behavior properly considered to be verbal according to the original definition of verbal behavior? Explain (445.2). Remind yourself at this time of the refined definition of verbal behavior (224-229) mentioned in 446.0.

38. Discuss when self-stimulation is verbal and when it is not verbal. Explain your answer or answers (445-446).

39. The third possible interpretation of thinking (the next to largest circle) is given in 446.1. Thinking is often thought of as sort of magical or mysterious. Why does covert verbal behavior and self-verbal behavior have this mystical or magical feel to it (447.1)? Why does verbal behavior in general seem "magical" (447.1 and 448.1)? Analyze these paragraphs very carefully. The points are subtle and important.

40. What are two more reasons why verbal behavior has seemed a likely substitute for "thinking" (448.2)? Skinner rejects this identification in 448.3. Summarize his reasons for rejecting it.

41. How does a verbal response make it possible to "think about" *one* property of nature at a time (448; see also 109)?

42. Why is covert verbal behavior easier to see (i.e., more conspicuous) than other covert behavior (e.g., covert riding a bicycle) (448)?

43. Know Skinner's conclusions about the nature of thinking (the outer circle) in 449.1-449.2.

44.   The relation of thought to behavioral form or topography is discussed in 449.3. What is the point of this discussion? How does Skinner illustrate this point by talking about Shakespeare?

45.   Can we study the thoughts of great men, both of the past and of the present? Explain briefly (449-452).

46.   On 456, Skinner says that with his analysis "hundreds of puzzling questions and obscure propositions about verbal behavior may be dismissed, while new propositions that arise to take their place are susceptible to experimental check as part of a more unified pattern." Discuss the following as examples of this statement's point: (a) Thought, in so far as it is communicable, cannot have any greater complexity than is possessed by the various possible kinds of series to be made out of 26 kinds of shapes. (b) Profound thoughts may be produced by accidental arrangements of letters or words, or by monkeys randomly striking typewriter keys. (c) It is difficult to describe a statement without making it. (d) Facts, propositions, and ideas are among the contents of thoughts. (e) Human thought can be dissected into (1) *man* possessing (2) *knowledge* of (3) a *world*. (f) It is impossible or difficult to express a given idea in a given language. (g) There is indescribable beauty. (h) There are ineffable thoughts. (i) We can study the thought of the great men of the past and of the present. All of these are mentioned on pages 449-452.

47.   "The concepts and methods which have emerged from the analysis of behavior, verbal or otherwise, are most appropriate to the study of what has traditionally been called the human mind." Discuss (449-452).

Personal Epilogue (pp. 453-456)

1.   Discuss the "behavioristic paradox" described by Russell, and how it relates to Skinner's analysis (pp. 453-454).

2.   Briefly describe how Skinner arrived at his formulation. In one or two sentences, what would you say is its most significant achievement (pp. 454-455)?

3.   What effect was Skinner trying to have on the reader, and why (pp. 455-456)?

Quiz Questions

1.   Under the heading "Sharpening Stimulus Control," various practices are described. Pick an example of one such a practice for sharpening the control of verbal stimuli and explain carefully how it "sharpens" the control.

2.   From Skinner's perspective, what does the field of "scientific methodology" actually consist of?

3.   A major goal of the chapter on thinking is to consider and then reject a series of possible interpretations of "thinking." Starting with the most restricted interpretation, describe each of the possible interpretations, and explain how Skinner argues against each -- except the last one.

4.   In *Verbal Behavior* and in *Science and Human Behavior*, Skinner gives one reason for including a consideration of private events (e.g., covert responses) in the topics dealt with by a science of behavior. Later, though, where the radical behaviorism-methodological behaviorism distinction is issue is more explicitly considered (e.g., in *About Behaviorism*), he has a different reason. Describe these two reasons.

5.   (a) What is the "bubble bubble" demonstration supposed to show? (b) But what does Skinner conclude about it?

6.   Give several reasons why does verbal self-stimulation seem almost "magical" in its effectiveness, and therefore seem like what we have come to expect of "thinking"?

7.   (a) Why does it seem that a self-mand should be useless? (b) In explaining the practical usefulness of a self-mand ("Get up!"), Skinner mentions two kinds of induction (his early term for generalization). One is responsible for the occurrence of the verbal response ("Get up!") and one is responsible for the self-listener's compliance. Explain each carefully. (c) Why might we expect such a self-mand ("Get up!") to remain the repertoire even though audience discrimination must ultimately eliminate the effects in (b) above?

Name: _____

Topic 12

The Production of Verbal Behavior II:

Logical and Scientific Verbal Behavior, and Thinking

	Ranking for the Course (1-7)	Rating for the Assignment (1-5)
Skinner (1957)	_____	_____
Skinner (1956)	_____	_____
Creel (1987a)	_____	_____
Burton (1980)	_____	_____
Hackenberg (2009)	_____	_____
Skinner (1953)	_____	_____
Skinner (1968)	_____	_____

The lower the number, the higher the rankings and ratings.
_____

Which of this week's readings, topics, or concepts need further review or clarification? That is, what else can I help you with?

VERBAL BEHAVIOR

ABSC 831

Topic 13

Chomsky's Review, Response, Rhetoric, Retrospectives, and Appreciations

Assigned Reading

Knapp, T.J. (1992). *Verbal behavior:* The other reviews. *The Analysis of Verbal Behavior, 10,* 87-95.

MacCorquodale, K. (1970). On Chomsky's review of Skinner's *Verbal Behavior. Journal of the Experimental Analysis of Behavior, 13,* 83-99.

Adelman, B. E. (2007). An undiscussed aspect of Chomsky (1959). *The Analysis of Verbal Behaviort. 23,* 29-34.

Virues-Ortega, J. (2006). The case against B. F. Skinner 45 years later: An encounter with Chomsky. *The Behavior Analyst. 29,* 253-267.

Palmer, D. C. (2006). On Chomsky's appraisal of Skinner's *Verbal Behavior*: A half century of misunderstanding. *The Behavior Analyst, 29,* 253-267.

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

Andresen, J. T. (1990). Skinner and Chomsky: 30 years later. *Historiographia Linguistica Behavior, 17*, 145-166. [Republished in *The Behavior Analyst*, 1991, *14*, 49-60.

<ins>Recommended Reading</ins>

Catania, A. C. (1972). Chomsky's formal analysis of natural languages: A behavioral translation. *Behaviorism, 1,* 1-15

Catania, A. C. (1997). An orderly arrangement of well-known facts: B. F. Skinner's *Verbal Behavior. Contemporary Psychology, 42,* 967-970.

Chomsky, N. (1957). *Syntactic structures.* The Hague: Mouton.

Chomsky, N. (1959). Review of Skinner's *Verbal Behavior. Language, 35,* 62-58.

Chomsky, N. (2000). *New horizons in the study of language and mind*. New York: Cambridge University Press.

Chomsky, N. & Place, U. T. (2000). The Chomsky-Place correspondence 1993-1994. *The Analysis of Verbal Behavior, 17,* 7-38.

Czubaroff, J. (1988). Criticism and response in the Skinner controversies. *Journal of the Experimental Analysis of Behavior, 49,* 321-329. [Read only pps. 321-325]

Dale, R., Roche, J., & Duran, N. (2008). Language is complex. *International Journal of Psychology and Psychological Therapy, 8*, 351-362.

Dulany, D. E. (1959). [Review of *Verbal behavior.*] *Science, 129,* 143-144.

Dymond, S., & Alonso-Alvarez, B. (2010). The selective impact of Skinner's *Verbal Behavior* on empirical research: A reply to Schlinger (2008). *The Psychological Record, 60*, 355-360.

Hayes, S. C., & Hayes, L. J. (1992). Mixing metaphors: Skinner, Chomsky, and the analysis of verbal events. *Behavior and Social Issues, 2,* 43-46.

Katahn, M., & Koglin, J. H. (1968). Paradigm clash: Comment on "Some recent criticisms of behaviorism and learning theory with special reference to Breger and McGaugh and to Chomsky." *Psychological Bulletin, 69,* 147-148.

Knapp, T. J. (1990). *Verbal behavior* and the history of linguistics. *The Analysis of Verbal Behavior, 8,* 151-153.

Lacy, H. (1974). The scientific study of linguistic behavior: A perspective on the Skinner-Chomsky controversy. *Journal for the Theory of Social Behavior, 10,* 17-51.

Malott, R. W. (1992). Language, rule-governed behavior, and cognitivism: On Moerk's integration of Skinner's and Chomsky's approaches to language. *Behavior and Social Issues, 2,* 33-41.

Mapel, B. M. (1977). Philosophical criticism of behaviorism: An analysis. *Behaviorism, 5,* 17-32.

Mathews, G. H. (1959). [Review of *Verbal behavior.*] *Harvard Educational Review, 29,* 264-268.

McLeish, J., & Martin, J. (1975). Verbal behavior: A review and experimental analysis. *Journal of General Psychology, 93,* 3-66.

Moerk, E. L. (1992a). The clash of giants over terminological differences. *Behavioral and Social Issues, 2,* 1-26.

Moerk, E. L. (1992b). Defeatist xenophobia or integrative complexity? A reply to the comments about "The clash of giants." *Behavior and Social Issues, 2,* 47-57.

Moore, J. (2000). Behavior analysis and psycholinguistics. *European Journal of Behavior Analysis, 1,* 5-22.

Morris, C. (1958). Language in the objective mode: Words without meaning [Review of *Verbal behavior*]. *Contemporary Psychology, 3,* 209-212.

Osgood, C. E. (1958). Language in the objective mode: A question of sufficiency. *Contemporary Psychology, 3,* 212-214.

Palmer, D. C. (2000a). Chomsky's nativism: A critical review. *The Analysis of Verbal Behavior, 17,* 39-50. [Original work published 1986].

Palmer, D. C. (2000b). Chomsky's nativism reconsidered. *The Analysis of Verbal Behavior, 17,* 51-56.

Richelle, M. (1976). Formal analysis and functional analysis of verbal behavior: Notes on the debate between Chomsky and Skinner. *Behaviorism, 4,* 209-221.

Richelle, M. (1993). *B. F. Skinner: A reappraisal* (pp. 119-137). Hove, England: Erlbaum

Salzinger, K. (2008). Skinner's *Verbal Behavior. International Journal of Psychology and Psychological Therapy, 8,* 287-294.

Schlinger, H. D. (2008). The long good-bye: Why B. F. Skinner's *Verbal Behavior* is alive and well on the 50th anniversary of its publication. *The Psychological Record, 58*, 329-337.

Schlinger, H. D. (2010). The impact of Skinner's *Verbal Behavior*: A response to Dymond and Alonso-Alvarez. *The Psychological Record, 60*, 329-337.

Schoneberger, T. (2000). A departure from cognitivism: Implications of Chomsky's *second* revolution on psycholinguistics. *The Analysis of Verbal Behavior, 17,* 57-73.

Searle, J. R. (2002, February, 28). End of the revolution. *New York Review of Books,* 33-36.

Sherrard, C. (1988). Rhetorical weapons: Chomsky's attack on Skinner. *Educational Psychology, 8,* 197-205.

Skinner, B. F. (1972). A lecture on "having" a poem. In B. F. Skinner (Ed.), *Cumulative record* (pp. 345-355). Englewood Cliffs, NJ: Prentice-Hall.

Smith, T. L. (1984). *Chomsky's cognitivism at twenty-five years from the perspective of Skinner's "Behaviorism at fifty."* Unpublished manuscript. Washington, DC: University of the District of Columbia.

Stremmer, N. (1990). Skinner's *Verbal Behavior,* Chomsky's review, and mentalism. *Journal of the Experimental Analysis of Behavior, 54,* 307-315.

Street, E. M. (1992). The clash of giants goes beyond terminological differences: A reply to Moerk. *Behavior and Social Issues, 2,* 27-31.

Sulzbacher, S. I., & Oller, D. K. (1974). A reanalysis of Lenneberg's Biological foundations of language. *Behaviorism, 2*, 146-161

Tikihimorov, O. K. (1959). Review of B. F. Skinner's *Verbal Behavior. Word, 15,* 362-367.

Waller, B. (1977). Chomsky, Wittgenstein, and the behaviorist perspective on language. *Behaviorism, 5,* 43-59.

Wiest, W. (1967). Some recent critiques of behaviorism and learning theory with special references to Greger and McGaugh and to Chomsky. *Psychological Bulletin, 67,* 214-225.

Commentary

This week, we address the reviews of *Verbal Behavior* other than Chomsky's (1959), as well as rebuttals to and commentaries on Chomsky's review, Chomsky's current views on *Verbal Behavior* and a response to that, and some later appreciations of Skinner's book.

Reviews

We begin with Terry Knapp's (1992) review of the "other" review of *Verbal Behavior*. Chomsky (1957) did not write the only review, if indeed it was even a review. Among the others were those by Dulany (1959), Matthews (1959), Morris (1958), Osgood (1958), and Tikihimorov (1959). These were, in many ways, supportive of Skinner's book, criticizing it mainly for overlooking certain issues and perspectives -- often their own. Chomsky would have found little solace in these reviews because they were still in the "behaviorist" tradition -- the meditional behaviorist tradition—and not part of his nativist, cognitive, structural paradigm.

Rebuttals

As noted earlier in the course, Skinner never formally responded in a substantive fashion to Chomsky's (1959) review, just informally – Skinner (1972). In fact, only one comprehensive behavior-analytic rebuttal was ever published, but this was more than 10

years later -- Kenneth MacCorquodale's (1970) "On Chomsky's Review of Skinner's *Verbal Behavior*." This is our second reading. Our third reading is a more recent critique of Chomsky's review by Barry Adelman (2007) -- "An Undiscussed Aspect of Chomsky (1959)." For additional commentary, both pro and con, see Katahn and Koplin (1968), Lacy (1974), McLeish and Martin (1975), Palmer (2000a, 2000b), Smith (1984), Stemmer (1990), Sulzbacher and Oller (1974), and Wiest (1967). For materials that take a more philosophical perspective on the Chomsky-Skinner debate, as opposed to a point-by-point analysis, see Bruce Waller's (1977) "Chomsky, Wittgenstein, and the Behaviorist Perspective on Language" and Brenda Mapel's (1977) "Philosophical Criticism of Behaviorism: An Analysis." For critiques of Chomsky's (1959) rhetorical style, see Sherrard (1988), which we read for the first week of class (see also Czuberoff, 1988)

Some of these rebuttals to Chomsky suggested that the misunderstandings between Chomsky and Skinner flowed, in part, as we have seen, from their different interests -- structural and functional (e.g., Catania, 1972; Richelle, 1976, 1993). These interests may or may not be resolvable because they are correlated with different psychological paradigms. Cognitive psychology may either structural or functional, but even then the latter would not look much like behavior analysis (e.g., the information processing approach). Likewise, behavior-analytic psychology may be either structural or functional, but even then the former would not look much like cognitive psychology (e.g., research on response co-variations). In other words, both may pursue structural and functional analyses. Although this would not necessarily unite them, at least they would be attempting to solve common, not orthogonal, problems. Such a uniting of cognitive and behavior-analytic perspectives has been attempted by Ernst Moerk (1992a) who showed that parents provide sufficient enough feedback to their children's verbal behavior to support Skinner's account (see Hayes & Hayes, 1992; Malott, 1992; Street, 1992; see Moerk, 1992b).

Chomsky Today

Chomsky's views on language and grammar as cognitively rule-governed phenomena have changed considerably since he initially introduced them (Chomsky, 1957; see Chomsky, 2000). This has been noted both by philosophers of mind (e.g., Searle, 2002) and behavior analysts (e.g., Schoneberger, 2000). In this context, Chomsky has addressed behavior-analytically informed and behavior-analytic audiences. The former included correspondence with Ullin Place, a renowned British philosopher who was behaviorally inclined. This was published in *The Analysis of Verbal Behavior* (Chomsky & Place, 2000). The latter was an interview with Javier Virues-Ortega (2006) that was recently published in *The Behavior Analyst* --"The Case against B. F. Skinner 45 Years Later: An Encounter with Chomsky." It is our next reading. In it, you will see that Chomsky's views about *Verbal Behavior* are little changed since 1959. David Palmer (2006) makes this and other points in his companion piece, our next reading -- "On Chomsky's Appraisal of Skinner's *Verbal Behavior*: A Half Century of Misunderstanding."

Appreciations

Finally, we turn to appreciations of Skinner's analysis, first with another article by MacCorquodale (1970), published right after his 1969 rebuttal to Chomsky. This is his "B. F. Skinner's *Verbal Behavior:* A Retrospective Appreciation" (see also Catania, 1997; Dale, Roche, & Duran, 2008; Salzinger, 2008; Schlinger, 2008; contra, Dymond & Alonso-Alvarez, 2010; contra. Schlinger, 2010). It is our next reading. Twenty years later, we find another appreciation, but not one from within behavior analysis. As a matter of fact, by then, the discipline of psycholinguistics had evolved beyond Chomsky's once-abiding influence. It had moved from concerns over structure (syntax) to semantics (meaning) to pragmatics (use and function). Skinner's *Verbal Behavior* is largely about pragmatics, but this is rarely noted in the context of those changes in psycholinguistics. Julie Tetel Andresen (1990) who is, in part, an historian of linguistics, has pointed this out, chastising the establishment for its oversights and urging a re-evaluation of Skinner's analysis in contemporary (post-modern) light—"Skinner and Chomsky: 30 years later" (see Knapp, 1990). This is a good, but difficult reading because Andresen (1990) assumed some background that not all behavior analysts share, but we'll read it nonetheless.

Summary of the Skinner-Chomsky "Debate"

For either this week or the last class, please summarize the Skinner-Chomsky debate based on your critiques and class discussion. Your summary should be suitable for a general audience that has read neither Skinner (1957) nor Chomsky (1959). It may be as brief as one page, but no longer than two. This requirement is now an option. You may keep the mean grade you have so far or you may complete this assignment to raise (I hope) your mean grade.

Term Paper

(a) A rough draft of your entire paper, (b) your references without abstracts, (c) your last graded assignment, and (d) your five page rough draft, revised as edited or requested.

Name: _____

READING RATINGS

Topic 13

Chomsky's Review, Response, Rhetoric, Retrospective, and Appreciations.

	Ranking for the week (1-8)	Rating for the course (1-5)
Knapp (1992)	_____	_____
MacCorquodale (1970)	_____	_____
Adelman (2007)	_____	_____
Virues-Ortega (2006)	_____	_____
Palmer (2006)	_____	_____
MacCorquodale (1969)	_____	_____
Andresen (1990)	_____	_____

(The lower the number, the higher the ranking or rating.)

_____

Which of this week's readings, topics, or concepts need further review, clarification, or elaboration? That is, what else can I help you with?

VERBAL BEHAVIOR

ABS 831

Topic 14

Clinical Behavior Analysis:

From Relational Frame Theory to Acceptance and Commitment Therapy

<u>Assigned Reading</u>

Dougher, M. J. (1993). Clinical behavior analysis: Introduction. *The Behavior Analyst, 16*, 269-270.

Dougher, M. J. (1994). Clinical behavior analysis: Introduction. *The Behavior Analyst, 17*, 287.

Kohlenberg, R. J., Tsai, M., & Dougher, M. J. (1993). The dimensions of clinical behavior analysis. *The Behavior Analyst, 16*, 271-282.

Zettle, R. D. (2005). The evolution of a contextual approach to therapy: From Comprehensive Distancing to ACT. *International Journal of Behavioral and Consultation Therapy, 1*, 77-89.

Hayes, S. C., & Wilson, K. G. (1993). Some applied implications of a contemporary behavior-analytic account of verbal events. *The Behavior Analyst, 16*, 283-301.

Hayes, S. C., & Wilson, K. G. (1994). Acceptance and Commitment Therapy: Altering the verbal support for experiential avoidance. *The Behavior Analyst, 17*, 289-303.

Hayes, S. C. (2004). Acceptance and Commitment Therapy, relational frame theory, and the third wave of behavioral and cognitive therapies. *Behavior Therapy, 35*, 639-665.

http://contextualpsychology.org/act_faq

<u>Recommended Reading</u>

Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 1*, 91-97.

http://www.baojournal.com/IJBCT/IJBCT-VOL-1/IJBCT-1-2.pdf

ContextualPsychology.org

Hayes, S. C., Barnes-Holmes, D., & Roche, B. (Eds.). (2001). *Relational frame theory. A post-Skinnerian account of human language and cognition.* New York: Kluwer Academic/ Plenum.

Hayes, S. C., & Smith, S. (2005). *Get out of your mind and into your life: The new Acceptance and Commitment Therapy.* Oakland, CA: New Harbinger

Hayes, S. C., Strosahl, K., & Wilson, K. G. (1999). *Acceptance and Commitment Therapy: An experiential approach to behavior change.* New York: Guilford.

Layng, T. V. J. (2009). The search for an effective clinical behavior analysis: The nonlinear thinking of Israel Goldiamond. *The Behavior Analyst, 32,* 163-184

Layng, T. V. J., & Andronis, P. T. (1984). Toward a functional analysis of delusional speech and hallucinatory behavior. *The Behavior Analyst, 7,* 139-156.

Hayes, S. C., Strosahl, K., & Wilson, K. G. (1999). Understanding metaphor: A relational frame perspective. *The Behavior Analyst, 24,* 191-199.

Stewart, I., & Barnes-Holmes, D. (2001). Understanding metaphor: A relational frame perspective. *The Behavior Analyst, 24,* 191-199.

Comments

Our focus this week is on Acceptance and Commitment Therapy (ACT) and, to some degree, how we get from relational frame theory (RFT; see Hayes, Barnes-Holmes, & Roche, (2001) to ACT. However, ACT lies within a broader field – what is called "clinical behavior analysis" (CBA) the field's other applied science, the first being applied behavior analysis. Perhaps the first CBA was Israel Goldiamond's "constructional approach" to adult psychopathology, which Layng and Andronis (1984) introduced us to earlier this semester. For a more general introduction and overview, see Layng (2009).

Clinical Behavior Analysis

To introduce to CBA, we will read Mike Dougher's (1993, 1994) introductions to it in two special sections on CBA in *The Behavior Analyst*. These are brief and not overly substantive, but they will give you the lay of the land. Following this, we will read Kohlenberg, Tsai, and Dougher's (1993) article, "The Dimensions of Clinical Behavior Analysis." You will recognize that its title was borrowed, in part, from another famous "dimensions" article – Baer, Wolf, and Risley (1968).

Acceptance and Commitment Therapy

With this as background, we can turn to ACT (see Hayes & Smith, 2005; Hayes, Strosahl, & Wilson, 1999). Our first reading is Rob Zettle's (2005) article, "The Evolution of a Contextual Approach to Therapy: From Comprehensive Distancing to ACT." It offers some

historical background on ACT. Following this, we turn to two articles by Steve Hayes and Kelly Wilson. The first takes us back into Skinner's (1957) *Verbal Behavior* and then back out to RFT and ACT. This is Hayes and Wilson's (1993), "Some Applied Implications of a Contemporary Behavior-analytic Account of Verbal Events." The second is focused on ACT more directly and on the nature of experiential avoidance to which it applied. This is Hayes and Wilson's (1994), "Acceptance and Commitment Therapy: Altering the Verbal support for Experiential Avoidance." Even though we have, by now, reviewed a good bit of ACT, we will (I do) still find it not all that intuitive, in part because it relies so much on metaphor (see Stewart & Barnes-Holmes, 2001).

Next, we have one of Steve Hayes's (2004) most recent reviews of RFT, ACT, and their place in what he calls the "third wave" of what I call CBA (but he doesn't). This is the publication version of his presidential address for the Association for the Advancement of Behavior Therapy, titled "Acceptance and Commitment Therapy, Relational Frame Theory, and the Third Wave of Behavioral and Cognitive Therapies."

For your interest, I have included the web site address for the Association for Contextual Behavioral Science -- ContextualPsychology.org. This is the main association for ACT scientists and practitioners, and related clinical behavior analysis therapies. For your last reading, you might look through the site and read, especially, its brief Frequently Asked Questions (FAQ) link.
http://contextualpsychology.org/act_faq

Term Paper

Your term paper is due by 5:00pm on Friday, December 17, but you may have until 5:00 on Monday, December 19, if you like. If you need still more time, let me know. Please include your question or topic, revised if necessary.

Coda

I close the semester with a quotation from the jurist, Learned Hand (1872-1961): "Words are like chameleons, which reflect the colour of their environment."

Name: _____

READING RATINGS

Topic 14

Clinical Behavior Analysis:

From Relational Frame Theory to Acceptance and Commitment Therapy

	Ranking for the week (1-7)	Rating for the course (1-5)
Dougher (1993, 1994)(2000)	_____	_____
Kohlenberg, Tsai, & Dougher (1993)	_____	_____
Zettle (2007)	_____	_____
Hayes & Wilson (1993)	_____	_____
Hayes & Wilson (1994)	_____	_____
Hayes (2004)	_____	_____
http://contextualpsychology.org/act_faq	_____	_____

The lower the number, the higher the ranking and rating.

_____

Which of this week's readings, topics, or concepts need further review, clarification, or elaboration? That is, what else can I help you with?