# Carl Binder - ABA 2005 - Chicago, IL

*Invited Symposium: A Tribute to Ogden Lindsley*

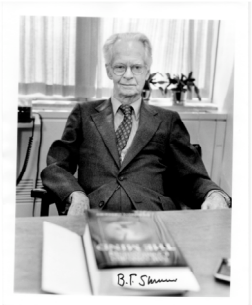
## Rate of Response:

***A Legacy for Teachers and Students from Skinner Through Lindsley***

Carl Binder
Binder Riha Associates
www.Binder-Riha.com
www.Fluency.org

© 2005 ABA 2005 1

**Most Important Advances in the history of Science Have Come from Improvements in Measurement.**




**"My most important contributions were rate of response and the cumulative response recorder."**

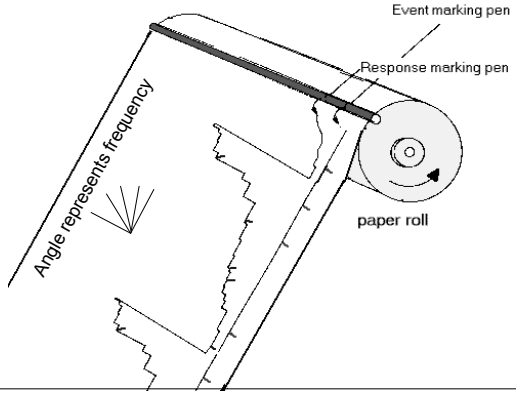
**- B.F. Skinner**

Evans, R. I. (1968). B. F. Skinner: the man and his ideas. New York: E. P. Dutton & Co., Inc

**Lindsley later preferred to call it *"frequency."***

ABA 2005 2

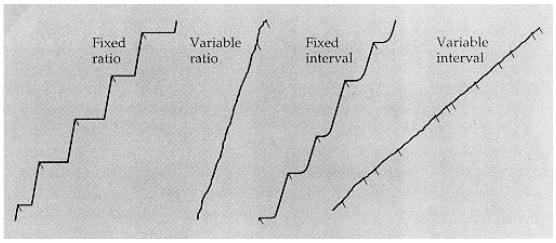
**Skinner's Standard Frequency Chart**




3

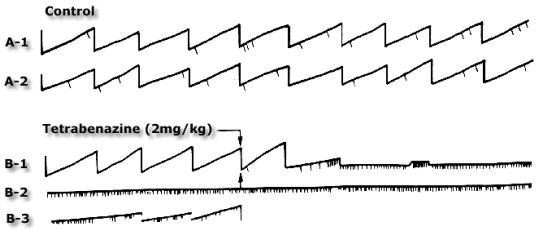
**Cumulative Records**

Basic Schedules of Reinforcement




© 2005 ABA 2005 4

**The Effects of a Drug in Real Time**



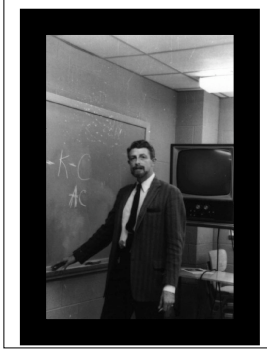

© 2005 ABA 2005 5

**Before Samson Rat, Lindsley had planned to be a physiological psychologist....**

# Carl Binder - ABA 2005 - Chicago, IL

*Invited Symposium: A Tribute to Ogden Lindsley*

**But with the Behavior Research Lab he committed himself to human behavior frequencies.**

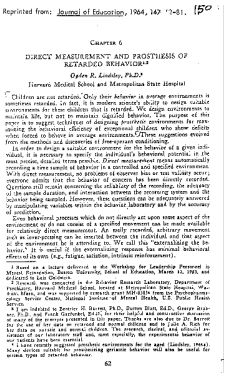


- Psychotic behavior
- Behavior pharmacology
- Effects of advertising
- Conjugate reinforcement
- Social behavior and communication
- Competition and Cooperation
- Geriatric Behavior Prosthesis
- Depth of sleep
- Clinical assessment
- Television / media preference
- Effects of psychotherapy
- Supervision and clinical training
- Parent training in behavior management
- "Retarded" behavior (with Barrett)



**He took that commitment into Education**

(With original "silent" co-author Bea Barrett)



Reprinted from: Journal of Education, 1964, 147 52-81. 150

CHAPTER 6

DIRECT MEASUREMENT AND PROSTHESIS OF RETARDED BEHAVIOR[1]

Ogden R. Lindsley, Ph.D.[2]

Harvard Medical School and Metropolitan State Hospital

Children are not retarded. Only their behavior is average environments is sometimes retarded. In fact, it is modern society's ability to design suitable environments for those children that is retarded. We design environments to maximize life, but not its measured, classified behavior. The purpose of this paper is to suggest techniques of designing *prosthetic* environments for rearranging the behavioral efficiency of exceptional children who show deficits when forced to behave in average environments.[3] Three suggestions evolved from the methods and discoveries of free-operant conditioning.

In order to design a suitable environment for the behavior of a given individual, it is necessary to specify the individual's behavioral potentials, or the most precise, detailed terms possible. *Direct measurement* means automatically recording a time sample of behavior as it occurs. Such measurement avoids the inferences and problems of response bias or low validity associated with methods other than the behavior of concern has been directly recorded. Questions still remain concerning the reliability of the recording, the adequacy of the sample duration, and interactions between the measuring system and the behavior being sampled. However, these variables can be adequately answered by manipulating variables within the behavior laboratory and by the accuracy of prediction.

Even behavioral processes which do not directly act upon some aspect of the environment or do not consist of a specified environment can be made available for relatively direct measurement. An easily recorded, arbitrary movement, such as depressing a lever, can be used to represent the behavior of interest. The movement by is attending to. We call this "normalizing the behavior." It is useful if the environmental response has universal behavioral effects of its own (e.g., fatigue, satiation, intrinsic reinforcement).

[1] Based on a lecture delivered at the Workshop for Leadership Personnel in Mental Retardation, Social Rehabilitation, School of Education, March 13, 1963, and at Lake Okoboji.

[2] This work was conducted in the Behavior Research Laboratory, Department of Psychiatry, Harvard Medical School, located at Metropolitan State Hospital, Waltham, Massachusetts, and supported by Research Grant M-1734 from the National Institutes of Mental Health, U.S. Public Health Service.

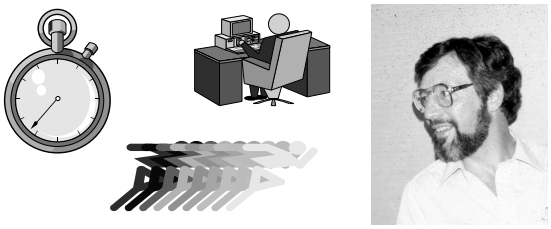
[3] I am indebted to Beatrice H. Barrett, Ph.D., Burton Blatt, Ed.D., George Brakel, M.D., and Frank Stephens, D.S.W., for their helpful and constructive discussion of many of the concepts presented in this paper. Thanks are also due to Dr. Barrett for the use of her data on extended and normal children and to Judy A. Eads for her data on normal and normal children. The research, clinical, and editorial assistance of Mrs. Eads, Mrs. Barrett and, more especially, the responsiveness behavior of our patients have been essential.

[4] I have recently suggested prosthetic environments for the aged (Lindsley, 1964). Many devices suitable for remembering prosthetic behavior will also be useful for various types of retarded behavior.

62



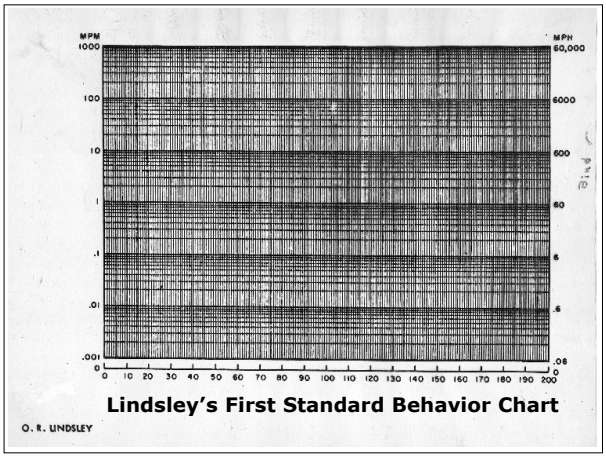
**Eric Haughton: Co-founder of Precision Teaching**



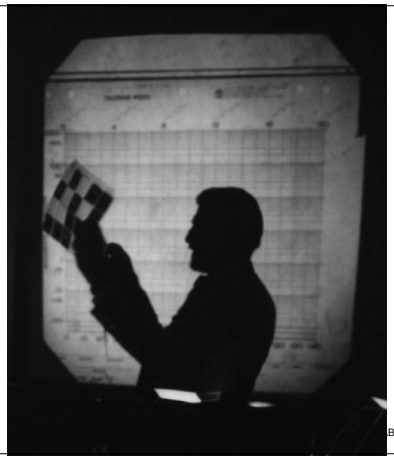
*"You can take behavior out of time…. but ....you can't take the time out of behavior."*

*- Dr. Eric Haughton*






**Lindsley's First Standard Behavior Chart**





**Frequency Measures for Skills & Knowledge**

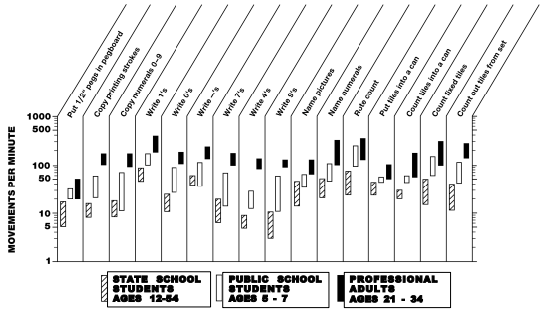
"Teaching is not only producing new behavior, it is also changing the likelihood that a student will respond in a certain way. Since we cannot see a likelihood, we look instead at how frequently a student does something. We see how fast he can add. The student who does problems correctly at a higher rate is said to know addition facts **better** than one who does them at a lower rate."

*– Dr. Julie Skinner Vargas, 1977, p. 62*

# Carl Binder - ABA 2005 - Chicago, IL

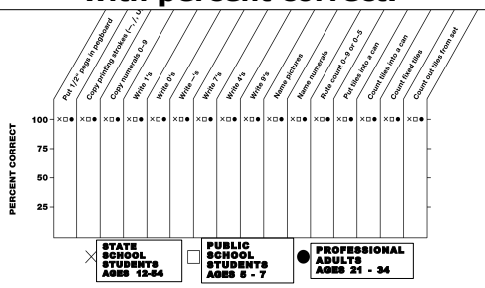
*Invited Symposium: A Tribute to Ogden Lindsley*

**We can SEE the difference between beginners and competent performers.**




Frequency comparisons on some components and prerequisites of elementary skills
(based on an unpublished pilot study conducted by Frances George and Deborah Pease).

**But *we CAN'T SEE the difference* with percent correct!**



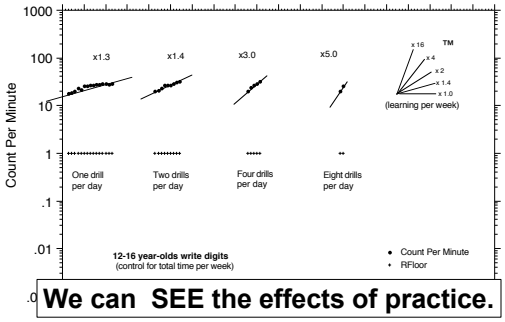

Accuracy comparisons on some components and prerequisites of elementary skills
(based on an unpublished pilot study conducted by Frances George and Deborah Pease).

**Frequency Measures Enable us to Define *Competent Ranges of Behavior***

- Tapping a surface: 250-350 per minute
- Writing Digits: 140 to 160 characters per minute
- Arithmetic: 70 to 110 computations per minute
- Keyboarding: 60 to 90 words per minute
- Brainstorming: 20 to 30+ ideas per minute
- 3-point basketball shots: 15-25 hits per minute

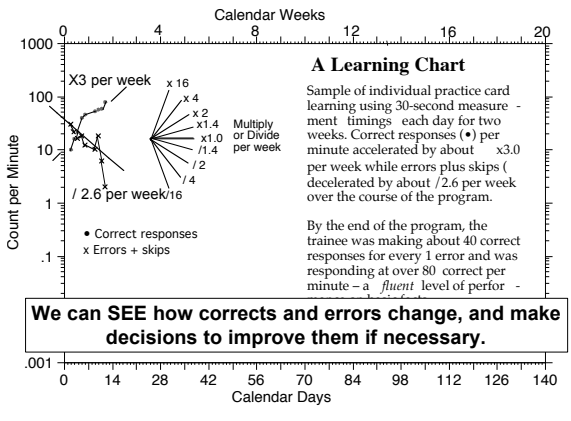
© 2005



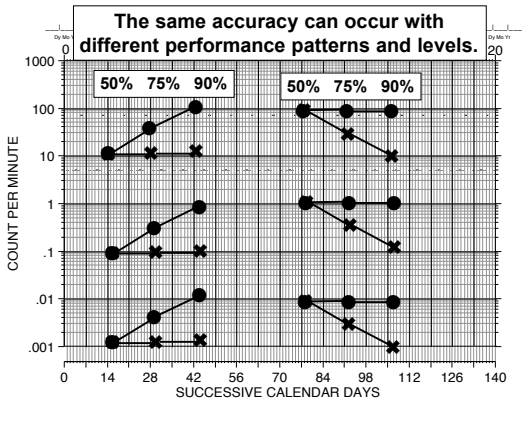


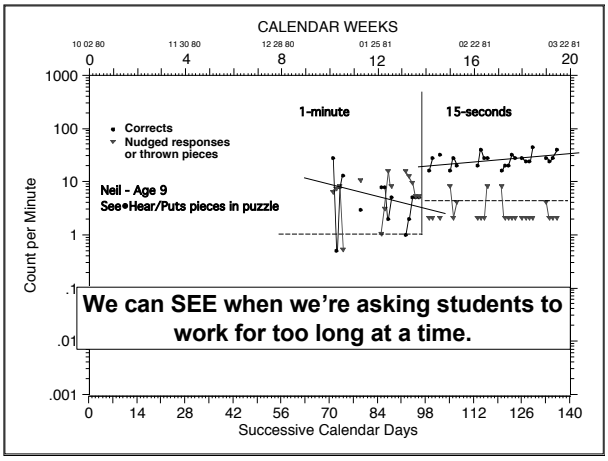
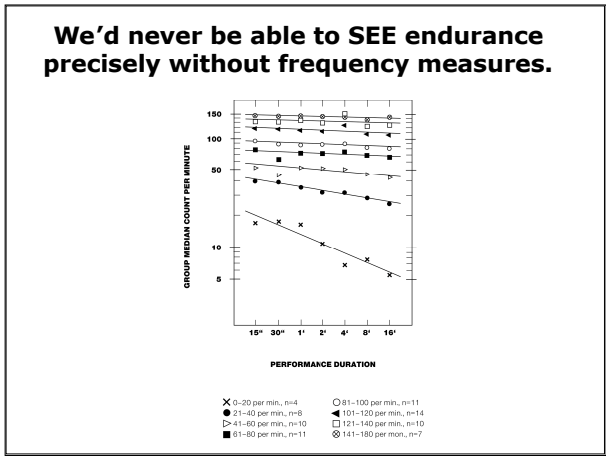
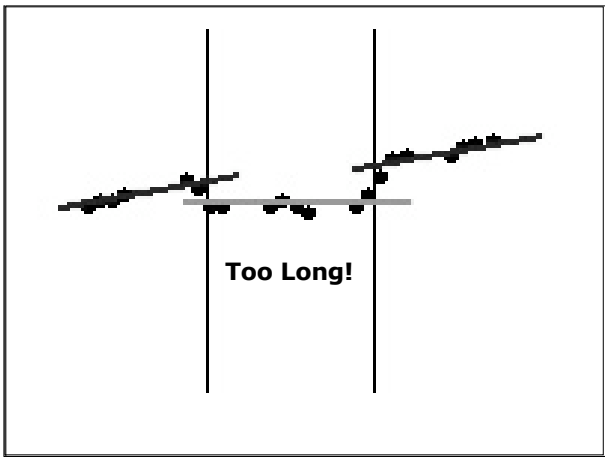
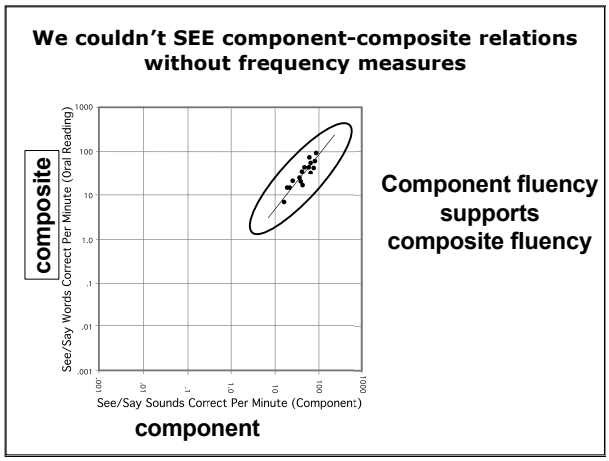
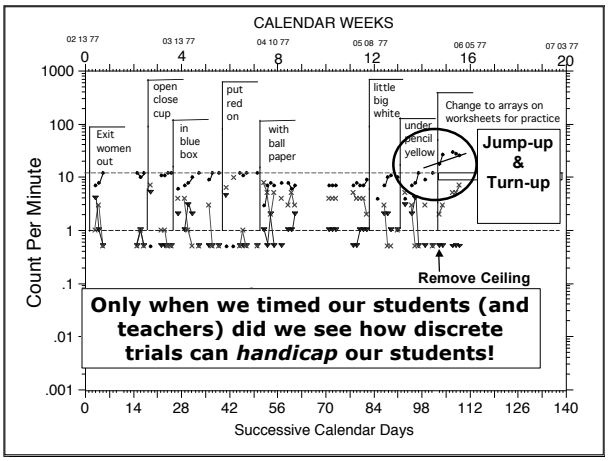
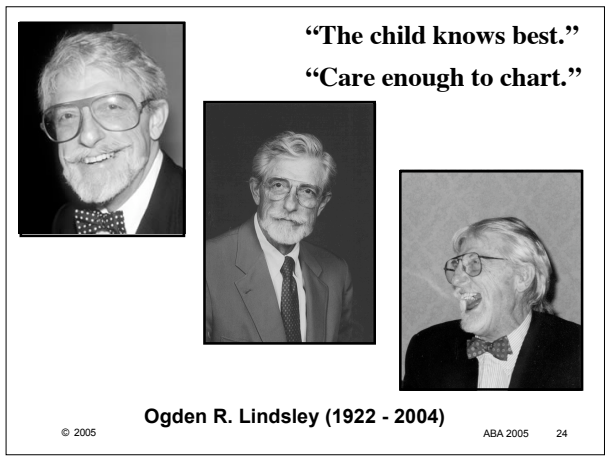

**We can SEE the effects of practice.**

Calendar Days
(start-day was 06/15/1980)




**We can SEE how corrects and errors change, and make decisions to improve them if necessary.**



# Carl Binder - ABA 2005 - Chicago, IL

*Invited Symposium: A Tribute to Ogden Lindsley*