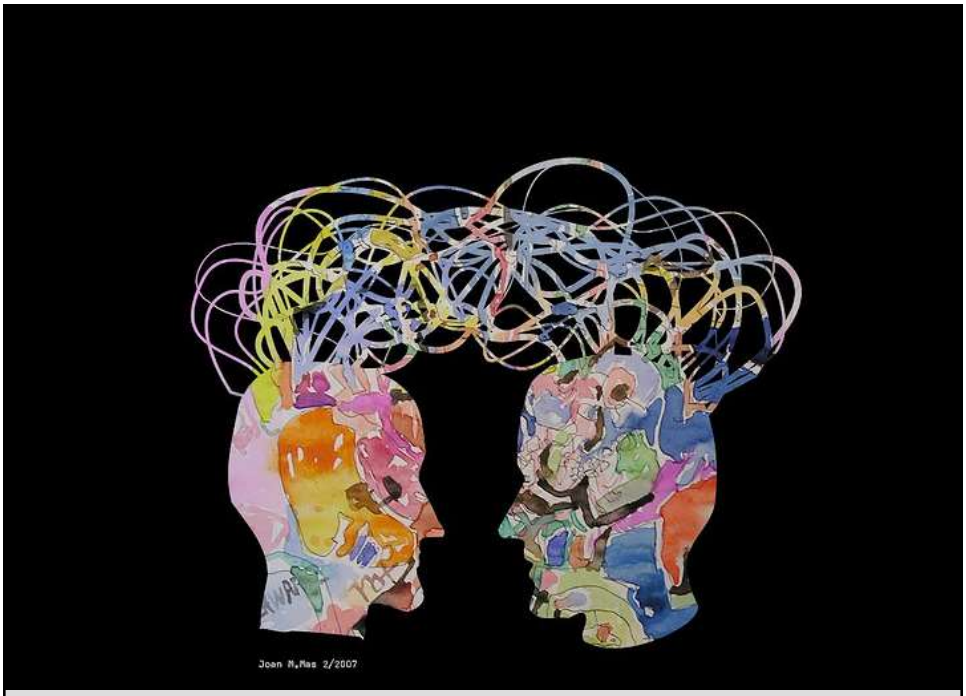


Image source: https://c2.staticflickr.com/2/1092/1459055735_3480b4050e_z.jpg?zz=1

B. F. SKINNER'S ANALYSIS OF VERBAL BEHAVIOR

History, Controversy, Implications, and Applications

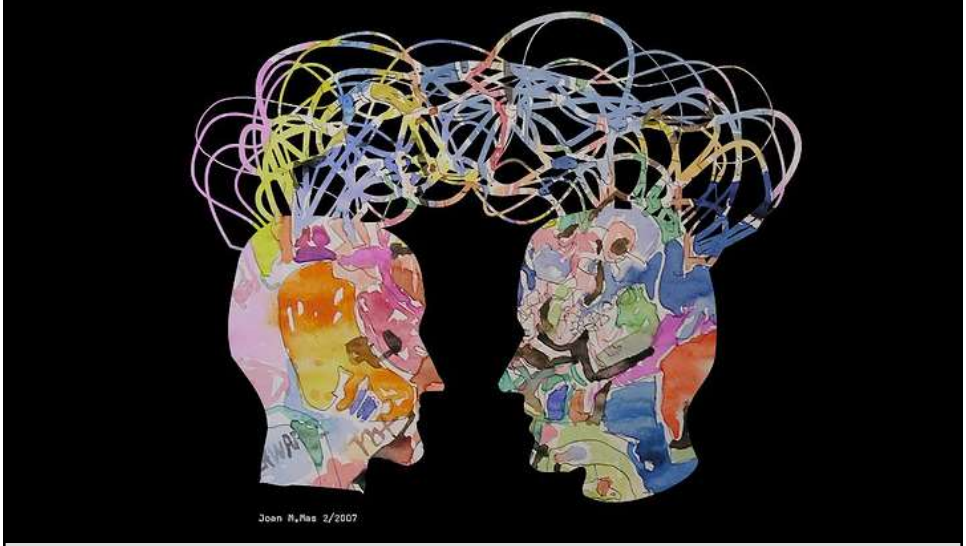


Image source: https://c2.staticflickr.com/2/1092/1459055735_3480b4050e_z.jpg?zz=1

HISTORY

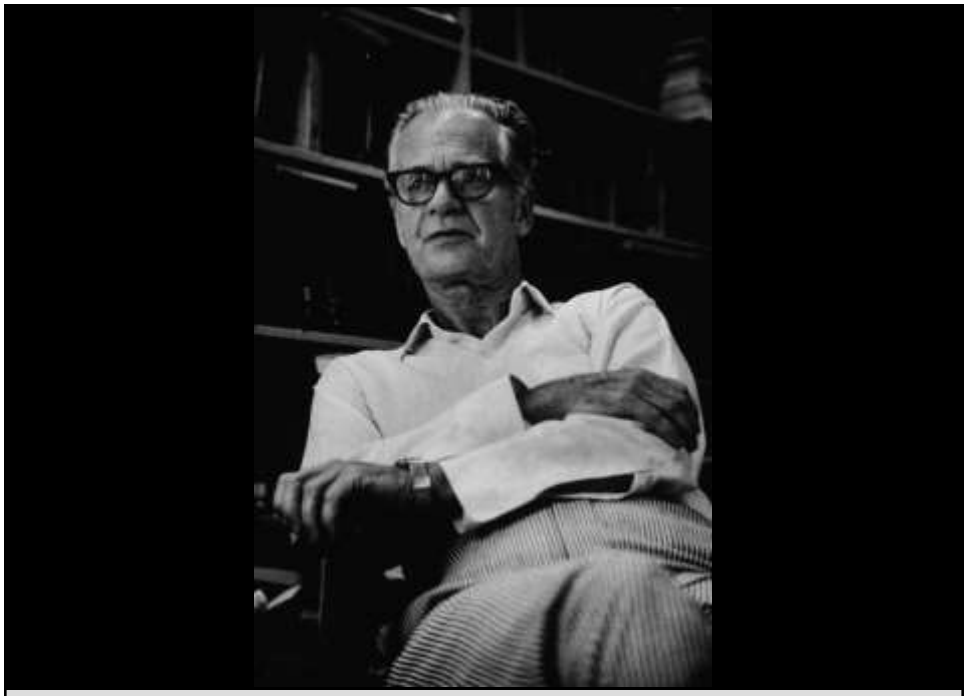


Image source: http://media-2.web.britannica.com/eb-media/92/110192-004-AC182B61.jpg

April 1933

Original caption:
B. F. Skinner is one of the students chosen by Harvard to become the new fellow at the new "Super school."

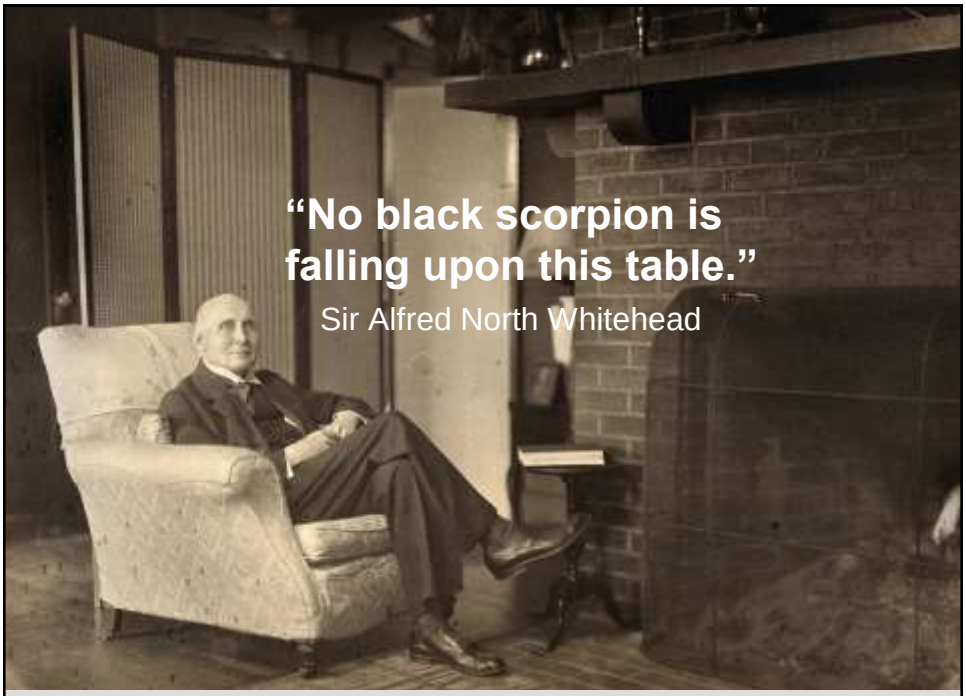


Image source: https://upload.wikimedia.org/wikipedia/commons/5/55/Alfred_North_Whitehead._Photograph._Wellcome_V0027330.jpg

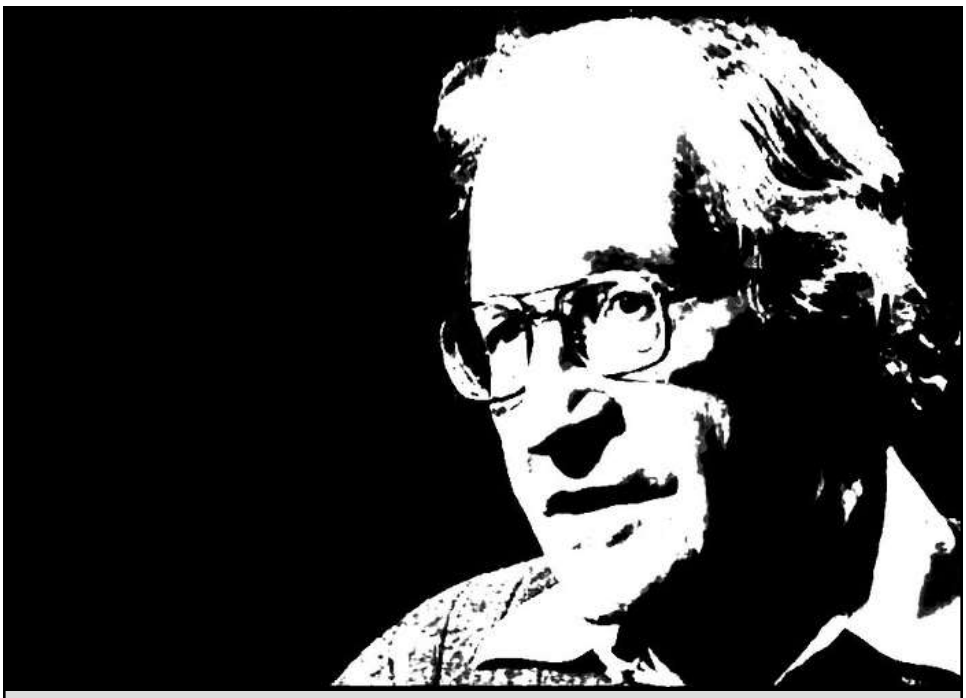


Image source: https://c1.staticflickr.com/1/149/338650839_4a7c29cc9b.jpg

"Really, what experiment did he do?"

Credit: Jack Michael

Verbal vs. Non-Verbal

Unique feature	Language	Nonlanguage
Type of R? No	Striped muscle R	Any muscle or gland R
Type of S that evokes R? No	Visual, auditory, tactile	Any sense mode
Type of rfmt for R? No	Any type of S^R or S^r	Any type of S^R or S^r
How R produces rfmt? Yes	**Indirectly**, only through someone else's behavior	By **direct** contact with the environment

A B C

(Socially-Mediated)

MO: SD —> Behavior —> Consequence

The **verbal operant** is the unit of analysis, both in terms of ***form**** and ***function***.

Image source: http://torange.biz/photo/19/19987/19987-FX-8-0-7-5-2-0.jpg

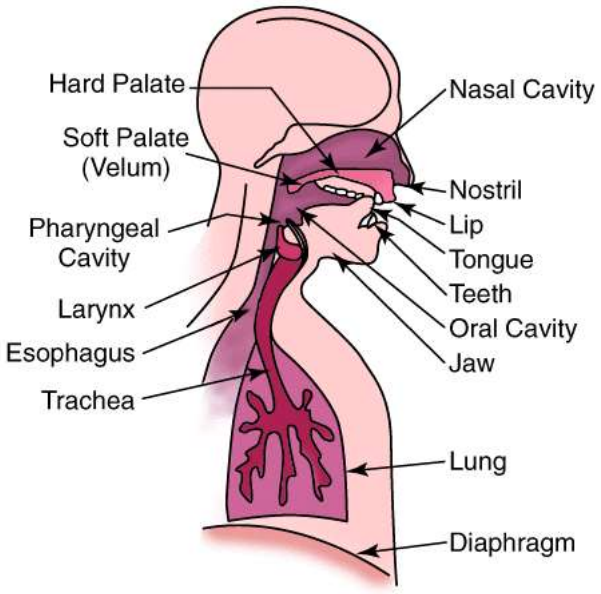
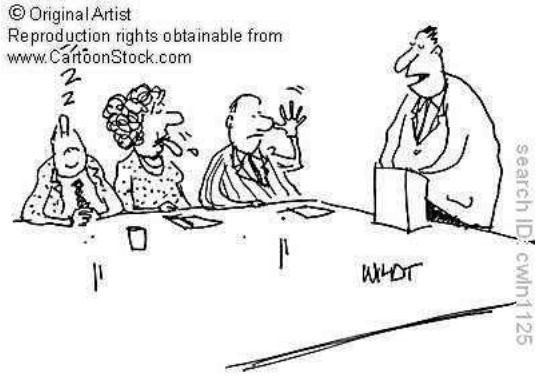
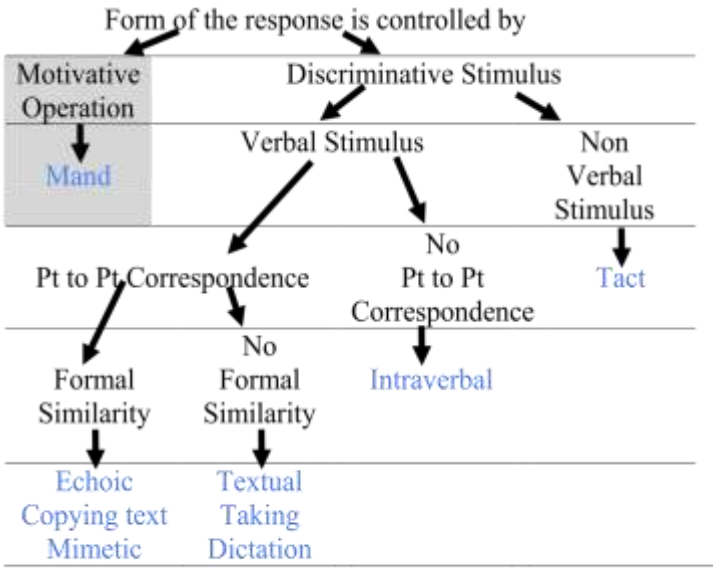


Image source: https://engineering.purdue.edu/~ee649/notes/figures/vocal_apparatus.gif



"This concludes my lecture on non-verbal communication. Any comments or questions?"

Elementary Verbal Operants



Credit: Bill Potter / Jack Michael

Image source: https://c1.staticflickr.com/3/2148/2163760529_914e576884_b.jpg

Conger & Killeen. (1974). Use of concurrent operants in small group research: A demonstration. *The Pacific Sociological Review*.

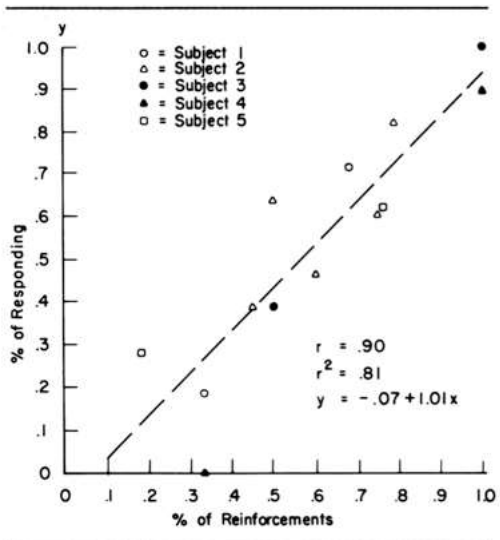


Figure 3: Proportion of responding to E_1 and reinforcers given by E_1 for individual subjects; interval 3—i.e., the last five minutes of parts I and II.

Image source: http://www.thebluediamondgallery.com/highlighted/images/communication.jpg

Symbolic Communication Between Two Pigeons

(Columba livia domestica)

Abstract. *Through the use of learned symbols, a pigeon accurately communicated information about hidden colors to another pigeon. Each verbal exchange was initiated with a spontaneous request for information. The two pigeons engaged in a sustained and natural conversation without human intervention.*

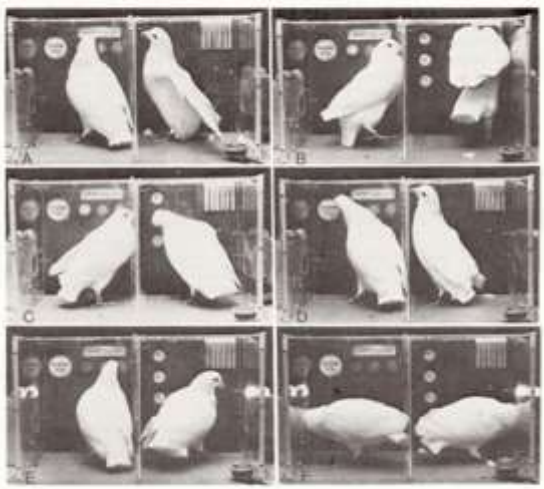


Fig. 2. Typical communication sequence. (A) Jack (left) asks Jill (right) for a color name by depressing the WHAT COLOR? key. (B) Jill looks through the curtain at the hidden color. (C) Jill selects the symbolic name for the color while Jack watches. (D) Jack rewards Jill with food by depressing the THANK YOU key. (E) Jack selects the correct color as Jill moves toward her reward. (F) Jack is rewarded with food.

CONTROVERSY

The Behavior Analyst 2009, 32, 185–190 No. 1 (Spring)

Much Ado About Nothing? Some Comments on B. F. Skinner's Definition of Verbal Behavior

Matthew P. Normand
University of the Pacific

Some have suggested that the definition of verbal behavior offered by B. F. Skinner (1957) fails to capture the essence of language insofar as it is too broad and not functional. In this paper, I argue that the ambiguities of Skinner's definition are not an indictment of it, and that suggestions to the contrary are problematic because they suffer a critical error of scientific reasoning. Specifically, I argue that (a) no clear definition of verbal behavior is possible because there is no natural distinction between verbal and nonverbal behavior; (b) attempts at an immutable definition are essentialistic; and (c) Skinner's functional taxonomy of language is in no way affected by the particulars of any definition of verbal behavior.

Key words: essentialism, functional analysis, language, verbal behavior

Journal of Applied Behavior Analysis

JOURNAL OF APPLIED BEHAVIOR ANALYSIS 2013, **46**, 285–288 NUMBER 1 (SPRING 2013)

ON THE ORIGIN AND FUNCTIONS OF THE TERM FUNCTIONAL ANALYSIS

HENRY D. SCHLINGER JR.

CALIFORNIA STATE UNIVERSITYLOS ANGELES.

AND

MATTHEW P. NORMAND

UNIVERSITY OF THE PACIFIC

In this essay, we note that although Iwata, Dorsey, Slifer, Bauman, and Richman (1982/1994) established the standard framework for conducting functional analyses of problem behavior, the term *functional analysis* was probably first used in behavior analysis by B. F. Skinner in 1948. We also remind readers that a functional analysis is really an experimental analysis, words that were contained in the title of Skinner's first book, *The Behavior of Organisms: An Experimental Analysis* (1938). We further describe how Skinner initially applied the concept of functional analysis to an understanding of verbal behavior, and we suggest that the same tactic be applied to the verbal behavior of behavior analysts, in the present case, to the term *functional analysis*.

Key words: functional analysis, functional relations, experimental analysis, behavior analysis, B. F. Skinner

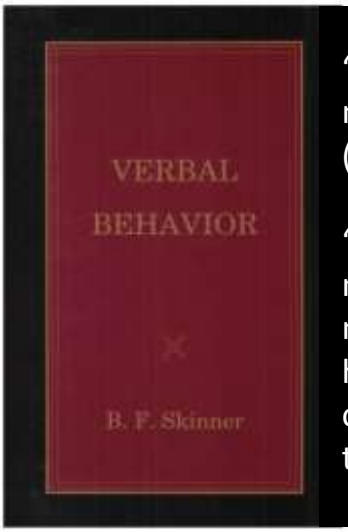
Much ado…

Skinner's analysis...

- Does not raise any questions or principles other than those already studied in the non-human laboratory.
- Is too broad and includes trivial and irrelevant behavioral episodes.
- Is not a functional definition because it is based on aspects of another organism's learning history.
- Has failed to generate productive lines of research

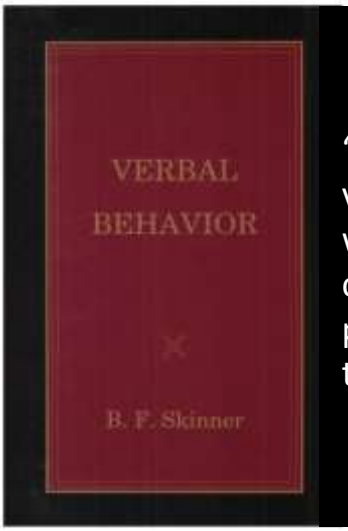
… about nothing

- No clear definition of verbal behavior is possible because there is no distinction between verbal and non-verbal behavior.
- Attempts at an immutable definition are essentialistic.
- Skinner's functional taxonomy of language is in no way affected by the particulars of any definition of verbal behavior.
- Invoking the behavior of others in categorical definitions is not unique to Skinner's definition of verbal behavior.
- The validity of an analysis is not judged (solely) by the amount of research that is produced.

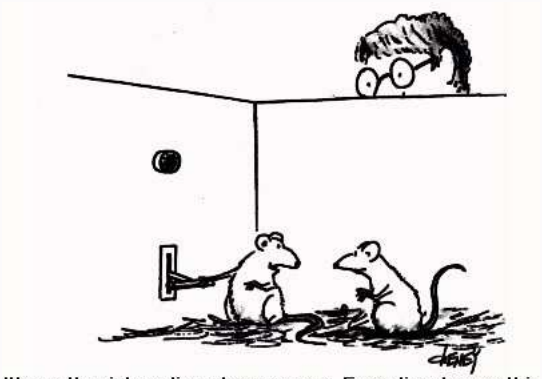


"...is reinforced through the mediation of other persons" (p. 2)

"behavior reinforced through the mediation of other persons [who] must be responding in ways which have been conditioned precisely in order to reinforce the behavior of the speaker'' (p. 225)



"...is shaped and sustained by a verbal environment—by people who respond to behavior in certain ways because of the practices of the group of which they are members." (p. 226)



It's a rather interesting phenomenon. Every time I press this lever, that post-graduate student breathes a sigh of relief.

Image source: https://s-media-cache-ak0.pinimg.com/736x/f1/3a/d0/f13ad0653a02a43ba3524c03832ecc76.jpg

The definition … is so broad as to include virtually all animal operant behavior in traditional behavior analytic research…

(Hayes & Barnes-Holmes, 2004, p. 218)

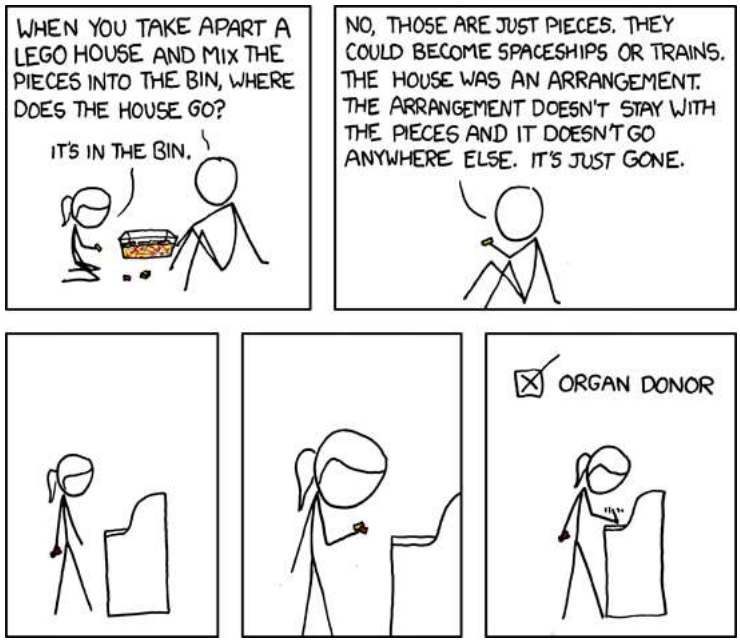


Image source: http://education101intrototeaching.pbworks.com/f/1328283232/esentialism.png

"The significant interrelations between these terms may be expressed by saying that the community reinforces the response only when it is emitted in the presence of the stimulus. The reinforcement of the response 'red,' for example, is contingent upon the presence of a red object. (The contingency need not be invariable.)"

(Skinner, 1945, p. 272)

Image source: http://www.skeptically.org/sitebuildercontent/sitebuilderpictures/skinner-portrait-40s.jpg

… any attempt to apply the analytic categories described in the book [*Verbal Behavior*] leads basic behavior analysts inexorably back to what they were already doing in the [animal] laboratory.

(Hayes & Barnes-Holmes, 2004, p. 218)

Image source: http://www.famouspsychologists.org/psychologists/b-f-skinner.jpg

The definition is … not a functional one in a behavior analytic sense, because it is not based on specific aspects of an individual organism's history but on aspects of some other organism's history (namely that of the audience trained to mediate reinforcement to the speaker)…

(Hayes & Barnes-Holmes, 2004, p. 218)

Function

The demonstration that one variable changes as a result of changes in another variable.

There is a *functional* relation between task difficulty and disruptive behavior.

Function

The demonstration that one variable changes as a result of changes in another variable.

There is a *functional* relation between task difficulty and disruptive behavior.

The consequence that is produced by behavior that maintains (reinforces) the behavior.

The *function* of the disruptive behavior is escape.

A Functional Taxonomy

	Antecedent	Consequence
Mand	Listener plus MO for a specific reinforcer	Access to that reinforcer
Tact	Listener plus verbal stimulus (resembles response)	Generalized reinforcement
Intraverbal	Listener plus verbal stimulus (does not resemble response)	Generalized reinforcement

The definition is … not a functional one in a behavior analytic sense, because it is not based on specific aspects of an individual organism's history but on aspects of some other organism's history (namely that of the audience trained to mediate reinforcement to the speaker)…

(Hayes & Barnes-Holmes, 2004, p. 218)

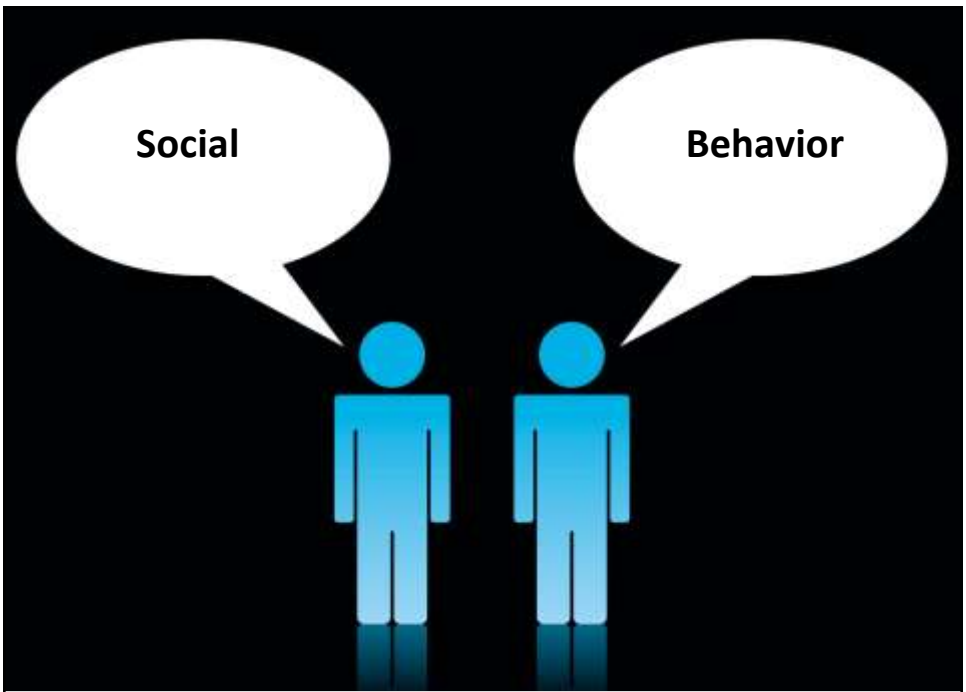
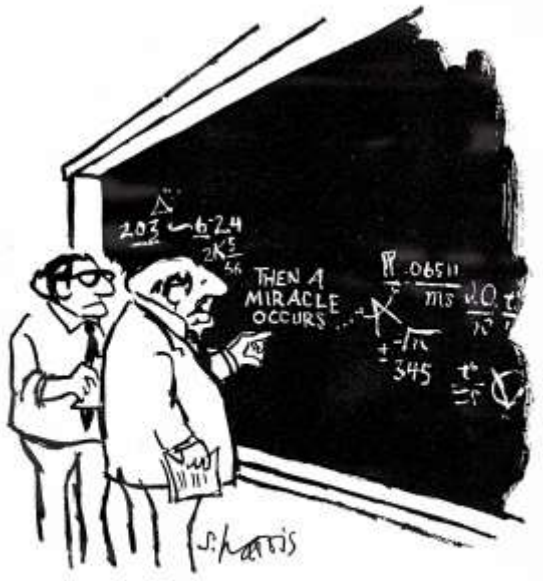


Image source: http://cliparts.co/cliparts/pcq/KkA/pcqKkAX9i.jpg

Too much ado about nothing.

- No clear definition of verbal behavior is possible because there is no distinction between verbal and non-verbal behavior.
- Attempts at an immutable definition are essentialistic.
- Skinner's functional taxonomy of language is in no way affected by the particulars of any definition of verbal behavior.
- Invoking the behavior of others in categorical definitions is not unique to Skinner's definition of verbal behavior.
- The validity of an analysis is not judged (solely) by the amount of research that is produced.

IMPLICATIONS



"I THINK YOU SHOULD BE MORE EXPLICIT HERE IN STEP TWO."

Meaning?

Image source: http://images.realtytoday.com/data/images/full/8143/real-estate-lingo.jpg

THE OPERATIONAL ANALYSIS OF PSYCHOLOGICAL TERMS

BY B. F. SKINNER
University of Minnesota

An answer to Question 4 will define the position to be taken in what follows. Operationism is not regarded as a new theory or mode of definition. The literature has emphasized certain critical or hitherto neglected instances, but no new kind of operation has been discovered and none should be singled out. There is no reason to restrict operational analysis to high-order constructs; the principle applies to all definitions (Question 9). This means, in answer to Question 1 (a), that we must explicate an operational definition for every term unless we are willing to adopt the vague usage of the vernacular.

Operationism may be defined as the practice of talking about (1) one's observations, (2) the manipulative and calculational procedures involved in making them, (3) the logical and mathematical steps which intervene between earlier and later statements, and (4) *nothing else*. So far, the major contribution has come from the fourth provision and, like it, is negative. We have learned how to avoid meaningless references by showing that they are artifacts, which may be variously traced to history, philosophy, linguistics, and so on. No very important positive advances have been made in connection with the first three provisions because operationism has no good answer to Question 10. It has not developed a satisfactory formulation of the effective verbal behavior of the scientist.

The operationist, like most contemporary writers in the field of linguistic and semantic analysis, is on the fence between logical 'correspondence' theories of reference and empirical formulations of language in use. He has not improved upon the mixture of logical and popular terms usually encountered in casual or even supposedly technical discussions of scientific method or the theory of knowledge (e.g., Bertrand Russell's recent *An Inquiry into Meaning and Truth*). 'Definition' is a key term but is not rigorously defined. Bridgman's original contention that the 'concept is synonymous with the corresponding set of operations' cannot be taken literally, and an similarly explicit but satisfactory statement of the relation is available. Instead, a few roundabout expressions recur with rather tiresome regularity wherever this relation is mentioned. We are told that a concept is to be defined '*in terms of*' certain operations, that propositions are to be '*based upon*' operations, that a term denotes something only when there are '*concrete criteria for its applicability*,' that operationism consists in '*referring any concept for its definition to . . . concrete operations . . .*,' and so on. We may accept expressions of this sort as outlining a program, but they do not provide a general scheme of definition, much less an explicit statement of the relation between concept and operation.

The weakness of current theories of language may be traced to the fact that an objective conception of human behavior is still incomplete. The doctrine that words are used to express or convey meanings merely substitutes 'meaning' for 'idea' (in the hope that meanings can then somehow be got outside the skin) and is incompatible with modern psychological conceptions of the organism. Attempts to derive a symbolic

320

Image source: https://upload.wikimedia.org/wikipedia/commons/3/3f/B.F._Skinner_at_Harvard_circa_1950.jpg

To grasp the meaning of a thing, an event, or a situation is to see it in its relations to other things: to note how it operates or functions, what consequences follow from it,what causes it,what uses it can be put to.... In the case of the meaning of words, we are aware by watching children and by our own experience in learning French or German that happenings, like sounds, which originally were devoid of significance acquire meaning by use, and that this use always involves a context. (Dewey, 1933, pp. 225- 231)

Image source: http://img1.imagesbn.com/p/9781557535504_p0_v1_s260x420.JPG

"Meaning is not properly regarded as a property of a response or a situation but rather of the contingencies responsible for both the topography of behavior and the control exerted by stimuli." (Skinner, 1974, p. 90)

Image source: http://www.skeptically.org/sitebuildercontent/sitebuilderpictures/skinner-portrait-40s.jpg

"Meaning is not properly regarded as a property of a response or a situation but rather of the contingencies responsible for both the topography of behavior and the control exerted by stimuli." (Skinner, 1974, p. 90)

"Meaning, contents, and references are to be found among the determiners, not among the properties, of response. " (Skinner, 1945, p. 271)

Image source: http://www.skeptically.org/sitebuildercontent/sitebuilderpictures/skinner-portrait-40s.jpg

The professor suggested that everything that exists is only an illusion. I was disappointed, because my girlfriend is stunning.

Public Accompaniment

Image source: https://c1.staticflickr.com/1/47/148110505_10946213c5_b.jpg

Collateral Respons

Image source: http://i.vimeocdn.com/video/558376992_1280x720.jpg

Common Properties

Image source: https://pixabay.com/static/uploads/photo/2014/04/05/11/29/people-315910_960_720.jpg

Lubinski and Thompson (1987)

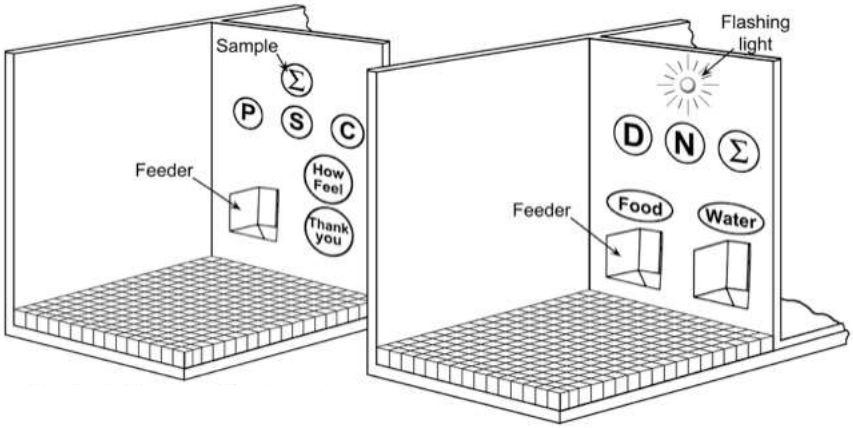


Image source: https://pixabay.com/static/uploads/photo/2015/09/21/01/35/volume-949241_960_720.jpg

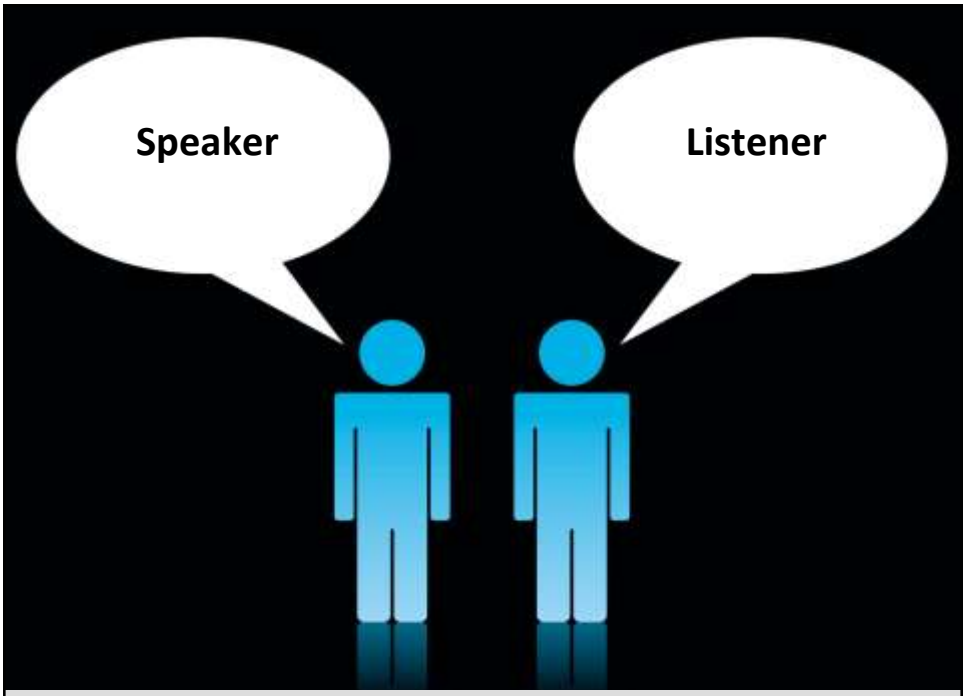


Image source: http://cliparts.co/cliparts/pcq/KkA/pcqKkAX9i.jpg

APPLICATIONS

Image source: https://i.ytimg.com/vi/9K08bPusa4w/maxresdefault.jpg

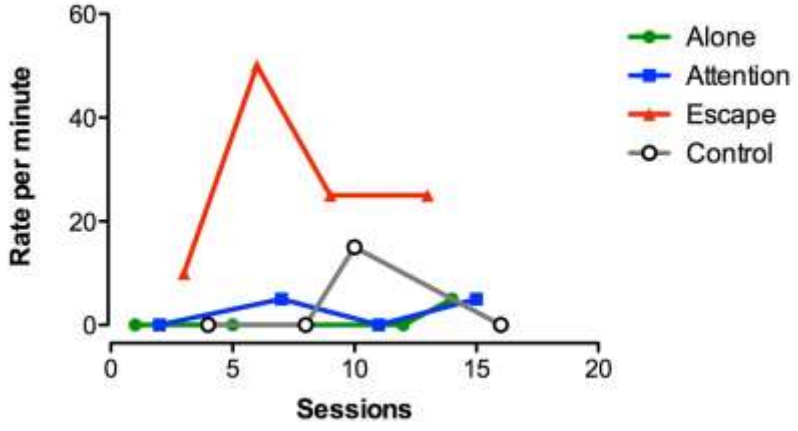
JOURNAL OF APPLIED BEHAVIOR ANALYSIS 1994, 27, 197–209 NUMBER 2 (SUMMER 1994)

TOWARD A FUNCTIONAL ANALYSIS OF SELF-INJURY

BRIAN A. IWATA, MICHAEL F. DORSEY, KEITH J. SLIFER,
KENNETH E. BAUMAN, AND GINA S. RICHMAN

THE JOHN F. KENNEDY INSTITUTE AND
THE JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE

This study describes the use of an operant methodology to assess functional relationships between self-injury and specific environmental events. The self-injurious behaviors of nine developmentally disabled subjects were observed during periods of brief, repeated exposure to a series of analogue conditions. Each condition differed along one or more of the following dimensions: (1) play materials (present vs absent), (2) experimenter demands (high vs low), and (3) social attention (absent vs noncontingent vs contingent). Results showed a great deal of both between and within-subject variability. However, in six of the nine subjects, higher levels of self-injury were consistently associated with a specific stimulus condition, suggesting that within-subject variability was a function of distinct features of the social and/or physical environment. These data are discussed in light of previously suggested hypotheses for the motivation of self-injury, with particular emphasis on their implications for the selection of suitable treatments.



Journal of Applied Behavior Analysis
JOURNAL OF APPLIED BEHAVIOR ANALYSIS 2013, 46, 349–353 NUMBER 1 (SPRING 2013)

FUNCTIONAL ANALYSIS OF VERBAL BEHAVIOR: A BRIEF REVIEW

JOSHUA B. PLAVNICK
MICHIGAN STATE UNIVERSITY
AND
MATTHEW P. NORMAND
UNIVERSITY OF THE PACIFIC

A variation of the preintervention functional analysis of problem behavior has recently been extended to identify the function of verbal behavior emitted by children with autism. Recent research suggests that a functional analysis of verbal behavior might be beneficial in evaluating previous instruction and guiding the selection of future educational targets and instructional procedures. The present paper reviews previous literature on the functional analysis of verbal behavior and identifies avenues for future research.

Key words: autism, functional analysis, language, typical development, verbal behavior

MAND

	Test	Control
Pre-session	Object unavailable for 60 min	Object available for 60 min
Start of session	Object shown to child then placed out of sight Experimenter in close proximity	Object available throughout session Experimenter seated on the other side of the room
Contingent	Brief (20 s) access or a small piece of food	No programmed consequences
Other	Prompt ("What do you want?") every 20 s if no response. Item shown every 1 min if no response	Food items replenished throughout session

TACT

	Test	Control
Pre-session	Object available for 60 min	Object available for 60 min
Start of session	Object available throughout session Experimenter in close proximity	Object not present Experimenter seated on the other side of the room
Contingent	Brief praise (but name of object not used)	No programmed consequences
Other	Prompt ("What is it?") every 20 s if no response. Food items replenished throughout session	

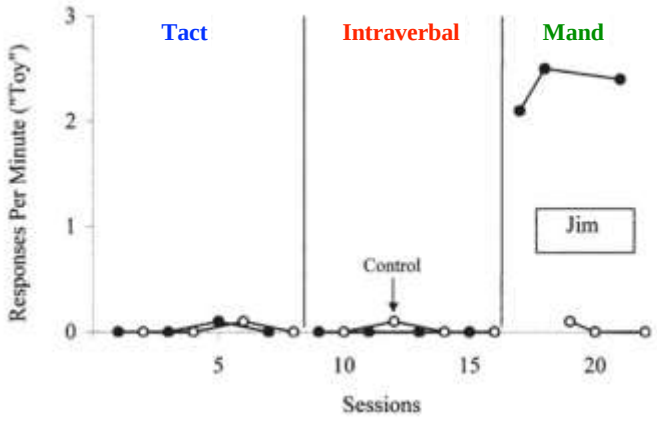
INTRA-VERBAL

	Test	Control
Pre-session	Object available for 60 min	Object available for 60 min
Start of session	Object not present Experimenter in close proximity Every 20 s, the therapist delivered **relevant** phrase that did not contain the vocal response.	Object not present Experimenter in close proximity Every 20 s, the therapist delivered **irrelevant** phrase that did not contain the vocal response.
Contingent	Brief praise (but name of object not used)	No programmed consequences

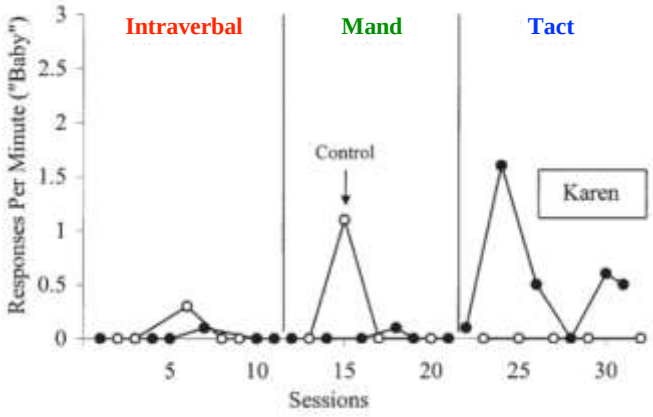
ECHOIC

	Test	Control
Pre-session	Object available for 60 min	Object available for 60 min
Start of session	Object not present Experimenter in close proximity Every 20 s, the therapist stated the name of the object.	Object not present Experimenter seated on the other side of the room
Contingent	Brief praise (but name of object not used)	No programmed consequences

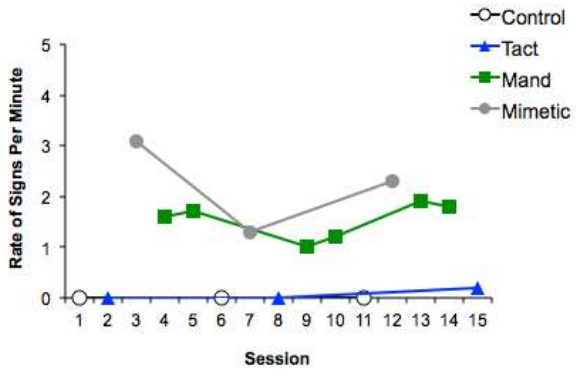
Lerman, Parten, Addison, Vorndran, Volkert, & Kodak (2005). **A methodology for assessing the functions of emerging speech in children with developmental disabilities.** *Journal of Applied Behavior Analysis, 38, 303-316.*



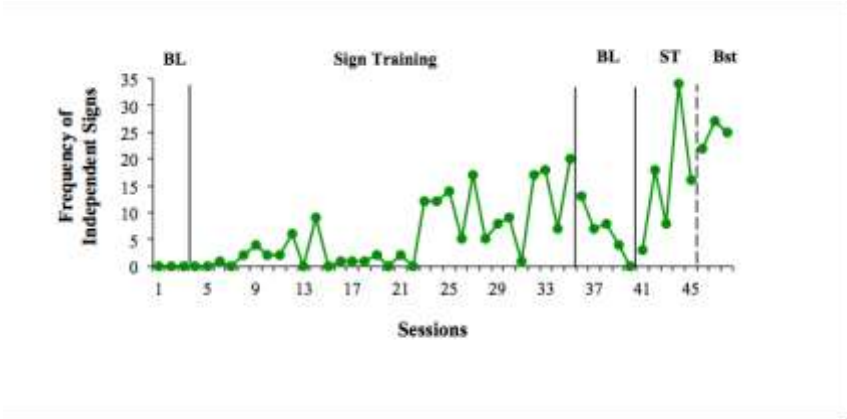
Lerman, Parten, Addison, Vorndran, Volkert, & Kodak (2005). **A methodology for assessing the functions of emerging speech in children with developmental disabilities.** *Journal of Applied Behavior Analysis, 38, 303-316.*



Normand, Severtson, & Beavers. (2008)
A functional analysis of non-vocal verbal behavior in a young child with autism. *The Analysis of Verbal Behavior, 24*, 63-67.

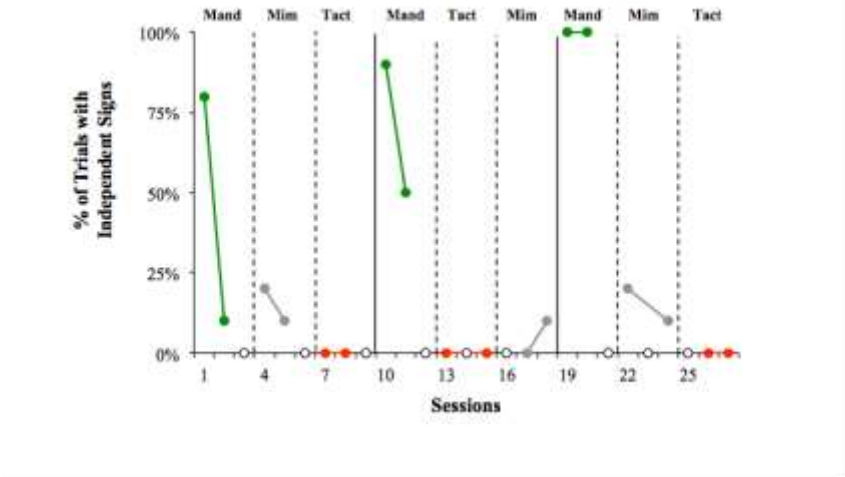


Normand, M. P., Machado, M. A., Hustyi, K. M., & Morley, A. J. (2011). Infant sign training and functional analysis. *Journal of Applied Behavior Analysis, 44*, 305-314.



Normand, M. P., Machado, M. A., Hustyi, K. M., & Morley, A. J. (2011). Infant sign training and functional analysis. *Journal of Applied Behavior Analysis*, *44*, 305-314.

*** Preliminary validation**

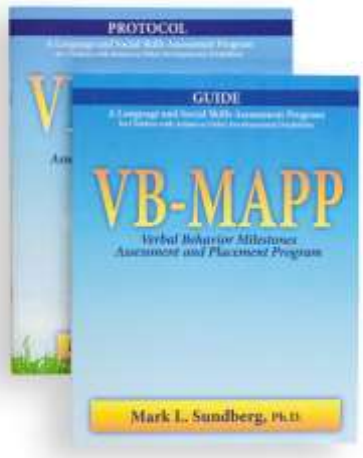


APPLICATION IMPLICATIONS?

- Assessment of existing language repertoire
- Evaluation of language acquisition programs
- Basic research
- Translational research

APPLICATION IMPLICATIONS?

- **Assessment of existing language repertoire**
- **Evaluation of language acquisition programs**
- Basic research
- Translational research



OTHER IMPLICATIONS?

- Assessment of existing language repertoire
- Evaluation of language acquisition programs
- **Basic research**
- **Translational research**

"WHAT'S THE BIG SURPRISE? ALL THE LATEST THEORIES OF LINGUISTICS SAY WE'RE BORN WITH THE INNATE CAPACITY FOR GENERATING SENTENCES."

JOURNAL OF THE EXPERIMENTAL ANALYSIS OF BEHAVIOR 1990, 54, 293–305 NUMBER 3 (NOVEMBER)

THREE-TERM CONTINGENCY PATTERNS IN MOTHER–CHILD VERBAL INTERACTIONS DURING FIRST-LANGUAGE ACQUISITION

ERNST L. MOERK

CALIFORNIA STATE UNIVERSITY, FRESNO

Selections from a large longitudinal data set of verbal interactions between a mother and her child are presented. Two sets of three-term contingency sequences that seemed to reflect maternal rewards and corrections were noted. Both the antecedents as well as the immediate consequences of maternal interventions are presented to explore training and learning processes. The observed frequencies of three-step sequences are compared to those expected based upon Markov-chain logic to substantiate the patterning of the interactions. Behavioral conceptualizations of the learning process are supported by these analyses, although their sufficiency is questioned. It is suggested that maternal rewards and corrections should be integrated with perceptual, cognitive, and social learning conceptualizations in a skill-learning approach to explain the complexity of language transmission and acquisition processes.

Key words: three-term contingency, multivariate analysis, language acquisition, reinforcement, imitation, verbal behavior, mother–child interaction

Image source: https://upload.wikimedia.org/wikipedia/commons/2/29/Mother-Child_face_to_face.jpg

Goldstein et al. (2004). Social interaction shapes babbling: Testing parallels between birdsong and speech. *Proceedings of the National Academy of Sciences*.

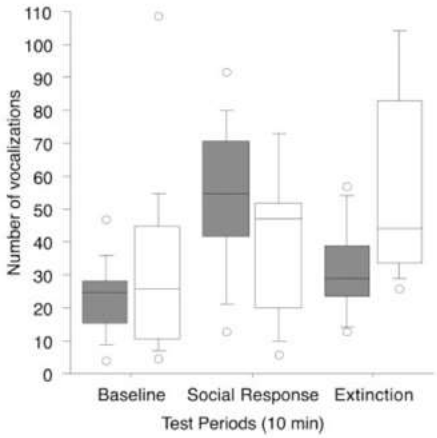


Figure 4 (*b*) Number of vocalizations produced by infants in each group. The increase in the YC infants' vocalizations may have been due to mothers increasing the amount of interaction generally (e.g., increasing touching, proximity, talking) as a reaction to spending the previous 10 min out of social synchrony with their infants.

TEDTALKS

IDEASWORTHSPREADING

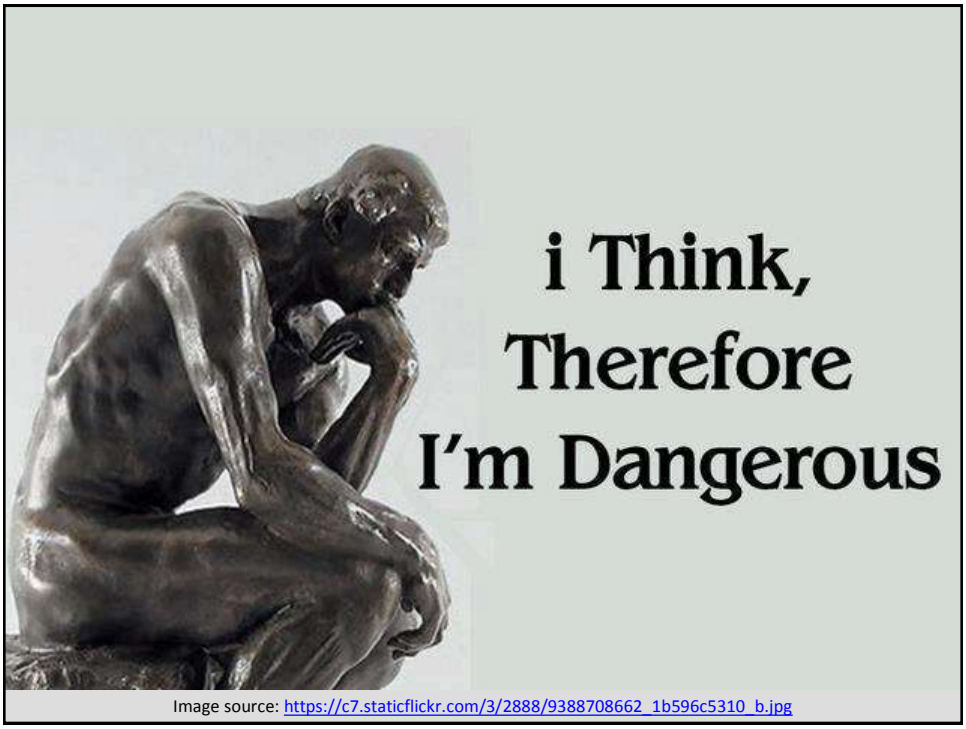


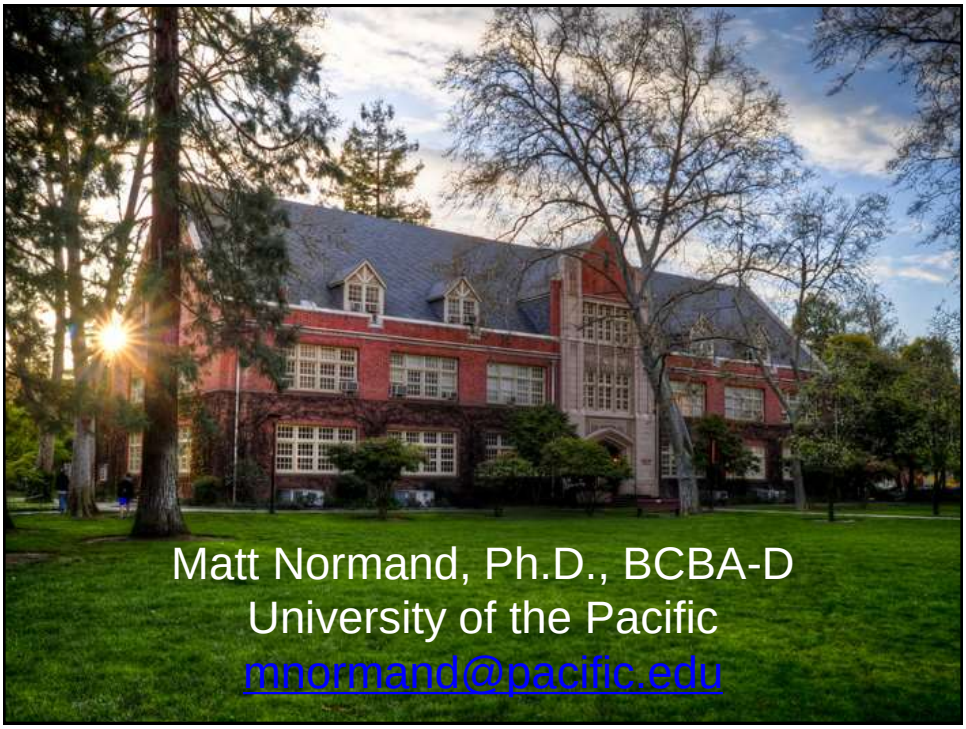
Image source: https://c7.staticflickr.com/3/2888/9388708662_1b596c5310_b.jpg

Journal of the Experimental Analysis of Behavior

Transitive Properties of Emergent Operant Discrimination: The Effects of Differentially Reinforcing Relational Responding in the Presence of a Contrived Conditioned Establishing Operation in Terms of the Abative Effects of a Conditioned Conditioner When Presented Independent of Responding

Image source: https://i.ytimg.com/vi/VRN1xPgUE4M/maxresdefault.jpg

Image source: https://upload.wikimedia.org/wikipedia/commons/4/47/Sébastien_Bourdon_-_Presumed_Portrait_of_René_Descartes_-_WGA2948.jpg


Matt Normand, Ph.D., BCBA-D
University of the Pacific
mnormand@pacific.edu