

On the Role of the Speaker and Listener within
the Same Skin in the Emergence of
Untaught Verbal Operants.



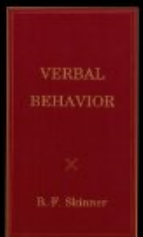
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Objectives

- Explore Skinner's (1957) conceptualization of covert verbal behavior as a type of private events, particularly as presented in latter portions of *Verbal Behavior*
- Present the start of a research agenda for studying covert verbal behavior and according to the Skinner (1957) conceptualization.
- *“These additional uses of verbal behavior....are most interesting when a group is not involved – when, in short, a (person) talks to (himself or herself). Once a speaker also becomes a listener, the stage is set for a drama in which one (person) plays several roles.” (Skinner, 1957, p. 433).*



A close-up photograph of a file folder tab. The tab is white with a decorative, scalloped edge and is positioned in the foreground, slightly to the left of the center. It is labeled with the text "Background Information" in a bold, black, serif font. The background is a blurred array of other file folder tabs, suggesting a filing cabinet or a large collection of documents. The lighting is soft and even, highlighting the texture of the paper and the sharpness of the text on the foreground tab.

**Background
Information**

Skinner on Private Events

- Private events are behavior occasioned by external environmental stimuli that happens to occur at the covert level – nothing mystical or magical about the fact that they occur covertly (1957; 1953)
- Thinking is behaving (1953)
- *“Events at the covert end have no special properties, observe no special laws, and can be credited with no special achievements” (1957; p. 438)*
- Conditioned or respondent covert seeing: We see X only when any stimulus that has accompanied X is present (i.e., see “red” covertly when one sees a heart on a card), as determined by one’s history of reinforcement (1953).
- Operant covert seeing: One sees reinforcing stimuli covertly because it is reinforcing to do so (i.e., the person who day dreams about Venice) (1953)



The Debate on Private Events

- Because they are private, they are unobservable, “guessed at, inferred, hypothetical constructs” -- not amenable to measurement (Baum, 2011)
- We should study private events, and establish reliable overt indicators (Palmer, 2011)
- Levels of analysis – both independent and dependent variables (Anderson et al., 2000)



Speaker and Listener within the Same Skin

- *Thinking* (Ch. 19 of 1957) may be LEAST subjected to empirical investigation:
- Thinking conceptualized as covert verbal behavior for which speaker mediates his or her own reinforcement (serves as his or her own listener)
- Many practical benefits for doing so

Speaker and Listener within the Same Skin

- ***The speaker's own verbal behavior automatically supplies stimuli for echoic, textual, or intraverbal behavior, and these in turn generate stimuli (which occasion) further responses*** (1957; p. 439)
- Speaker's covert (and overt) verbal behavior affects his/her behavior as a listener
 - Opening a Lock example
 - Playing the Piano example
- Covert verbal responses may be automatically reinforced by the practical consequences they produce for the speaker – automatic practical consequences may supply the necessary contingencies (1957; p. 442); *problem-solving* (Palmer, 1991)

Overt Indicators of Covert (Private) Behavior



Stimulus Pairing Observation Procedure (SPOP):

- Rosales, Rehfeldt, & Huffman (2012; *JABA*):
- SPOP: a procedure to produce tacting & listener skills that requires no explicit instruction
- Participants are simply exposed to pairings of stimuli separated by an ITI.
- Vocal names accompanied by visual stimuli mirror naturally occurring opportunities (i.e., observing adults and peers manipulating and tacting items).
- Rosales et al. found that some untaught listener and tact skills emerged after SPOP instruction for preschool children; but tact instruction with other stimuli was necessary for other tact and listener relations to emerge.
- Horne & Lowe (1996): participants' echoing of names during SPOP may facilitate their performance during listener and tact posttests, as though responding as a speaker and listener within the same skin

Byrne, B., Rehfeldt, R. A. , & Aguirre, A. (2014). Evaluating the Effectiveness of Stimulus Pairing Observation Procedure and Multiple Exemplar Instruction in Children with Autism. *The Analysis of Verbal Behavior, 30*, 160-169.

- Purpose:
 - *Evaluate the efficacy of SPOP and MEI/SPOP in producing untaught listener and tact skills*
 - *Explore the role of participants' echoic behavior (echoing of stimulus names) on their performance on listener and tact test trials*
- Participants:
 - *Three 7-year olds with autism and severe language delays (VB-MAPP Level 1)*

Procedure Overview:

- Pretest Probes (in 9-trial blocks):
 - Tact Probes (“what is it?”)
 - Listener Probes (“where is the _____”)
- SPOP Instruction:
 - Trial consisted of 2 s presentation of picture and its dictated name (5 9-trial blocks), with 2-3 s ITI
- Posttest Probes 1
- MEI/SPOP:
 - Identical to SPOP instruction but performed with 2 novel sets of 3 stimuli
- Remedial SPOP w/ Original Stimuli
- Posttest Probes 2

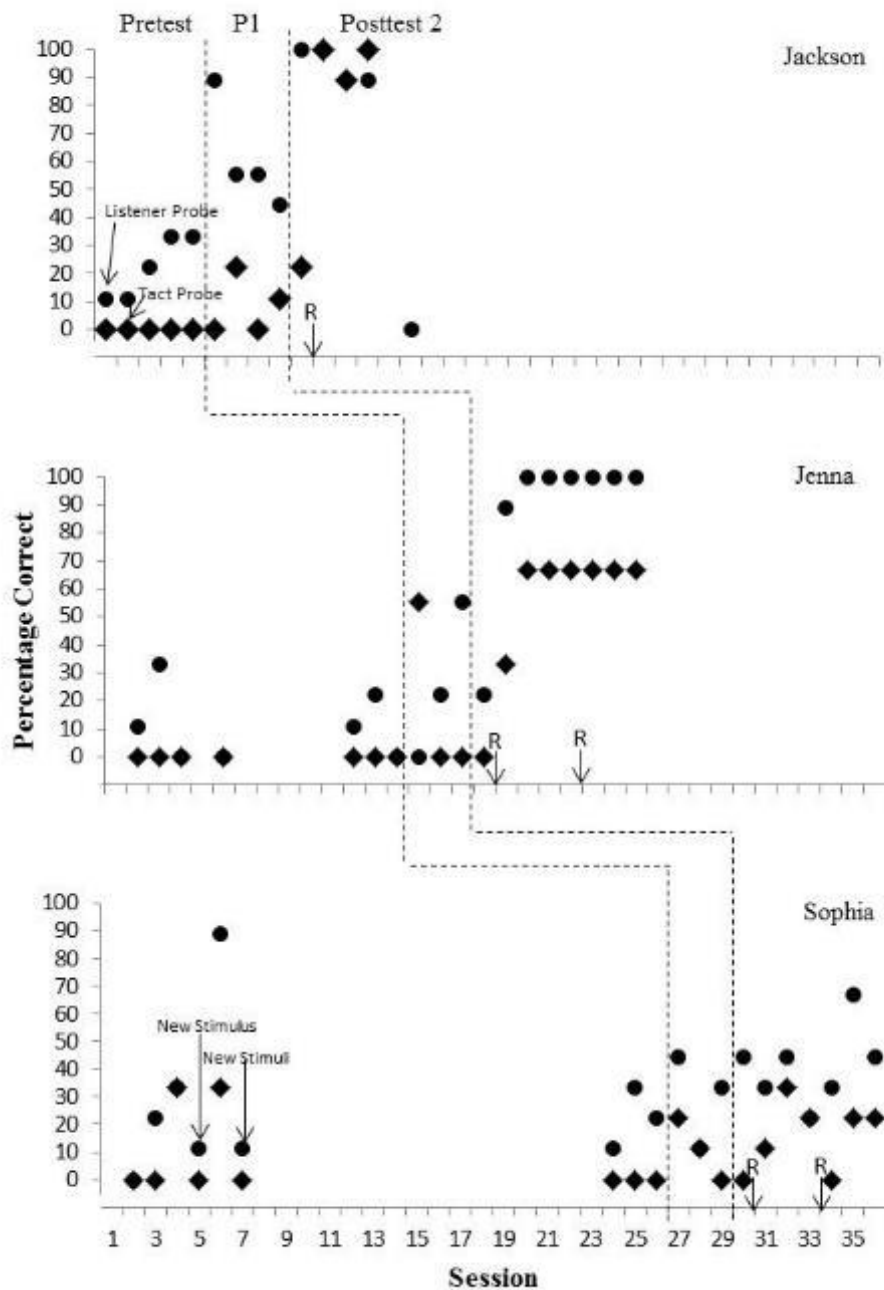
Measures:

- Performance on
 - 1. Tact Probes (for emergent tacts)
 - 2. Listener Probes (emergent listener)

as a function of SPOP

Proportion of Echoed Stimulus Names emitted during

1. Listener pre and posttests trials (“where is the ____”)
2. SPOP Instruction (pairings of dictated names with visual stimuli)



Only Jackson showed untaught listener and tact skills with original instructional stimuli following multiple exemplar instruction with SPOP and novel stimuli.



Jenna showed untaught listener skills.



Sophia showed improvement in tact and listener skills following SPOP and MEI/SPOP but none were at criterion performance.

Echoic Results

Mean percentage of echoed trials for the original stimulus sets and MEI stimuli sets for Jackson.

	Original Set	MEI Set 1	MEI Set 2
Pretest	25.93%	18.52%	66.66%
Intervention	96.67%	94.07%	92.78%
Posttest	34.72%	66.67%	44.44%

Jackson, who showed untaught tacting and listener skills, echoed names on high proportion of trials during all SPOP phases, but on few trials during listener pre and posttests.

Echoic Results

Mean percentage of echoed trials for the original stimulus sets and MEI stimuli sets for Jenna.

	Original Set	MEI Set 1	MEI Set 2
Pretest	63.49%	33.33%	22.22%
Intervention	96.3%	91.11%	98.3%
Posttest	81.81%	73.61%	92.98%

Jenna, who showed untaught listener skills following SPOP & MEI, echoed names on high proportion of trials during all SPOP phases, and on a high proportion of posttest trials relative to pretests.

Echoic Results

Mean percentage of echoed trials for the original stimulus sets and MEI stimuli sets for Sophia.

	Original Set	MEI Set 1	MEI Set 2
Pretest	83.33%	100%	0%
Intervention	97.04%	94.07%	92.54%
Posttest	97.78%	93.65%	79.09%

Sophia, who made minor improvements in tact and listener skills, named stimuli on a high proportion of SPOP trials and pre and posttest trials.

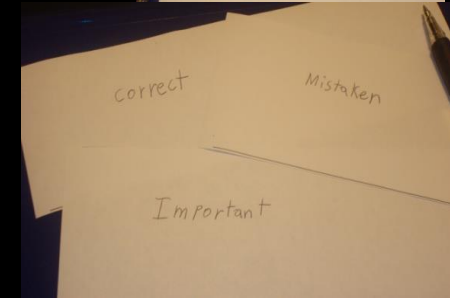
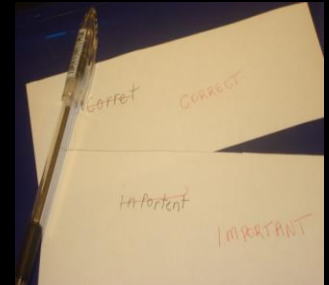
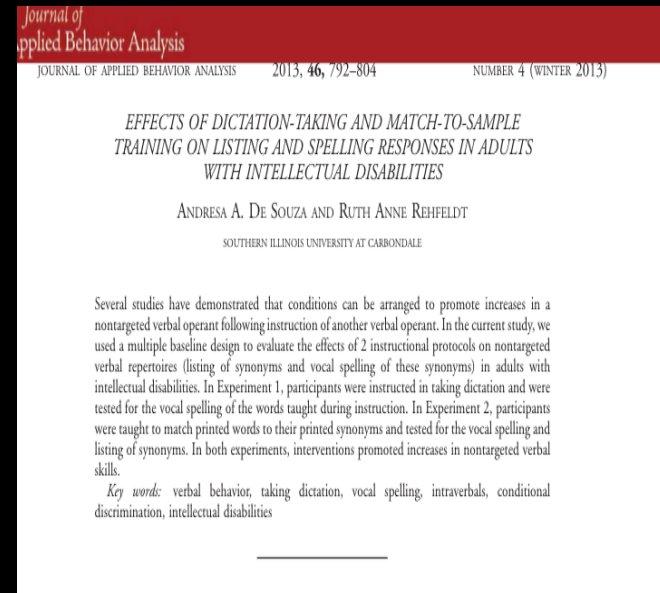
Implications

- SPOP effective in promoting development of listener skills
- Tact skills at criterion levels following SPOP for one participant only
- All participants echoed frequently during SPOP instruction, Jackson less so during listener tests when skills were at criterion, Sophia moreso when skills were not at criterion
- Naming occurring covertly during Jackson's listener tests?
- Echoic behavior only corollary

De Souza & Rehfeldt (2013). *JABA*

Would teaching written spelling (i.e., taking dictation) facilitate the induction of vocal spelling (intraverbal)?

- *Skinner (1957): Writing and speaking are separately acquired and conditioned; what “bridges the gap” between spoken and written behavior?*
- Greer et al. (2005)
- *Would we observe corollary indicators of covert spelling?



Participants

- 3 young adults with intellectual disability
- Followed instructions without difficulties, participated in conversations with others, and could identify and name letters
- Had participated in special education in high school and had graduated within the last 1-2 years
- Used multiple baseline design across participants

Instructional Stimuli (from SAT prep book)

Textual Stimuli:

Verify
Confirm
Demonstrate

Expand
Distend
Increase

Negate
Disprove
Invalidate

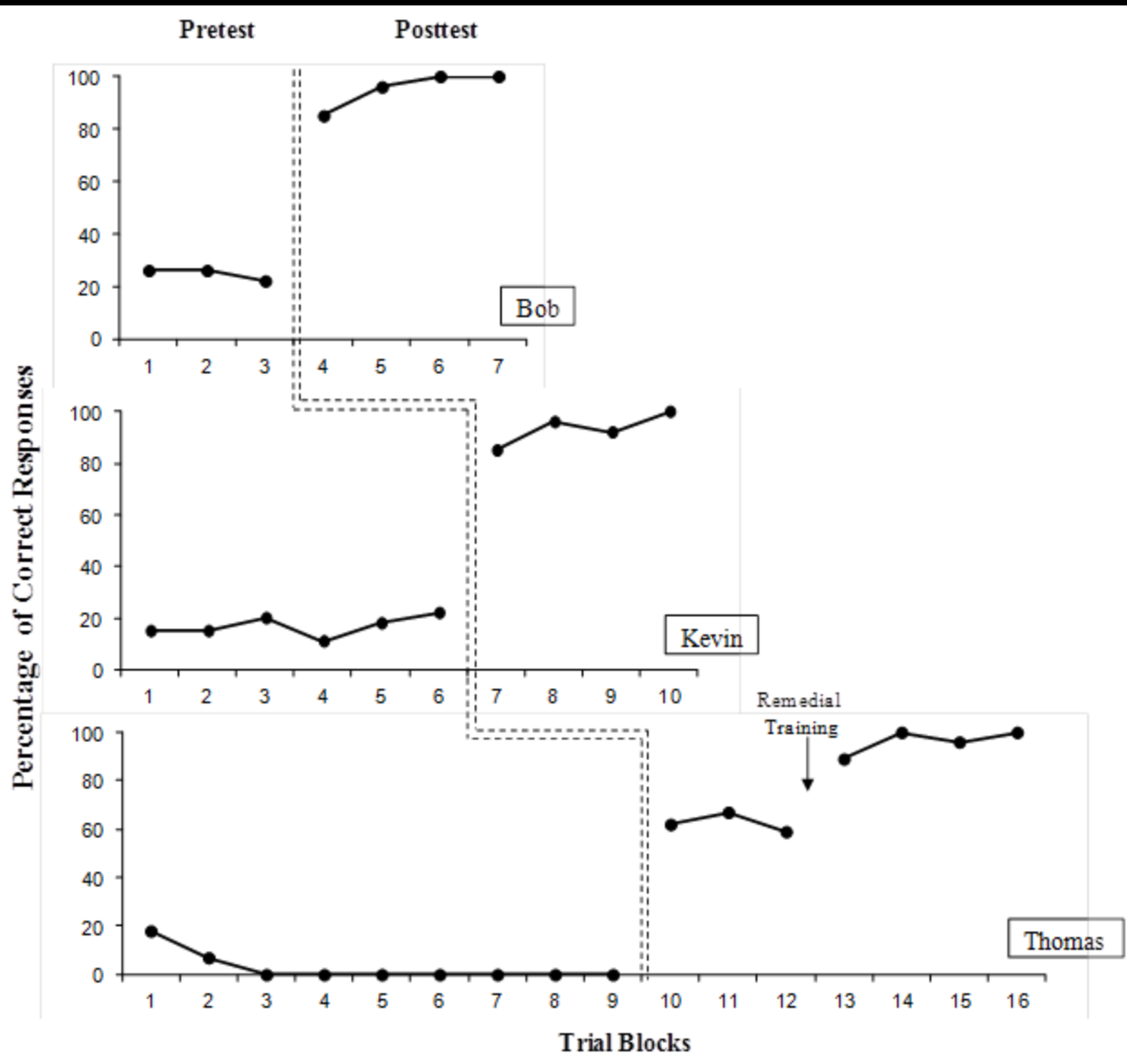


Procedure, cont.:

- Pretests/Posttests
 - Evaluated nontargeted vocal spelling responses → 3 x each word
 - “Spell ____”
 - No reinforcement and no error correction
- Dictation Instruction
 - “Write ____”
 - Correct response → verbal praise
 - Incorrect response → error correction

Plus feedback





Including More Measures of Private Events (Palmer, 2011)



Mazo et al. (project completed) Effects of Dictation Taking and Spelling Responses in Children While Using Overt Indicators to Measure Covert Processes

EFFECTS OF DICTATION-TAKING AND MATCH-TO-SAMPLE TRAINING ON LISTING AND SPELLING RESPONSES IN ADULTS WITH INTELLECTUAL DISABILITIES

ANDRESA A. DE SOUZA AND RUTH ANNE REHFELDT

SOUTHERN ILLINOIS UNIVERSITY AT CARBONDALE

- Replication of De Souza & Rehfeltdt (2013) with typically-developing 1st graders
- Included additional measures of covert processes (overt indicators)



Method

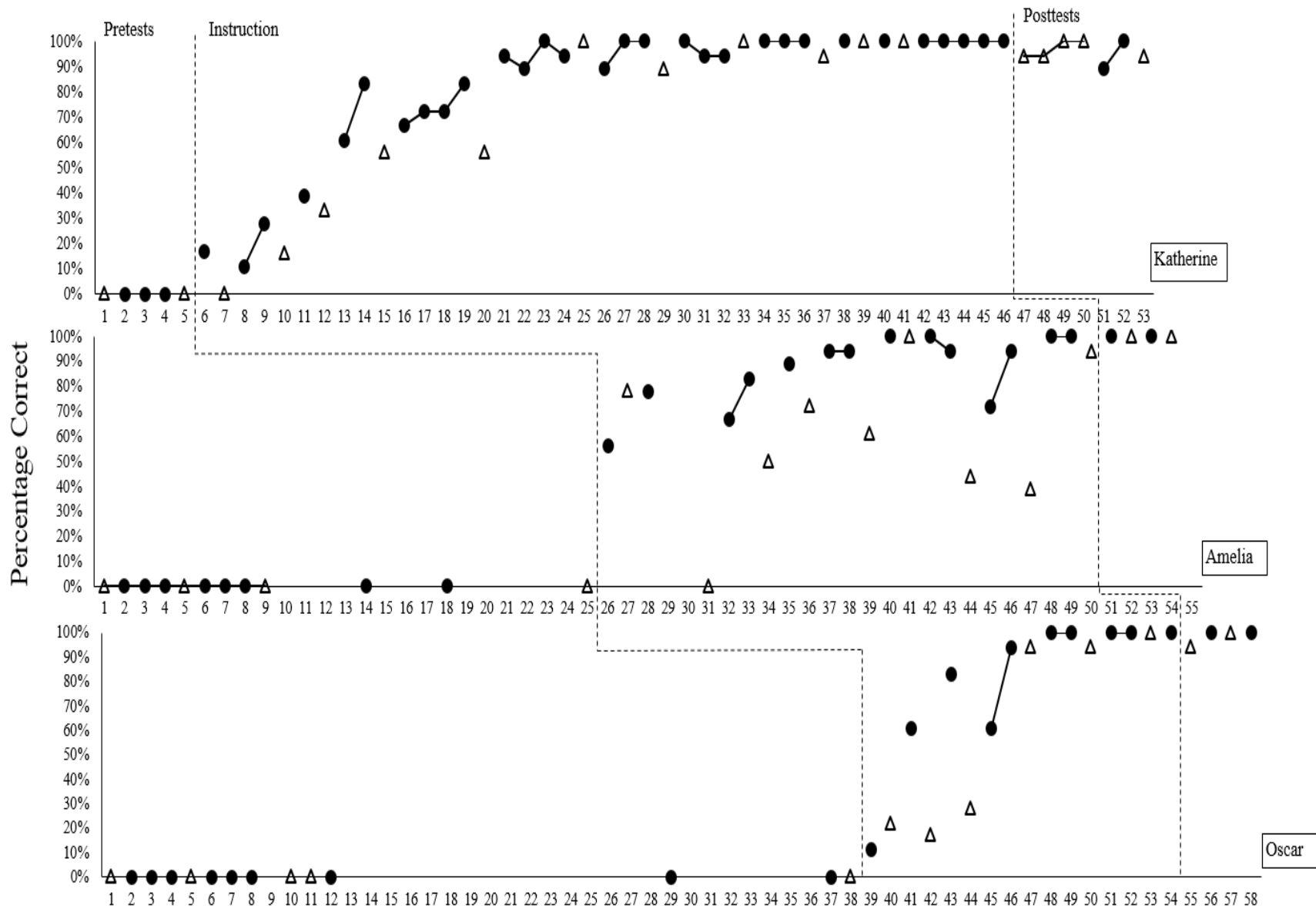
- Dependent Variable
 - Percent of correct vocal spelling (words unique to each participant)
 - Overt Indicators
- Independent Variable
 - Taking Dictation
 - (Written spelling with error correction & feedback)
- Experimental Design
 - Multiple Probe Embedded in a Multiple Baseline Design Across Participants



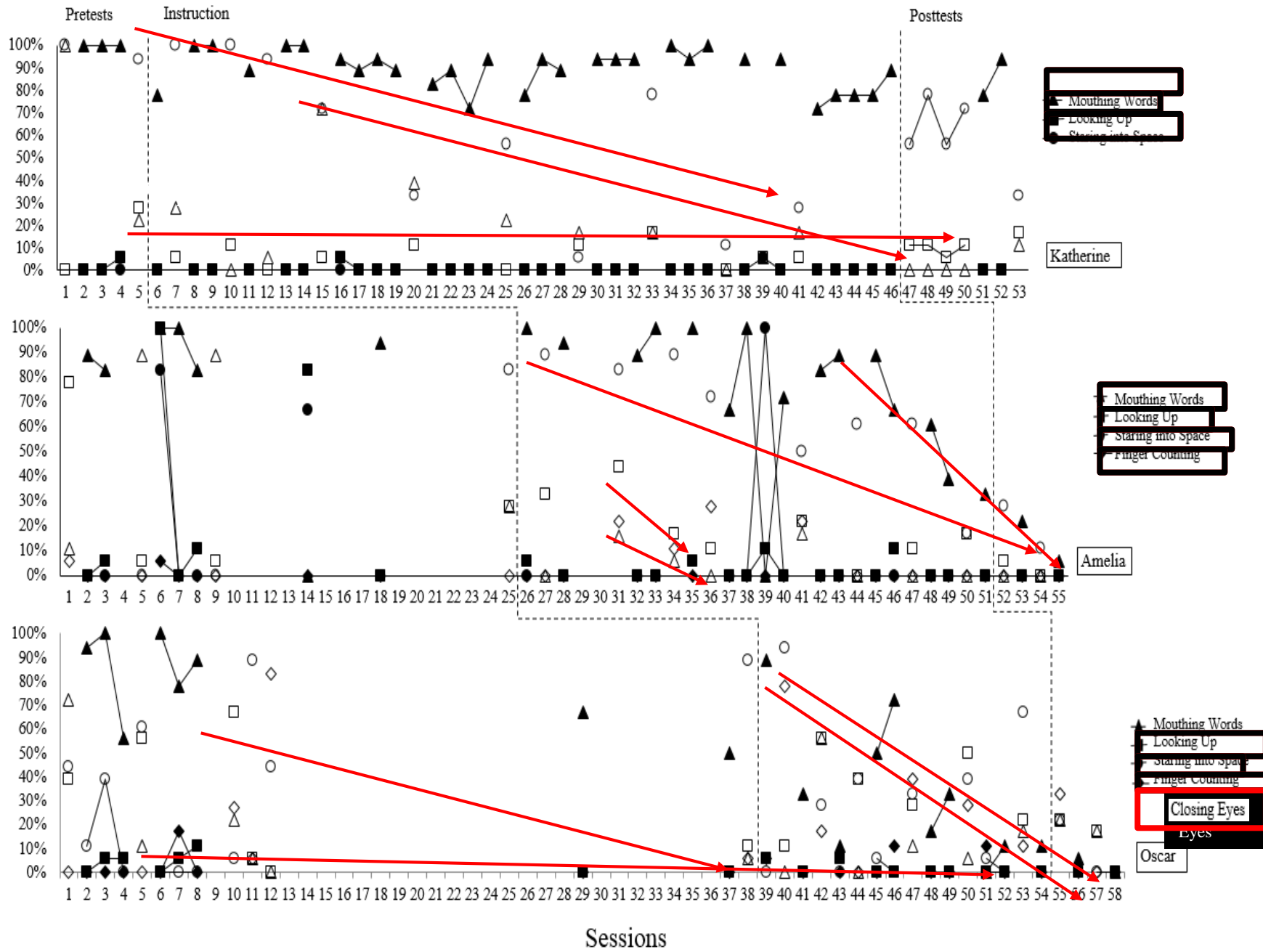
Overt Indicators

- Katherine
 - Mouthing words
 - Looking up
 - Staring into space
- Amelia
 - Mouthing words
 - Looking up
 - Staring into space
 - Finger counting
- Oscar
 - Mouthing words
 - Looking up
 - Staring into space
 - Closing eyes





Percentage of Trials with Overt Indicator



Sessions

Private Events as an Independent Variable (Anderson et al. 2000)



An Evaluation of Instruction in Visual Imagining on the Written Spelling Performance of Adolescents with Learning Disabilities

Angelica A. Aguirre · Ruth Anne Rehfeldt

- Sears & Johnson (2001): Visual imagery was more effective than control condition on written spelling performance and retention.
 - Their Procedure:
 - *Students looked at word; teacher covered word*
 - *Instructed to see image of item in mind*
 - *Imagine word displayed on large outdoor screen*
 - *Imagine each letter of word pasted onto the screen with fantasy paste*
 - *“Help yourself remember this word by imagining yourself nailing each letter with fantasy nails”*

Method & Procedure:

Participants:

- **Mary:** 17; ADHD & Variety of language & academic disorders
- **Steven:** 18; ADHD, Asperger Syndrome
- **Stacy:** 17; ADHD

- Stimuli: 10 ACT words



Mary	Agrarian Connoisseur Incorrigible Inevitable Irrefragable Languid Pendulous Propensity Regalia Zealot
Steven & Stacy	Cavalier Complaisant Deliquesce Exegesis Forebode Ingratiate Malign Proselyte Repose Respite

Procedure

- **Pre and Posttests:** Instructed to write _____
- **Control Condition (exposure):** shown stimulus for 5 s, “The word is _____;” instructed to write word.
- **Visual Imagining Condition:** Shown stimulus for 3 s; “The word is _____”; stimulus removed.
- *“See if you can see the written word in your mind (3 second pause). Imagine the word on a piece of white paper (3 second pause). Help yourself remember the word by imagining yourself writing over each letter of the word (3 second pause).” Instructed to write word.*
- **Visual Imagining + Error Correction & Reinforcement Condition:** Same as Visual Imagining, but feedback & error correction provided for correct and incorrect responses

Corollary Measures

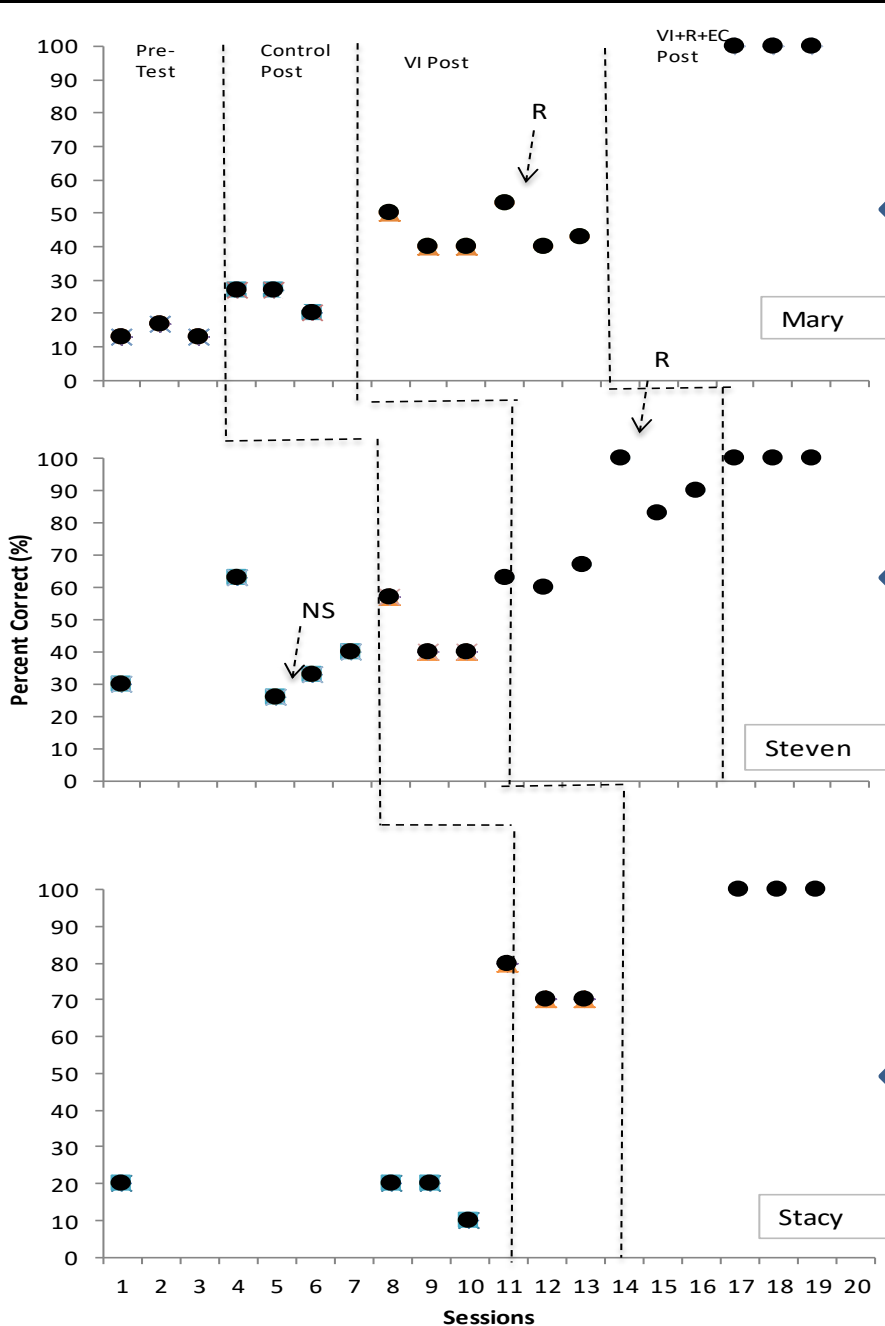
- Any finger spelling, vocal spelling, echoing or sounding out the dictated word, or looking away from their paper before writing their response on a trial by trial basis

Results

Error correction & reinforcement necessary; 27-42 instances of overt indicators during ALL instructional phases.

Error correction & reinforcement necessary; 1-7 instances of overt indicators during control and VI only.

Mastered words during VI alone; but improvements also noted following control/exposure condition; 4-5 instances of overt indicators during pretests and VI only.



Con**clusion**ion

Concluding Comments

- Behavior analysts can't ignore covert VB or "thinking"
- In verbal organisms, we know that overt VB may recede to the covert level (Skinner, 1957)
- Make it part of the analysis!
- *OK with Skinner*
- *Technology may develop for targeting cognitive skills*

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