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A Context for Science with a Commitment to Behavior Change

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The Behavior Analyst Today (BAT) is published quarterly by Joseph Cautilli. BAT is an online, electronic publication of general circulation to the scientific community. BAT's mission is to provide a concentrated behavior analytic voice among voices which are more cognitive and structural. BAT emphasizes functionalism and behavioral approaches to verbal behavior. Additionally, BAT hopes to highlight the importance of conducting research from a strong theoretical base. BAT areas of interest include, but are not limited to Clinical Behavior Analysis, Behavior Models of Child Development, Community based behavioral analytic interventions, and Behavioral Philosophy. BAT is an independent publication and is in no way affiliated with any other publications.

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MESSAGE FROM THE BEHAVIOR ANALYST CERTIFICATION BOARD:

Recently, the Behavior Analyst Certification Board formed a workgroup to examine the experience requirement for certification. The workgroup is soliciting your feedback and input on this important aspect of certification, as we look to improvement and refinement. Please send your comments or suggestions, either from the point of view of serving as a supervisor, or as someone who has received or is receiving supervision, to Raymond G. Romanczyk, Ph.D., BCBA at rromanc@binghamton.edu . These responses along with other formal survey results will be used to prepare a set of recommendations for the BACB to consider. We welcome your input.

Submission Information

Most contributions are by invitation and all are then peer-reviewed and edited. The editors, however, welcome unsolicited manuscripts, in which case, we suggest potential authors send an abstract or short summary of contents and we will respond as to our interest in a full manuscript submission. In all cases, manuscripts should be submitted electronically saved in "rich text format" (.rtf) to BOTH Michael Weinberg at mweinberg@klx.net and Joe Cautilli at jcautill@astro.temple.edu. Please adhere to APA format and use "Times New Roman" font in 11 pt. throughout. In references, however, please italicize the places where APA format would have you underline. Headings are encouraged and must follow APA format. Visit the BAO site for more information regarding submissions: http://www.behavior-analyst-online.org/NEWBAT/Frameless%20BAT/index.html#Submissions

Our Mission

The Behavior Analyst Today is committed to increasing the communication between the sub disciplines within behavior analysis, such as behavioral assessment, work with various populations, basic and applied research. Through achieving this goal, we hope to see less fractionation and greater cohesion within the field. The Behavior Analyst Today strives to be a high quality journal, which also brings up to the minute information on current developments wihin the field to those who can benefit from those developments. Founded as a newletter for master level practitioners in Pennsylvania and those represented in the clinical behavior analysis SIG at ABA and those who comprised the BA SIG at the Association for the Advancement of Behavior Therapy, BAT has evolved to being a primary form of communication betweeen researchers and practitioners, as well as a primary form of communication for those outside behavior analysis. Thus the Behavior Analyst Today will continue to publish original research, reviews of sub disciplines, theoretical and conceptual work, applied research, program descriptions, research in organizations and the community, clinical work, and curriculum developments. In short, we strive to publish all which is behavior analytic. Our vision is to become the voice of the behavioral community.

Editor's Note
From
Michael Weinberg

It is with great pleasure that I assume the role of editor of *Behavior Analyst Today* beginning with this issue. What began 5 years ago as a newsletter has now become a premier on-line journal in the field of behavior analysis, with readers around the world. This was the vision of Joseph Cautilli, who has stepped down from his role as lead editor, and a number of others who were involved in creating the journal, including Beth Rosenwasser, Craig Thomas, and Margaret Hancock. I was also among the originators of BAT, and was asked by the Board of Education of Pennsylvania, who was then recognizing and instituting the Florida Behavior Analyst certification process in the Commonwealth. *BAT* is an effort requiring many different professionals to publish. The vision that Joe had has continued and grown. This vision includes the notion that a quality journal in our field can be created and sustained that is free of charge to readers and readily accessible by being "on-line." We now have an editorial board consisting of many distinguished behavior analysts, with a growing membership internationally. I would like to thank the board, and our layout editor for his heroic efforts in preparing each issue for publication, George Peterson.

BAT is now on EBSCO, PSYC-INFO, and soon to be rated by the Information Science Institute. We are all proud of our accomplishments over the past four years and with the continued support of our dedicated staff, we hope to continue the journal for years to come. Along with the associate editors and editorial staff, we will work together to continue to improve the quality of the journal, and be a highly desirable destination for publishing articles in both basic and applied behavior analysis. We will continue our commitment to these principles and to providing a quality no-cost on-line journal.

BAT articles are most often submitted by invitation; however we do welcome unsolicited submissions. Please send submissions or questions about the submission process to me directly or Joe Cautilli at Jcautill@Temple.edu.

Mike Weinberg
Editor

Learning Channels and Verbal Behavior

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This article reviews the basics of learning channels and how specification of stimuli can help enhance verbal behavior. This article will define learning channels and the role of the ability matrix in training verbal behavior.
Descriptors: Learning channels; learning channel matrix; verbal behavior; generic extension; The ABLLS

Behavior analysis has long relied on precise, descriptive accounts of behavior. When discussing the terms stimulus and response, Keller and Schoenfeld (1950) submit: "…whenever we try to describe either the behavior or the environment of an organism, we are forced to break it down into parts. *Analysis* is essential to description, in our science as well as others" (p. 3). Skinner has also articulated the importance of accurately describing behavior for the science of behavior (Skinner, 1953, 1957, 1974). While contemporary behavior analysts, e.g., Catania (1998), Cooper, Heron, & Heward (1987), Pierce & Epling (1999), still encourage good descriptions of behavior, many professionals outside of behavior analysis have yet to embrace sound operational definitions.

Haughton (1980) criticized terms such as "knows," "understands," or "is able" because they do not delineate learning well. "Jessica knows her subtraction facts" tells very little of what Jessica can do regarding subtraction. With the advent of PL 94-142, the federal law required more objective criteria for instructional objectives, long and short term goals, evaluation procedures, and monitoring progress in special education (Underwood & Mead, 1995). The mandate for more specific operational definitions still did not resolve all problems. Descriptive words such as "calculates," "writes," and "responds" (Haughton, 1980) appeared but still translated into ambiguous descriptions of behavior. "Miles can calculate subtraction facts," provides additional information that Miles is performing a mathematical operation. The definition, however, fails to offer essential information such as the response form (i.e., oral or written).

To add precision and provide more information Lindsley suggested teachers use "learning channels." A learning channel represents the "input" or the sensory modality involved with a stimulus and an "output" or the behavior contained in the response (Haughton, 1980; Lindsley, 1998). If a learner orally reads a book, "see" would signify the "input" and "say" the "output". The combination of the "see" and "say," added before the action-object "reads a book," is called a learning channel set (Haughton, 1980). Figure 1 shows an example of a learning channel matrix.

Haughton (1980) indicated that learning channels can assist teachers and other professionals in education avoid vague descriptions of behavior. Kubina and Cooper (2000) list the following general advantages of using learning channels: (a) use multiple learning channels with the same target performance will add variety to instruction and practice; (b) extend skill applications by teaching and practicing many exemplars of the skill area; (c) facilitate planning for instruction and practice; (d) communicate with others in plain English; (e) remind us that learners learn and respond in many ways; (f) help us select instructional and practice activities for learners with special needs, and (g) make learning more exciting and fun.

How to use the Learning Channel Matrix

A basic learning channel matrix includes two major parts, the input and output channels or, as in Figure 1, shortened to "in" and "out." The adapted learning channel matrix shown in

Figure 1 comes from Haughton (1980) and Binder and Haughton (2002). Nevertheless, behavioral analysts do not have to limit themselves to the present format. A useful matrix should add precision to any behavior outcome specified for a learner. Haughton (1980) originally developed three matrices, the Mobility Matrix, the Academic/Personal/Social Development Matrix, and the Activity Matrix, for use with a variety of behaviors. The following section is a guide for using the learning channel matrix shown in Figure 1.

LEARNING CHANNEL MATRIX

IN	DO (D)	DRAW (Dr)	MARK (Mk)	POINT/ TAP (PT)	THINK (T)	TYPE (Ty)
HEAR (H)	Motor imitation (from peer)				Write essay with story starters	
TOUCH (To)						
TASTE (Ta)						
SNIFF (Sn)						
SEE (Se)	Motor imitation		Ta-S Identify flavors of liquids			
FREE (F)						

OUT

***Figure 1*. A Learning Channel Matrix with examples of single and/or multiple in and out channels.**

Learner behavior. Lindsley (2002) emphasized that learning channels refer to the learner's behavior rather than the teacher's. For instance, if a teacher models a response and asks the learner to imitate, a see-do learning channel (see the teacher's model and do the response) occurs. If the teacher says and the learner does “touch your arm”, then a hear-do channel occurred. Specifically, the learner heard the command and did it. The learning channel details the request and the desired behavior, but the teacher should be aware of what the learner actually attends to. Even though the desired behavior emerges, such as doing the teacher's model, the learner may have used a different learning channel.

Define input or in channels as the sensory modalities associated with antecedent stimuli. The in channels represent the sensory modalities the learner uses during the occurrence of the stimuli immediately preceding the response. Answering addition facts may involve "seeing" an addition problem (e.g., 6 + 2 = ?). The in channel, or the sensory modality used with the antecedent stimulus of a written addition problem is visual or see. The other potential in channels include hear, touch, taste, sniff, and free. The term “free” captures what many people call think or feel. Skinner (1953) wrote of thinking and pointed out that while it does exist, the behaviors involved with thinking are difficult to define rigorously. Free refers to “free from” external sensory modalities (i.e., hear, touch, taste, sniff, see). A young woman may record what happened on a particular day by writing in her diary. The in channel in effect during her writing is “free.” Free specifies the lack of an observable external stimulus. In other words, the young woman was "free from" the use of an external sensory modality during her writing behavior. Free is the only in channel which will not be combine with other in channels because it is free from other sensory modalities.

Define output or out channels as the response. The out channels are the learner's responses. A student answering addition problems by writing numbers uses the out channel of "write." Whether the student answers the question with a correct or incorrect response, the out channel is present. Stated differently, the form of the out channel has nothing to do with content of the response. Writing 7 to the stimulus “3 + 2= ?” involves the out channel write. Out channels include do, draw, mark, point/tap, think, type, say and write. Skinner (1957) noted that thinking addresses verbal responses accessible only to the thinker. As a broadly inclusive term, the out channel *think* describes behaviors accessible only to the learner. An example of the think channel happens in school when a teacher provides students with story starters and asks the students to think about something, e.g., "Think about your favorite summer vacation". The learning channel is hear-think. Because the think channel is accessible only to the learner, other learning channels and behaviors are used to assess behaviors that have think as an out channel. After the students think about their favorite summer vacation, they may then write an essay. Writing an essay offers an inference into the think out channel.

Use the learning channel matrix to determine in and out channels. Haughton (1980) called the in and out combination a "channel set." We use the term "learning channel" generically to refer to both the in and out. To find the learning channel for a behavior both the in and out channels must be identified. To return to the previous addition example of finding an in and an out channel, a learner was answering addition problems. Finding *see* from the row of in channels and then finding *write* from the column of out channels intersects to form the learning channel. Inside the cell write "addition math facts." The learning channel see-write precisely describes the behavior of answering addition facts.

Multiple in and out channels. Lindsley (1994) noted that some behaviors can have multiple in and/or multiple out channels. An example of a multiple in channel could occur with addition facts. The student could see the teacher writing the problem while hearing what the

teacher says. So the student sees the teacher writing "6" and hears the teacher say "six," sees the teacher write "+" and hears the teacher say "plus" and so on. The multiple in channel is “seehear.” If the student then writes down the answer the learning channel is “seehear-write" addition facts. A behavior may also have multiple out channels. If a student hears the number "8" then writes and says the number's name "eight", the out channel is writesay.

Learning channel conventions. Lindsley (2002) suggested the following convention for expressing learning channels. Use a hyphen (-) when a pause occurs between an in and an out channel. If a student sees a number "8" first and then writes the number “8" his learning channel would be expressed as "see-write." If multiple antecedents or multiple responses take place at the same time the multiple words are put together without a hyphen. As previously noted, a student that sees the teacher writing "6" and hears the teacher say "six" has a "seehear" in. Depending on the out, whether it has one or multiple responses, it would be separated from the in channel with a hyphen. The student that engages in the "seehear" in channel, then writes the answer would have a learning channel of "seehear-write."

The learning channel matrix has two-dimensions and may unintentionally encourage single channel sets such as “see-say” or “hear-write” (Lindsley, 2002). Therefore with multiple learning channels the following coding system suggests a way to move beyond the two-dimensional limitation. For "seehear-say" find the first part of the IN, "see," from the IN row and find the say in the OUT column and locate their intersection. In that cell write down the additional abbreviation of the second part of the IN followed by a hyphen, i.e., H-. Then write the behavior as in Figure 1. If a behavior has multiple out channels such as "hear-writesay" similar procedures are followed. Find the "hear" from the IN row and identify where it intersects with then first part of the OUT "write." In that cell write down the additional abbreviation of the second part of the OUT preceded by a hyphen, i.e., -S, and then write the behavior as displayed in Figure 1.

Some behaviors may have multiple in channels and multiple out channels. Students learning about different liquids may have opportunities to see liquids and taste them and then mark what flavor it has, e.g., bitter, sweet, salty, and say the response. The learning channel would be "seetaste-marksay." Find the intersection of the first in channel, see, and the first out channel, mark. Abbreviate the second part of the in channel and the out channel with a hyphen in between, i.e., Ta-S, and then write the behavior “identify flavors of liquids."

How Learning Channels Benefit the Analysis of Verbal Behavior

Skinner defined verbal behavior as behavior mediated by another organism. Within his analysis of verbal behavior specific verbal operants are classified as different types of relationships occurring between controlling variables and verbal responses (Skinner, 1957). Verbal operants and other aspects of the analysis of verbal behavior converge generally and practically with learning channels. Figure 2 presents one potential way that verbal behavior interacts with learning channels. While the verbal operants define a behavior functionally, learning channels add precision to the descriptions of the topography.

	Point-to-point correspondence: part or subdivisions of S^D control parts or subdivisions of R_v		Thematic correspondence: S^D does not resemble the R_v	
	Verbal Operants	Learning Channels	Verbal Operants	Learning Channels
Formal Similarity: $S^D = R_v$ in format	Duplic Echoic(auditory) Copy (visual)	 Hear-Say See-Write	 Intraverbal	 Hear-Say
No Formal Similarity: S^D R_v in format	Codic Dictation (auditory-visual) Textual (visual-auditory)	 Hear-Write See-Say	 Tact	 See-Say

***Figure 2*. Summary of Possible Interaction Between Verbal Behavior and Learning Channels. "S^D" represents the "discriminative stimulus" (controlling variable) and "R_V" expresses the "Verbal Response".**

General benefits

Learning channels can benefit behavior analysts who use the analysis of verbal behavior. The following section lists general ways learning channels contributes to verbal behavior. This section does not serve as an exhaustive list of positive benefits, but rather as a starting point for describing general benefits.

Define behavior precisely. One advantage of using learning channels is to improve the precision of behavioral definitions. Miltenberger (1997) points out that behavior can have multiple dimensions, e.g., frequency duration, intensity, and can be "observed, described, and recorded" (p. 3). The more objective and thorough the definition, the more likely the behavior can be measured accurately. Whether in the laboratory or applied practice, precise definitions facilitate measurement, observation, replication, analysis and interpretation.

When teaching a learner to tact animal pictures a behavior analyst may use a description for the target behavior: "tacting animal pictures." Tacting, however, can take place in a variety of learning channels. The learner may hear the prompt , e.g., Point to the cat, see the animal pictures, and then point to the cat. The learning channel combined with the behavior is "seehear-point tact animal pictures." The learner could also hear the prompt , e.g., What is this?, see the behavior analyst point to the animal picture and then say "cat." The learning channel is now "seehear-say tacting animal pictures." Additionally, the learner may hear the prompt (e.g., "Tell me which one is the cat"), see the animal pictures and then point and say "cat." The learning channel has changed to "seehear-pointsay tacting animal pictures." The addition of the learning channels to the target behavior impacts the accurate measurement of the behavior's occurrence.

Enhanced communication. Information (e.g., behavioral descriptions, data) can be shared among multiple audiences. Take the example of an Individual Education Program (IEP) team that discusses particular behavioral objectives. The IEP team may consist of a variety of professionals

such as speech therapists, general and special education teachers, school psychologists, behavior analysts, and parents. Each team member will have different backgrounds and experiences. The divergent backgrounds oftentimes translate to professional vernacular specific to each team member which can potentially cause miscommunication. Learning channels provide all team members with a common set of descriptive terms. A behavioral objective that includes a learning channel offers terms more clearly understood regardless of the background of the person. A behavior analyst may suggest “tacting colors” as an important objective for the student. A speech therapist may agree that the objective “tacting colors,” or in her words labeling, is an important goal. While other professionals may not understand the exact meaning of the term tact, adding see-say to the objective clarifies the target behavior. By specifying “see-say tacting colors” the learning channel enhances communication because it uses what Lindsley (1991) calls “plain English.” Plain English uses words that most people understand because they occur frequently in our everyday language.

Transfer of stimulus control. Cooper, Heron, and Heward (1987) list a number of ways that stimulus control can be transferred from supplementary stimuli to natural stimuli. Fading, errorless learning, and different types of response prompts (e.g., most-to-least-prompting) allow a behavior analyst to transfer stimulus control. When used with verbal behavior, learning channels further describe how and what kind of supplementary stimuli occur.

Sundberg and Partington (1998) established a useful procedure for transferring stimulus control for a vocal tact of an object. In the first step, the learner sees a nonverbal stimulus, a car, and hears a verbal stimulus, "What is that?" and then hears an echoic stimulus "car." The behavior analyst reinforces the learner’s correct response. In the second step, the learner again sees a nonverbal stimulus, car, and hears the verbal stimulus, "What is that?" and then hears a part of the previous echoic stimulus "ca." The behavior analyst reinforces correct responses. The third step calls for the learner to see the nonverbal stimulus car and hear the verbal stimulus, "What is that?" The tacting response is reinforced if correct. The fourth step has the learner see the nonverbal stimulus car with the behavior analyst reinforcing the correct tact, car.

The inclusion of learning channels with the previous example provides additional information in regards to the target behavior. In Figure 3, a diagram shows how the stimulus control transfers from supplementary stimuli to a natural stimulus. The learning channel diagram shows the current status of the learner’s performance in "plain English" and goals for the target behavior. For current status in plain English, the learning channels in Figure 3 communicates to all professionals or members of the intervention team an easily understood and identified level of stimulus control change.

The first step in Figure 3 shows multiple in channels, seehearhear, and one out channel, say. The learner sees a nonverbal stimulus and hears two different supplementary stimuli, a verbal stimulus and an echoic stimulus, and makes an echoic response. In the second step, the learner again sees a nonverbal stimulus and hears a verbal stimulus, then a different echoic stimulus. We suggest using a plus sign whenever a change occurs in transferring stimulus control with either in or out channels. At this point the learner does engage in an echoic response but also starts to tact. The third step shows a withdrawal of the echoic stimulus and has only two in channels, seeing a nonverbal stimulus and hearing a verbal stimulus. The learner now tacts the response. The fourth step has only a nonverbal stimulus and a tact response.

1. Seehearhear-Say	
In: See- Nonverbal stimulus: car (Natural Stimulus) Hear- Verbal stimulus: "What is that?" (Supplementary stimulus) Hear- Echoic stimulus: "Car" (Supplementary stimulus)	Out: Say- "Car" (response)
2. Seehear+hear-say	
In: See-Noverbal stimulus: car (Natural stimulus) Hear- Verbal stimulus: "What is that?" (Supplementary stimulus) Hear-Echoic stimulus: "Ca" (Fading supplementary stimulus)	Out: Say- "Car" (response)
3. Seehear-say	
In: See-Nonverbal stimulus: car (Natural stimulus) Hear-Verbal stimulus: "What is that?" (Supplementary stimulus)	Out: Say- "Car" (response)
4. See-Say	
In: See-Nonverbal stimulus: car (Natural stimulus)	Out: Say- "Car" (response)

***Figure 3*. Application of Learning Channels in Transfer of Stimulus Control. A tacting common object response is under the control from natural stimulus combined with supplemental stimuli to natural stimulus solely.**

Learning channels also benefit goals. The goal for any procedure transferring stimulus control is responding to a natural stimulus. In the vocal tacting of an object example, the goal is see-say. All steps prior to the goal are transitional steps. By examining the transitional steps in learning channels, a behavior analyst will likely see where the current status is and keep the learner moving toward his goal. Some individuals, such as those with autism, can become dependent on prompts (Anderson, Taras, & Cannon, 1993). Learning channels keep the behavior analyst aware of the current status of stimulus control and support procedural decision-making thereby potentially reducing reliance on prompts.

Generic extension. Generic extension occurs when a novel stimulus, which shares properties of a learned stimulus, controls the response (Skinner, 1957). An example of this happens when a child sees a novel car and calls it "car." The generic extension of the tact relationship develops from the new car sharing properties, e.g., four wheels, glass windows, size and shape, similar to the previously learned tact. Learning channels may offer additional information as to why a learner does not generically extend a response. Binder and Haughton (2002) present an example where a student learned to see-write answers to addition problems. When the teacher asked the student a similar addition problem vocally, a hear-say, the student could not respond correctly.

In Binder and Haughton's (2002) example, a student had difficulty generically extending an intraverbal relationship. The student originally learned the intraverbal in the see-write channel.

The student saw a problem, e.g., 2 + 2 = ? and wrote the answer, e.g., 4. The teacher asked the student to respond vocally to an auditory stimulus. Even though the intraverbals share common properties, e.g., addition computation and numbers, etc., the entire learning channel, both in and out channels, varied. The first intraverbal, see-write, differs from the second intraverbal hear-say. We discuss, below, in the practical application section, how to use learning channel to program for generic extension.

Practical application

The practical application section focuses on how learning channels can impact the use of the analysis of verbal behavior. Sundberg and Partington (1998) and Partington and Sundberg (1998a, 1998b) published a comprehensive approach for using the analysis of verbal behavior to help children with autism and other developmental disabilities. This section describes possibilities for embedding learning channels into Sundberg and Partington's approach.

Initial assessment and basic language and learning skill objectives. A behavior analyst would use *The Assessment of Basic Language and Learning Skills, The ABLLS,* to assess a student's language. *The ABLLS* has two components, *The ABLLS Protocol* (Partington & Sundberg, 1998a) and *The ABLLS Guide* (Partington & Sundberg, 1998b). *The ABLLS Protocol* "Provides both parents and professionals with criterion-referenced information regarding a child's current skills, and provides a curriculum that can serve as a basis for the selection of educational objectives" (p. i). It also includes a skill tracking system for recording and monitoring progress of important skills. *The ABLLS Guide* helps analyze data from *The ABLLS Protocol* and assists with creating educational priorities and objectives for an individual.

Figure 4 provides an example demonstrating how *The ABLLS* target behaviors could integrate learning channels. The first column lists task numbers found in *The ABLLS Protocol* (1998a). The second column specifies the learning channel of *The ABLLS* target behavior. Adding the learning channel to *The ABLLS* target behavior highlights the salient dimensions of the behavior. A1 reads “Take reinforcers when offered.” When adding the learning channel, the target behavior reads “See-do take reinforcers when offered.” The “see-do” means the learner “sees” the reinforcer offered by another person and takes the reinforcer. Taking the reinforcer indicates the person “does” something, i.e., the do out channel.

The addition of learning channels with behavioral descriptions may prevent the use of unnecessary supplementary stimuli. A behavior analyst presenting a toy ball might say “Would you like this ball?” While the behavior analyst’s action conforms with the A1 task, the learner’s in channel becomes “seehear.” A “seehear-do” learning channel differs from a “see-do.” The next time the behavior analyst offers the ball without saying anything, the learner may not take the ball. The reasons for not taking the ball may lie in the fact that stimulus control was formed jointly with the visual stimulus of “See the ball” combined with the auditory stimulus of hearing “Would you like this ball”. The learning channel specifies to all members of the intervention team to restrict the auditory stimulus and present the visual stimulus only.

The third column in Figure 4 suggests a number of in channels that can occur with supplementary stimuli. The in channel behavior serves as a reference for prompts or supplementary stimuli a behavior analyst could use to establish the behavior. In the previous example, a learner who sees a reinforcer and does not take it when offered may require a supplementary stimulus of a physical prompt. The learning channel seetouch-do describes an intermediary step to the terminal learning channel, see-do, with the addition of the supplementary stimulus, touch. In the last column, a general description for a list of potential materials for each

target behavior is presented. Figure 4 is intended to show only possibilities. The behavior analyst must decide which *ABLLS* target behavior, terminal learning channel, supplementary stimuli and materials for each individual learner.

ABLLS Target Behavior	Target Behavior LC	In Channel Associated with Supplementary Stimuli	Materials
A1 Take reinforcers when offered	See-Do	Touch-	Reinforcing objects
A2 Take a reinforcer from a choice of two	See-Do	Seetouch-	Reinforcing and non-reinforcing objects
B2 Match identical pictures to sample	See-Do	Seetouch-	Identical and non-identical pictures
C2 Follow instructions to do a preferred activity	Hear-Do	Seetouch-	Material for preferred activity
D1 Motor imitation with objects	Seehear-Do	Touch-	Objects for imitation
D2 Motor imitation with object discrimination	Seehear-Do	Touch-	Objects for imitation
E1 Imitate sounds on request	Hear-Say	Touchsee-	List of target sounds
E2 Imitate initial sounds of words	Hear-Say	Touchsee-	List of target words
F2 Multiply controlled requests	Seehear-Say	Heartouch-	Reinforcing objects
G1 Label reinforcers	Seehear-Say	Hear-	Reinforcing objects
G2 Label common objects	Seehear-Say	Hear-	Common objects

***Figure 4*. Examples of integration of *the ABLLS* and the Learning Channels.**

Generic extension. To facilitate generic extension the behavior analyst may provide multiple examples. As a learner tacts more and more examples of nonverbal stimuli, the probability increases that the learner may generically extend the tact to novel occurrences of the nonverbal stimulus. For instance, if a learner tacts a chocolate chip cookie, “cookie,” when the learner sees an Oreo cookie she may not tact it as a cookie. The Oreo cookie is a novel stimulus, and although it shares properties of a cookie, it does not share the major properties of a chocolate chip cookie. If the learner is provided with a variety of cookies beyond chocolate chip, the

probability increases that generic extension will occur because the learner will encounter major properties of a cookie and not features specific to chocolate chip cookies.

In the previous example, the learner has a greater likelihood to extend "cookie" to other cookies because of multiple examples tacted in the see channel. Another way to promote generic extension involves using different in channels or multiple in channels. A behavior analyst using the hear in channel, for instance, would provide a vocal description of a cookie, e.g., round, food, sweet tasting. To use multiple in channels, a learner could seetaste or seetastetouch a cookie. The behavior analyst increases the probability of generic extension by allowing the learner to come in contact with other relevant properties of the tact. The behavior analyst may also choose to specify the relevant properties to the learner, e.g., "That tastes sweet".

Data collection. Partington and Sundberg (1998b) recommend collecting data with basic language and learning skills. They advise users of *The ABLLS* to update the protocol and summary grid yearly. For fast learners Partington and Sundberg (1998b) suggest updating the data every 4 to 6 months. Cooper et al, (1987) indicate that direct and continuous data collection improves the detection of important features of a behavior. In addition to *The ABLLS*, including procedures that easily and reliably record data will help monitor behavior change on a more frequent basis. While behavior analysts may use their own daily data collection procedures when using Sundberg and Partington's (1998) approach to teaching language, we provide an example of a data collection sheet that also includes learning channels.

Figure 5 shows a data sheet for collecting data, which includes verbal operants and learning channels. The top part of the data collection sheet has basic information: the learner's name, the date of the most recently completed *ABLLS*, the labeling task number from *The* ABLLS, the target learning channel and any potential supplementary stimuli. The in and out channels are also included as a reminder. And last, a coding system tells what symbols to use for observed responses. The data collection sheet in Figure 5 is designed for all of the tasks that fall under "labeling" in *The ABLLS*. A completed data collection sheet, Figure 5, appears for Yi-Wen who has begun to learn to label common objects, G2 in *The ABLLS* (see Figure 4). Under the column "Label," the behavior analyst has written a list of the common objects being introduced. Next to the Label column the date appears for the day of the observation. The data collection sheet captures probe data which the behavior analyst checks for each day at the beginning session.

To use this data collection sheet write in what in the date. Next, the first item "cup" will be presented to the learner with the question "What is it?" If the learner correctly responds "cup" write a check mark in the cell that intersects with the cup and date. If the learner gives an incorrect response, an "X" will go into the cell. The following day, 1/24, an "H " was written in the cell for "book" because an additional auditory prompt was presented and the learner responded correctly. If the learner responded incorrectly to the auditory prompt an "HX" would go into the cell to indicate a prompt but the learner did not respond to it correctly. When using delayed prompts, a +H goes into the cell followed by an "X" or a " " to express correct and incorrect responses. A blank on the data collection form means the label was not assessed for that day.

The data collection sheet facilitates the monitoring of daily and overall progress. By recording data daily, the performance data permits an analysis of instructional effectiveness. Some labels will be learned quickly while other labels may require prompts. The presence of a pattern of errors suggests planning for additional prompts or trying some other procedure that does not allow the learner to practice errors. The data collection sheet also can be used to

determine when the learner reaches some predetermined performance criterion. Different types of learning skills require separate criterion levels (Alberto & Troutman, 1999). For instance, a basic skill that will later be built on, or a skill that is a foundational to other learning, requires 100% accuracy. When using *The ABLLS*, the intervention team would decide what criterion levels to use with each objective. The data collection sheets, those sheets used beyond one specific task such as G2, also provide a more general picture of a learner's overall progress. A review of multiple data collection sheets would suggest a target time for updating *The ABLLS*.

Labeling Data Collection Sheet

Learner's name: Yi-Wen Date of last completed ABLLS: Jan, 22nd, 2003

Labeling Task Number: G2 Labeling common objects Target Learning Channel: SeH-S

Supplementary Stimuli: H (Echoic stimulus)

In channels: Free- FR, Hear-H, See-Se, Sniff-Sn, Taste-Ta, Touch-To; Out channels: Do-D, Draw-Dr, Mark, MK, Point/Tap-PT, Say-S, Think-T, Write-W.

Coding

- Correct Response; X- Incorrect Response; _H_ additional prompt (H for hearing the correct response.); +_H_ fading additional prompt (+H: wait three seconds without correct response, then provide modeling.)

Date / Label	1/22	1/23	1/24	1/25															
Cup																			
Book		X	H	H															
Chair		HX	+H																
Door																			
Rug			H	H															
Fork		H	+HX	+H															
Plate		HX																	
Shoes			X	X															
TV																			
Pen				X															
Soap																			
Table																			
Shelf																			

***Figure 5*. Objective list and data collection. An example of a student's ABLLS G2 data.**

Conclusion

The main function of learning channels is to supplement descriptions of behavior by specifying the in and out channels. Learning channels does not mean the same thing as "learning styles, learning preferences, or multichanneled sensory processing." Learning channels do not suggest what to teach, how to teach, or the best way of changing behavior. Instead, learning channels offers a more thorough description of behavior, and, in the hands of a behavior analyst, provide another tool for decision-making.

A developing body of research has demonstrated that the explicit application of learning channels to behaviors such as multiplication facts, addition facts, and learning Greek letters yields practical and experimental significance (Irish, 1998; Skulski, 1998; Zanatta, 2000). Lindsley (1998) suggests that learning channel research may supply new and powerful techniques for learning. When applied to Skinner's analysis of verbal behavior, learning channels can add precision to behavioral descriptions, enhanced analysis and communication, and augment the uses of verbal behavior in research and applied settings.

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References

Anderson, S. R., Taras, M., & Cannon, B. O. (1993). Teaching new skills to young children with autism. In C. Maurice, G. Green, & S. C. Luce (Eds.) *Behavioral intervention for young children with autism: A manual for parents and professionals* (pp. 181-194). Austin, TX: Pro-Ed.

Alberto P. A., & Troutman A. C. (1999). *Applied behavior analysis for teachers (5th ed.).* Upper Saddle River, N.J: Merrill.

Binder, C., & Haughton, E. (2002, November). *Using learning channels and the learning channel matrix.* Paper presented at the International Precision Teaching Conference, Harrisburg, PA.

Catania, A. C. (1998) *Learning* (4th ed.). Englewood Cliffs, NJ: Prentice-Hall.

Cooper, J. O., Heron, T. E., & Heward, W. L. (1987). *Applied behavior analysis.* Upper Saddle River, N.J. : Merrill.

Haughton, E. C. (1980). Practicing practices: Learning by activity. *Journal of Precision Teaching, 1(3),* 3-20.

Irish, E. (1998). *Kindergarten students use self-study, academic sprinting, and channel surfing to improve recall of addition facts*. Unpublished master's thesis, The Ohio State University, Columbus, OH.

Keller, F. S. & Schoenfeld, W. N. (1950). *Principles of psychology.* Acton, MA: Copley.

Kubina, R. M., & Cooper, J. O. (2000). Changing learning channels: an efficient strategy to facilitate instruction and learning. *Intervention in School and Clinic, 35(3),* 161-166.

Lindsley, O. R. (1991). From technical jargon to plain English for application. *Journal of Applied Behavior Analysis*, *24*, 449-58.

Lindsley, O. R. (1994). "Point/see/slide" or "Slide/see/say" learning channels. *The Journal of Precision Teaching, 12*(1), 2-7.

Lindsley, O. R. (1998). Learning channels next: Let's go. *Journal of Precision Teaching and Celeration, 15*, 2-4.

Lindsley, O. R. (2002, November). *Learning stream glossary*. Paper presented at the annual meeting of the International Precision Teaching conference, Harrisburg, PA.

Miltenberger, R. G. (1997). *Behavior modification: principles and procedures.* Pacific Grove, CA: Brooks/Cole

Partington, J. W., & Sundberg, M. L. (1998a). *The assessment of basic language and learning skills (The ABLLS): An assessment, curriculum guide, and skills tracking system for children with autism or other developmental disabilities.* Pleasant Hills, CA: Behavior Analysts.

Partington, J. W., & Sundberg, M. L. (1998b). *The assessment of basic language and learning skills (The ABLLS): Scoring instructions and IEP development guide*. Pleasant Hills, CA: Behavior Analysts.

Pierce, W. D., & Epling, W. F. (1999). *Behavior analysis and learning* (2nd ed.). Upper Saddle River, NJ: Prentice Hall.

Skinner, B. F. (1953). *Science and human behavior.* New York : Macmillan.

Skinner, B. F. (1957). *Verbal behavior*. Englewood Cliffs, NJ: Prentice hall.

Skinner, B. F. (1974).*About behaviorism*. New York : Knopf.

Skulski, K. (1998). *Elementary students academically at-risk use self-study, academic sprinting, and channel surfing to improve recall of multiplication facts.* Unpublished master's thesis, The Ohio State University, Columbus, OH.

Sundberg M. L., & Partington J. W. (1998). *Teaching language to children with autism or other developmental disabilities*. Pleasant Hills, CA: Behavior Analysts.

Underwood, J. K., & Mead, J. F. (1995). *Legal aspects of special education and pupil services.* Needham Heights, MA: Simon & Schuster.

Zanatta, L. T. (2000). *The effects of hearsee/say and hearsee/write training on acquisition, generalization, and retention.* Unpublished master's thesis, North Texas University, Denton, TX.

Perspective-Taking and Theory of Mind
A Relational Frame Account

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Cognitive perspective-taking has attracted considerable attention in the mainstream developmental literature, and is most commonly studied under the rubric of Theory of Mind. The current article reviews the levels of understanding of informational states that are believed to underlie cognitive perspective-taking from this conceptual framework. An alternative approach to perspective-taking from a functional behavioral framework is also presented. The concepts and methodologies behind this approach are driven by a modern behavioral account of human language and cognition known as Relational Frame Theory. As well as providing a brief summary of the core concepts of Relational Frame Theory, the article presents the relational frame account of cognitive perspective-taking. The empirical evidence in support of this view of perspective-taking as well as related research on false belief and deception are reviewed. The overlap between the Theory of Mind and Relational Frame Theory approaches to perspective-taking is discussed.
Key words: Perspective-taking; theory of mind; Relational Frame Theory; false belief; deception.

Relational Frame Theory (RFT) is a modern behavioral and functional account of human language and cognition (Hayes, Barnes-Holmes, & Roche, 2001). The theory draws primarily on the concept of derived multiple stimulus relations and a behavioral process called arbitrarily applicable relational responding as the core features of verbal behavior. Accordingly, RFT argues that this process underlies many, if not all, of the basic phenomena that comprise human language and cognition, including, naming, storytelling, humor, metaphor, perspective-taking, and even spirituality. In the current paper, we are concerned primarily with the RFT account of perspective-taking as an example of a complex human psychological phenomenon that can be accounted for in behavior analytic terms. In the first part of the article we present the basic concepts of RFT. In Part 2 we outline the RFT approach to cognitive perspective-taking, and review the empirical evidence that supports this view, drawing comparisons with the more traditional account of this phenomenon known as Theory of Mind (ToM).

Relational Frame Theory and Derived Relational Responding

According to RFT, relational responding in accordance with arbitrary stimulus relations is not controlled solely by formal stimulus properties, but by contextual cues. For example, if you are instructed that 'A is the same as B, and B is the same as C', then as a verbally sophisticated organism you will readily derive, without additional information, that 'A is the same as C' (although A and C are not physically the same stimulus). In the language of RFT, the derived sameness relation between A and C is controlled by contextual cues, in this case the word "same", the relational functions of which have been established by the verbal community. For RFT, deriving the A-C relation in this case is an example of arbitrarily applicable relational responding because the "sameness" of the relation is arbitrarily applied and can be modified by social whim. For example, I could now tell you that 'A is larger than B and B is larger than C'. In this case, you would derive new relations ('A is larger than C and C smaller than A'), and this relational response provides an example of the relational frame of comparison (rather than sameness).

The literature on RFT has identified a number of patterns or families of arbitrarily applicable relational responding, referred to as relational frames (Hayes, Fox, Gifford, Wilson, Barnes-Holmes, & Healy, 2001). Although these frames are distinctive in various ways, they all have the same three

defining properties: mutual entailment, combinatorial entailment, and transformation of stimulus function. Mutual entailment describes the relations between two stimuli or events. For example, if A in a specific context is related in a particular way to B, then a relation between B and A is also entailed in that context. Mutually entailed relations may or may not be symmetrical. For instance, if A is the same as B, then the derived mutually entailed relation between B and A is also one of sameness (i.e., B=A). However, if A is more than B, then a less than relation is entailed between B and A.

Combinatorially entailed relations pertain among three or more related stimuli. Consider again the comparison example presented previously: 'A is larger than B and B is larger than C'. In this case, a larger than relation is entailed between A and C, but a smaller than relation is entailed between C and A. Combinatorially entailed relations also differ from mutually entailed relations with regard to their specificity. For instance, 'if A is shorter than B and A is shorter than C', then the entailed relations between B and C and between C and B remain unspecified (i.e., B and C might be the same, or one might be shorter than the other).

The transformation of stimulus functions is the behavioral property that provides stimulus relations with psychological content. Consider again the 'A larger than B' example. If in certain contexts A acquires anxiety eliciting functions, then by virtue of the comparative relation, B will acquire reduced anxiety eliciting functions, relative to A. In effect, the different functions possessed by A and B are determined by the nature of the relation that holds between them (Dougher, Hamilton, Fink, & Harrington, 2003).

A number of studies have provided empirical evidence in support of the relational frames identified thus far, including, frames of coordination, comparison, opposition, and deictic frames of perspective-taking (Dymond & Barnes, 1995; McHugh, Barnes-Holmes, & Barnes-Holmes, in press; Roche, Barnes-Holmes, Smeets, Barnes-Holmes, & McGeady, 2000; Steele & Hayes, 1991). According to RFT, these families of relational frames play different roles in different types of verbal or cognitive behavior. For example, the family of deictic frames is believed to underpin cognitive perspective-taking, and in the remaining sections of the article we will address perspective-taking in detail.

Theory of Mind and Perspective-Taking

Cognitive perspective-taking has for many years attracted considerable research attention in the mainstream cognitive developmental literature, and is most commonly referred to under the rubric of ToM (Baron-Cohen, 1995; Baron-Cohen & Hammer 1997; Baron-Cohen, Tager-Flusberg, & Cohen, 2000). One of the primary goals of research in this area has been a pragmatic one, and involves the design of intervention programs that might facilitate the remediation of perspective-taking deficits in populations such as those diagnosed with autism.

Theory of Mind researchers have outlined five levels of understanding of informational states that must be mastered if children are to learn to take the perspective of another (Howlin, Baron-Cohen, & Hadwin, 1999). These levels and the scenarios used to establish the appropriate performances are described below. Level 1 of this model involves simple visual perspective-taking, and concerns the fact that different people can see different things. Attempts to establish this skill from a ToM framework include presenting the following scenario. A two-sided card (e.g., with a house on one side and a dog on the other side) is placed in front of two children. Each child can see only the side of the card directly in front, but not both sides. One of the children may then be asked to describe which image he/she can see and which image can be seen by the other child (i.e., adopting the perspective of the self and another).

Level 2 is referred to as complex visual perspective-taking, and is concerned with the ability to know that people can see the same things differently. In a typical scenario, for example, two children are

seated opposite each other and a one-sided picture (e.g., of a cat) is placed down on a table in front of them. In this arrangement, one of the children will see the cat the right way up, whereas the other child will see the cat upside down. Once again, one child is asked to describe what can be seen by each individual.

At Level 3, visual features are believed to play a less salient role in perspective-taking, and individuals at this level come to understand the principle that 'seeing leads to knowing.' In a typical scenario, a young boy, for example, is presented with an empty box and asked to close his eyes. During this time an unknown item is placed inside the box. The boy is then asked "What is inside the box?" and a correct response involves knowing that he cannot know what was inside because he did not see. The child is thereafter allowed to look inside the box, and is asked "How do you know what is inside the box?" A correct response now involves knowing that he can know what is inside the box because he has seen inside. A similar scenario is then presented in order to determine the child's ability to take the perspective of another (e.g., of a teddy bear), and the same questions are asked with regard to this alternative perspective.

The fourth level of understanding informational states involves true beliefs and predicting actions on the basis of a person's knowledge. Imagine the following true belief scenario. Two play scenes are presented to a young boy. In one of the play scenes, that is described as occurring in the morning, an action figure is placed beside a toy boat, whereas in the other scene, that is described as occurring later, an identical action figure is placed beside a toy airplane. The child is then instructed as follows: "This morning, you saw the action figure near the boat but you did not see the action figure near the airplane". The child is then asked: "Where do you think the action figure is?" A correct response should indicate that the action figure is near the boat. If the child is then asked "Why do you think the action figure is near the boat?" a correct response will indicate that this is where the action figure had been seen previously. If the boy is then asked: "Where would you go to find the action figure?" a correct response would involve looking near the boat. If the child is finally asked "Why will you go to the boat?" a correct response will involve indicating that this is where the action figure had been seen previously. From a ToM perspective, responding correctly to these questions indicates knowing that a person will only know what has been seen, and will act on this basis (i.e., true belief).

The fifth and most complex level of knowledge of informational states from a ToM perspective involves the understanding of false belief and predicting actions on the basis of beliefs that are false rather than true. Consider a typical training scenario as follows: A young girl is presented with a jewelry box and asked, "What do you think is inside the jewelry box?" Having not seen inside the box, the child is likely to suggest that there is jewelry inside. However, unbeknownst to the child, the box contains candy instead of jewelry. When the box is then opened and the child sees the candy, she is then asked, "Before we opened the jewelry box, what did you think was inside?" A correct response involves the child stating that previously she thought there was jewelry inside. If then asked "What was really inside?" a correct response now involves stating that there is candy inside the box. Similar to Level 4 of this model, responding correctly to the questions contained within this scenario indicates knowing that a person can act on the basis of previous beliefs that are false, as well as current beliefs that are true. A similar scenario is then presented from the perspective of another (e.g., a doll), and the same questions are posed in order to determine the child's ability to respond in accordance with an alternative perspective. In summary, therefore, a ToM approach to the development or establishment of perspective-taking involves increasing levels of complexity in understanding informational states from simple visual perspective-taking to acting on the basis of false belief. In subsequent sections of the current article we will present the RFT approach to these phenomena and consider possible areas of overlap between the two accounts.

Relational Frame Theory and Perspective-Taking

In its approach to cognitive perspective-taking, RFT attempts to specify the relational repertoires that are necessary for competent perspective-taking performances. According to RFT, the development of perspective-taking is underpinned by increasing complexity in abilities to respond in accordance with a family of deictic frames that specify a stimulus relation in terms of the perspective of the speaker. The three relational frames that appear to be fundamental to the development of perspective-taking skills are the frames of I and YOU, HERE and THERE, and NOW and THEN (Barnes-Holmes, Barnes-Holmes, & Cullinan, 2001). Deictic relations are believed to emerge in part through a history of responding to questions such as " What were you doing there?" or "What am I doing now?" Although the form of these questions is often identical across contexts, the physical environment is different. What remains constant across these events are the relational properties of I versus YOU, HERE versus THERE, and NOW versus THEN. In the course of language and cognitive development, these relational properties are said to be abstracted through learning to talk about one's perspective in relation to the perspective of others (Hayes, 1984). For example, I is always from this perspective here, but not from the perspective of another person there. Consider again the scenario from ToM Level 2 in which two children are sitting opposite one another and observing a picture of a cat placed on the table in front of them. In this arrangement, the child on the left will see the cat the right way up, while the child on the right will see the cat upside down. Although both children in this example are observing the same picture, the perspective of the child on the left is different from the perspective of the child on the right. In other words, when the child on the left speaks of seeing the cat from "here", it is not the same place as when the child on the right speaks of seeing from "here".

Many commonly used phrases provide exemplars of the relevant relational properties of I-YOU, HERE-THERE, and NOW-THEN (e.g., "*I* am *here now*, but *you* were *here then*"). It should also be emphasized that these perspective-taking properties may be present even when the actual words "I", "you", "here", "there", "now", and "then" are absent. That is, relevant phrases often include or substitute words coordinated with particular individuals, places, and times (e.g., "It is two o' clock and I am at home [HERE and NOW], but Erica [YOU] is still in the restaurant" [THERE and NOW]). These alternative or substituted words serve the same contextual functions that would otherwise be provided by the actual words themselves. For example, "Erica" or "her" may be functionally equivalent to "YOU", and "the restaurant" may be functionally equivalent to "there". What is important, from an RFT point of view, is the generalized relational activity and not the actual words themselves (as is the case for all relational framing).

There is currently a growing body of evidence in support of the RFT view of perspective-taking as relational responding. In one of the earliest studies the current authors conducted in this area (McHugh, Barnes-Holmes, O'Hora, & Barnes-Holmes, in press) we developed a protocol that targeted the three perspective-taking frames of I-YOU, HERE-THERE, and NOW-THEN, in conjunction with three types, or levels of relational complexity, referred to as: *simple* relational responses; *reversed* relational responses; and *double reversed* relational responses. An example of one task from each frame combined with each level of complexity, and an RFT interpretation of the processes involved in responding to these tasks, is presented below.

Consider a simple I-YOU perspective-taking task in which subjects were presented with the following question: "If I (Experimenter) have a yellow brick and YOU (subject) have a blue brick: which brick do I have? Which brick do YOU have?" (No experimental stimuli were present during the trial). In technical terms, a correct response on this trial (i.e., "You/Experimenter have a yellow brick and I/subject have a blue brick") requires that the subject respond in accordance with the "I-YOU" deictic relational frame, under the contextual control of the if-then relational frame. In effect, the if-then frame

determines the functions (i.e., the yellow and blue bricks) that become attached to the I and YOU related events in the deictic frame.

The protocol designed for this study also included simple HERE-THERE perspective-taking trials. In a simple HERE-THERE trial the subject may have been instructed as follows: "I am sitting here on the blue chair, and you are sitting there on the black chair. Where are you sitting? Where am I sitting?" A correct response on this trial requires that the subject respond in accordance with the I-YOU and HERE-THERE frames, under the contextual control of if-then.

The third simple relational task we investigated involved simple NOW-THEN relations. These trial-types differed from the other simple relations in that they did not involve responding to I and YOU *simultaneously*. Consider the following example: "Yesterday I was watching television, today I am reading. What was I doing then? What am I doing now?" In this case, only the perspective of I (the Experimenter) is targeted (the YOU perspective was targeted on alternate trials). Once again, a correct response requires that the subject respond in accordance with the I-YOU and NOW-THEN frames, under the contextual control of if-then.

Simple perspective-taking responses can be made more complex by explicitly reversing the deictic relations involved. The protocol we devised incorporated reversed I-YOU, reversed HERE-THERE, and reversed NOW-THEN trials. Consider the following example of a reversed I-YOU trial: "If I have a yellow brick and you have a blue brick, and if I was you and you were me: which brick would I have? Which brick would you have?" Responding correctly to this trial involves a transformation of functions in accordance with a deictic relation between I and YOU. That is, the mutually entailed relation between I and YOU transfers yellow brick from I to YOU and blue brick from YOU to I. Reversed HERE-THERE and NOW-THEN relations followed the same format in which transformations of functions occurred via mutually entailed relations.

The third and most difficult level of relational complexity we investigated was referred to as a double reversed relation, in which two relations were reversed simultaneously. Consider the following double reversal trial referred to as an I-YOU/HERE-THERE double reversal: "I am sitting here on the blue chair and you are sitting there on the black chair. If I was you and you were me, and if here was there and there was here: where would you be sitting? Where would I be sitting?" In this trial, the I-YOU reversal followed by the HERE-THERE reversal involves two mutually entailed relations between I and YOU and HERE and THERE, thus reversing the initially reversed relation. In simple terms, the subject deriving these relations ends up in the chair in which they started.

Double reversals based on HERE-THERE and NOW-THEN followed the same format (except that I and YOU were presented separately). Subjects, for example, were instructed as follows: "Yesterday I was sitting there on the blue chair, today I am sitting here on the black chair. If here was there and there was here, and if now was then and then was now: where would you be sitting now? Where would I be sitting then?" Once again, in simple terms, the subject deriving these relations ends up in the chair in which they started.

The findings from this study revealed differences between subjects' responses on the various frames, and on the three levels of relational complexity. Specifically, the results for relation type revealed that subjects emitted more errors on the HERE-THERE and NOW-THEN relations when each was compared with the I-YOU relations. The results for relational complexity revealed that subjects made significantly more errors on reversed and double reversed relations than on simple relations. Overall, these findings indicated that, even in adults, perspective-taking appears to consist of functionally distinct relational components.

In a subsequent study (McHugh, Barnes-Holmes, & Barnes-Holmes, in press) we employed the same relational protocol in an attempt to conduct a developmental profile of these perspective-taking skills with individuals of different age groups. The mean percentage of errors of subjects in each of the five age groups on the three levels of relational complexity is presented in Figure 1. As is evident from the figure, the findings from this study indicated a clear developmental trend in the ability to perform the relational perspective-taking tasks from early childhood to adulthood. Specifically, children (aged 3-5 years) produced more errors than all of the older age groups (ranging from 6-30 years). Furthermore, these differences are broadly consistent with the mainstream cognitive literature, which has reported that performances on simple ToM tasks generally develop across the ages of four and five years old, and are usually well established by age six (Taylor, 1988).

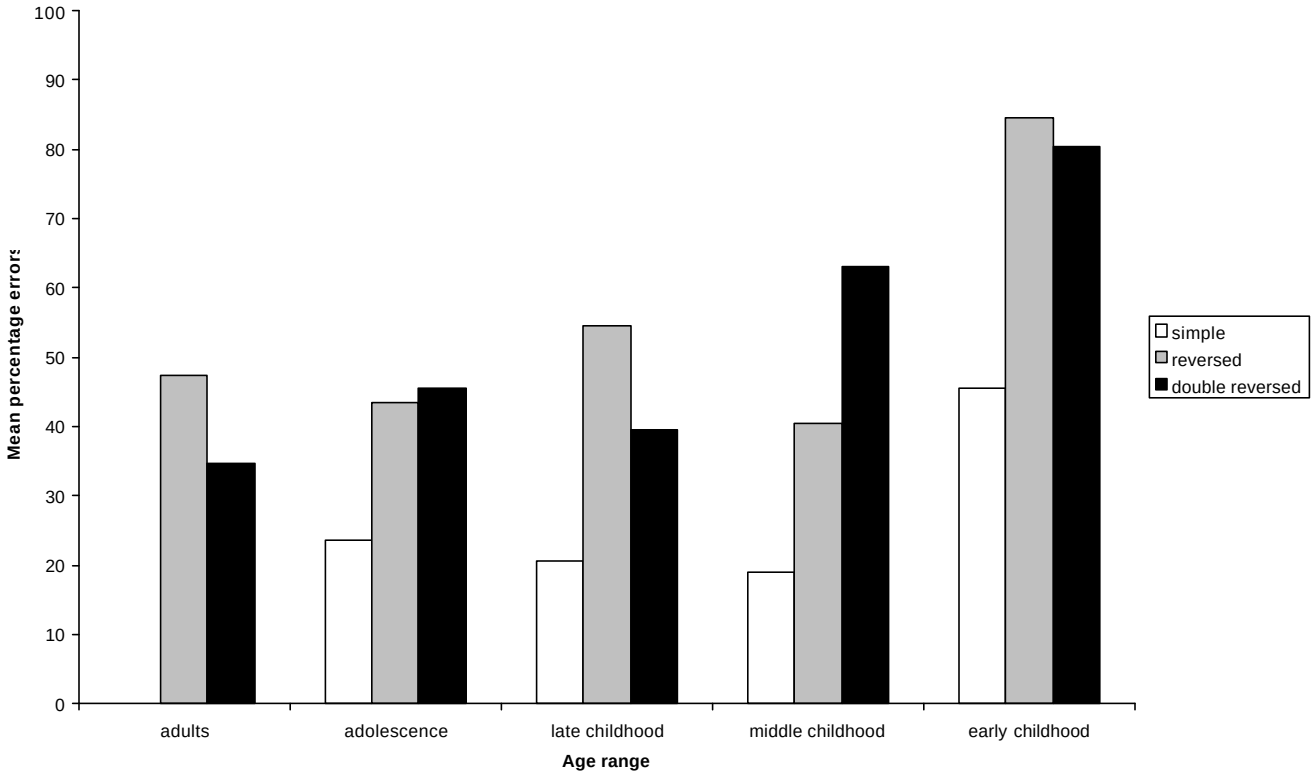

Figure 1
Mean percentage of errors recorded for the five age groups of subjects in the perspective-taking protocol employed by McHugh, Barnes-Holmes, & Barnes-Holmes, (in press).

In summary, therefore, the findings from this study indicated that the relational repertoires required for perspective-taking appear to follow a distinct developmental trend, and may be comprised of functional relational units of analysis. This latter point has important implications for the design of programs of remediation with populations that often display perspective-taking deficits (e.g., autistic children).

Two preliminary RFT studies we have conducted are relevant in this regard (Barnes-Holmes, 2001; McHugh, Barnes-Holmes, & Barnes-Holmes, 2003). In these studies we attempted to remediate deficits in relational perspective-taking in a number of normally developing young children. In the first study, two children were exposed to the perspective-taking protocol with corrective feedback presented after each trial. One seven-year-old female required training on the reversed and double reversed relations in order to complete the entire protocol. A three-and-a-half year old male was exposed only to I-YOU and HERE-THERE trials, and required extensive training across exemplars, also on the reversed and double reversed relations. In the second study, we found that extensive and systematic exemplar training was necessary to establish even simple NOW-THEN relations in another four-year old child. Although, this work on training perspective-taking remains preliminary, these interventions lend further support to the RFT conceptualization of perspective-taking, and suggest the possible utility of RFT methodologies in remediating perspective-taking deficits.

The findings from the studies available to date, particularly the results obtained from the training studies, have indicated significant overlap between ToM and a relational frame approach to cognitive perspective-taking. According to RFT, ToM tasks provide incidental training in contextual control of the three perspective-taking frames, and add relational flexibility by requiring control by the relational frame of *logical not* in order to establish competent perspective-taking performances. In the language of RFT, tasks from ToM Levels 1 and 2 (simple and complex visual perspective-taking, respectively) inadvertently establish contextual control of the relational frame of I-YOU. That is, responding correctly to questions such as "What can I see/What can you see?" is determined by the cues "I" and "you," which are contained in the tasks. According to RFT, training tasks in ToM Level 3 (seeing leads to knowing) increases the contextual control of I-YOU, and indirectly establishes control by the frame of NOW-THEN. Consider the correct responses to the scenarios that focus on the self and other: "I did not see THEN so I do not know NOW" and "YOU saw THEN so YOU know NOW". Level 4 ToM training tasks (understanding and predicting actions on the basis of true belief) appear to involve indirect training in contextual control of all three perspective-taking relational frames. Consider the frames involved in responding correctly as follows: "I saw the action figure near the boat (THERE) this morning (THEN), and so I think the action figure is THERE NOW." According to RFT, ToM training at Level 5 also incorporates incidental training in contextual control of the perspective-taking frames, and adds relational flexibility by requiring control by the relational frame of logical not. Consider the role of the perspective-taking frames in the correct answer: "I did NOT see inside THERE and THEN, but I do see inside HERE and NOW."

In interpreting the ToM approach to perspective-taking, we would argue that the tasks commonly used to establish a ToM repertoire, with regard to understanding informational states, indirectly involve training in relational perspective-taking (i.e., I-YOU, HERE-THERE, and NOW-THEN). In light of the foregoing research, and more recent unpublished evidence, we have come to believe that the relational skills required to complete the perspective-taking tasks in the RFT protocols may be heavily involved specifically in Levels 1-3 of the traditional ToM tasks. In order to investigate higher levels of perspective-taking, and the role of the perspective-taking frames in responding to true and false belief (Levels 4 and 5 of the ToM model), we have designed a similar protocol for testing true and false belief as relational responding.

In this study (McHugh, Barnes-Holmes, & Barnes-Holmes, under submission) we developed a true and false belief protocol that consisted of six trial-types that differed from each other in terms of the relational frame or frames being targeted. This protocol was modeled on the ToM methodology most commonly used to investigate this phenomenon known as the 'deceptive container task.' For ease of communication, the trial-types contained within the RFT true and false belief protocol are referred to as: HERE trials, THERE trials, NOT HERE trials, NOT THERE trials, BEFORE NOW trials, and AFTER

NOW trials.

The HERE and THERE trials were employed to assess responding to true belief (ToM Level 4). Consider a HERE trial-type: "If you put the doll in the cookie jar and I am here: what would I think is in the cookie jar? What would you think is in the cookie jar?" This trial-type emphasizes the HERE aspect of responding on the basis of the HERE-THERE frame. The protocol also contained THERE trials that were identical to the HERE trials, except that the perspective of THERE was emphasized (e.g., If you put the doll in the cookie jar and I was there what would I think is in the cookie jar? What would you think is in the cookie jar?").

From an RFT perspective, responding in accordance with logical not may be important in understanding false belief. The protocol, therefore, incorporated a combination of HERE-THERE and logical-not trials, referred to as NOT HERE and NOT THERE trial-types, in order to assess the subjects' ability to understand false belief. These trials were almost identical to the HERE and THERE trials, respectively, except that they involved the addition of logical not. Consider a NOT THERE trial as follows: "If I put the doll in the cookie jar and you were *not there*: what would I think is in the cookie jar? What would you think is in the cookie jar?" The correct response in this case involves indicating that I (Experimenter) will know what is inside, but you (subject) will not know, because you were not located *there*. The NOT HERE trials were almost identical to the HERE trials, except that logical not was included.

The two remaining trial-types contained within the protocol directly targeted the third perspective-taking frame of NOW-THEN. Once again, some of these trial-types assessed true belief, referred to as AFTER NOW trials, while others assessed false belief, referred to as BEFORE NOW trials. Consider the AFTER NOW trial "You open the cookie jar and there is a doll inside now. Now, what do you think is in the cookie jar? After now, what would you think is in the cookie jar?" This task assessed true belief because the correct response requires subjects to indicate that they can act on the basis of what they have seen as true. The BEFORE NOW trial-types were similar in format but assessed false belief. Unlike the other false belief trials, BEFORE NOW trials did not assess false belief by emphasizing logical not. Instead, false belief was implied in the temporal order of the events stated in the trial. Consider the following example: "You open the cookie jar and there is a doll inside now. Now, what do you think is in the cookie jar? Before now, what did you think was in the cookie jar?" This task assessed false belief because the correct answer required subjects to determine that before now they could only act on the basis of a false belief (i.e., that there were cookies in the cookie jar).

The results of this study add to our earlier work on the developmental profile of relational perspective-taking (ToM Levels 1-3). On the protocol containing both true and false belief tasks, we also found a clear developmental trend in the performances of subjects aged from early childhood to adulthood. These results are presented in Figure 2. This developmental trend was supported by significant differences in the number of errors between most of the age groups, and the fact that error rates appeared to decrease as a function of age.

See Figure 2, next page

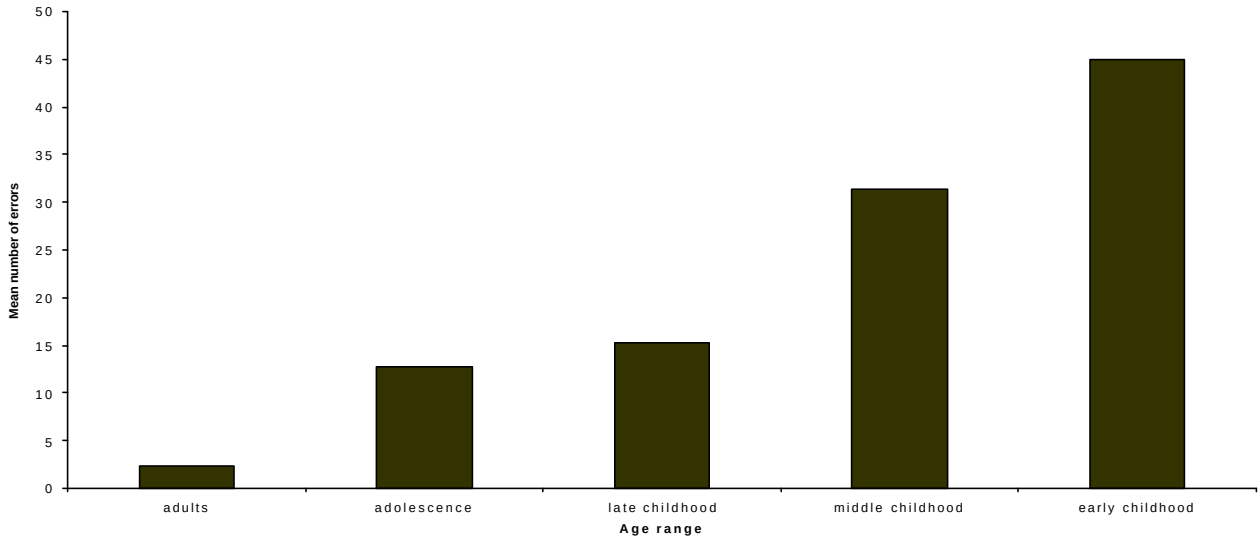

Figure 2
Mean number of errors recorded for the five age groups of subjects in the true and false belief protocol employed by McHugh, Barnes-Holmes, & Barnes-Holmes, (under submission).

In our most recent work in this area, we have turned our attention to what is considered to be the most advanced level of ToM. Specifically, we are developing a relational frame analysis of deception (McHugh, Barnes-Holmes, & Barnes-Holmes, in preparation). In this research we have employed a protocol similar to that designed to examine false belief. In the current protocol, however, the three perspective-taking frames are manipulated in conjunction with a frame of distinction, and logical not. For illustrative purposes, consider the following task, in which a subject is instructed as follows: "If I have a teddy bear and I do not want you to find it, where should I hide the teddy bear?" In this trial, the scenario depicted involves I (the Experimenter) aiming to deceive you (the subject). In a similar trial, the subject may then be instructed: "If you have a teddy bear and you do not want me to find it, where should you hide the teddy bear?" Although the correct responses to the trials are the same, they each require the subject to adopt a different perspective. Our preliminary findings are broadly consistent with the developmental profiles obtained from our relational perspective-taking and true and false belief protocols. That is, the deception protocol appears to generate yet another clear developmental profile from early childhood to adulthood. However, the deception protocol, as would be predicted given its greater relational complexity, has produced many more errors than the previous two protocols, and larger age differences particularly among the younger groups.

Summary and Conclusions

The ability to take the perspective of another individual is considered by most mainstream cognitive and developmental psychologists to be a complex and critical set of cognitive abilities. Interestingly, some cognitive researchers have criticized ToM for its lack of precision in defining the specific cognitive skills involved. At worst, ToM has been characterized as a description rather than an

explanation of the psychological processes involved in perspective-taking. At the same time, behavioral psychology has had very little to say about perspective-taking, and has played virtually no role in the ToM research program and the debate surrounding it. The development of an RFT account and research program on perspective-taking may well change this state of affairs and allow the behavioral tradition to play a possibly important role in the study of this most important human psychological ability.

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REFERENCES

Barnes-Holmes, Y. (2001). Analysing relational frames: Studying language and cognition in young children. Unpublished doctoral thesis. National University of Ireland, Maynooth, Ireland.

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

Baron-Cohen, S. (1995). *Mindblindness: An essay on autism and theory of mind*. Cambridge, M.A.: Bradford Books, MIT Press.

Baron-Cohen, S. & Hammer, J. (1997). Parents of children with Asperger Syndrome: What is the cognitive phenotype? *Journal of Cognitive Neuroscience, 9*, 548-54.

Baron-Cohen, S., Tager-Flusberg, H., & Cohen, D. (2000). *Understanding other minds: Perspectives from developmental cognitive neuroscience (2nd Ed.)*. Oxford: Oxford University Press.

Dougher, M. J., Hamilton, D., Fink, B., & Harrington, J. (2003). *Generalized relational stimuli and the transformation of operant and respondent stimulus functions*. Paper presented at the annual convention of The Association for Behavior Analysis, San Francisco, USA.

Dymond, S. & Barnes, D. (1995). A transformation of self-discrimination response functions through the arbitrarily applicable relations of sameness, more-than, and less-than. *Journal of the Experimental Analysis of Behavior, 64*, 163-184.

Hayes, S. C. (1984). Making sense of spirituality. *Behaviorism, 12*, 99-110.

Hayes, S., C., Barnes-Holmes, D., & Roche, B. (2001). (Ed's.), *Relational frame theory: A post-Skinnerian account of language and cognition.* New York: Plenum Press.

Hayes, S. C., Fox, E., Gifford, E. V., Wilson, K. G., Barnes-Holmes, D., & Healy, O. (2001). Derived relational responding as learned behavior. In S. C. Hayes, D. Barnes-Holmes, & B. Roche, (Ed's.), *Relational frame theory: A post-Skinnerian account of language and cognition*. New York: Plenum Press.

Howlin, P., Baron-Cohen, S., & Hadwin, J. (1999). *Teaching children with autism to mind-read: A practical guide*. Chichester, England: Wiley.

McHugh, L., Barnes-Holmes, Y., & Barnes-Holmes, D. (in preparation). A relational frame interpretation of deception.

McHugh, L., Barnes-Holmes, Y., & Barnes-Holmes, D. (under submission). Understanding false belief as generalized operant behavior. *The Psychological Record*.

McHugh, L., Barnes-Holmes, Y., & Barnes-Holmes, D. (in press). Perspective-taking as relational responding: A developmental profile. *The Psychological Record*.

McHugh, L., Barnes-Holmes, Y., O'Hora, D., & Barnes-Holmes, D. (in press). Perspective-taking: A relational frame analysis. *Experimental Analysis of Human Behavior Bulletin.*

Roche, B., Barnes-Holmes, D., Smeets, P. M., Barnes-Holmes, Y., & McGeady, S. (2000). Contextual control over the derived transformation of discriminative and sexual arousal functions. *The Psychological Record, 50,* 267-292.

Steele, D. L. & Hayes, S. C. (1991). Stimulus equivalence and arbitrarily applicable relational responding. *Journal of the Experimental Analysis of Human Behavior, 56*, 519-555.

Taylor, M. (1988). Conceptual perspective taking: Children's ability to distinguish what they know from what they see. *Child Development, 59*, 703-718.

Selection-Based Imitation

A Tool Skill in the Development of Receptive Language in Children With Autism

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Receptive language is a basic behavioral repertoire that many children with autism have difficulties acquiring. This difficulty may be caused by several factors suggesting the need for case-by-case analysis and the development of multiple intervention strategies. This paper outlines a strategy that has been effective in establishing receptive labeling in some children for whom conventional methods proved ineffective. The present strategy emphasizes the development of tool skills that are conjectured to subserve receptive labeling. These tools skills are developed by teaching a form of imitation that may be termed "selection-based imitation" (SBI). The present strategy should be recognized as clinically based and may be subjected to more rigorous investigation and further refinements.
Keywords: receptive labeling; "selection-based imitation;" case-by-case analysis

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Receptive language may be defined as a basic behavioral repertoire that consists of responding non-verbally to spoken words in accordance with conventions in a verbal community. Impairment of receptive language or more generally, language comprehension, is prevalent in children with autism (Rutter & Schopler, 1987; Waterhouse & Fein, 1989). A considerable proportion of these children have difficulty acquiring even the basic forms of receptive language such as simple correspondence between words and objects (i.e., receptive object labeling). This difficulty may be caused by several different factors suggesting the need for case-by-case analysis and the development of multiple intervention strategies. Thus, a continuous challenge for clinicians is to apply the concepts and principles of behavior analysis in creative, yet systematic and coherent ways.

This paper outlines a strategy that has proven effective clinically in teaching receptive labeling to some children where common methods were unsuccessful (for a description of common methods see for instance Leaf and McEachin, 1999; Lovaas, 1981). The present strategy emphasizes the development of a form of imitation in which the instructor points to a stimulus (e.g., picture) displayed in one array and where the child imitates by pointing to the corresponding stimulus in a separate array. In this interaction the response topography remains the same across trials whereas the stimulus pointed to changes each time. Since this form of imitation does not involve distinct response topographies, it may be termed "selection-based imitation" (SBI).[1] SBI involves several tool skills conjectured to subserve receptive labeling including sustained attention to task, observation of other people's interaction with stimuli (i.e., pointing), scanning (including shifting of attention between stimulus sets) and inhibition of "impulsive" (prepotent but incorrect) responding.[2] By establishing SBI these skills are strengthened prior to an attempt of teaching word-object relations.

Behavioral engineering and levels of analysis

When attempting to construct a basic behavioral repertoire such as receptive labeling, it may be useful to distinguish between two levels of analysis. One level focuses on the target repertoire as an integrated routine in context, that is, a composite act defined in terms of its functional relation to environmental variables. This may be termed the *phenomenological level*. The other level is concerned with lower-level strata or sub-components of the repertoire in question (as defined at the phenomenological level). In other words, this level is concerned with

the internal structure of the repertoire including the processes and operations sufficient in engendering the relevant properties of the phenomenological level. This may be termed the *implementation level*. Phenomenological level and implementation level are not proposed as technical terms but as helpful, heuristic concepts with respect to behavioral engineering.[3]

Behavior may not have a necessary structure other than trivial (Baer, 1982) and one often finds that a repertoire may be established through different program sequences, different constellations of components and different instructional strategies. In other words, the implementation level of a behavioral repertoire may differ across individuals. The focus of the implementation level is therefore to provide pragmatic or sufficient solutions rather than the uncovering of essential, immutable structures. Consequently, the implementation level may include components that are "unnatural" or highly contrived. However, construction of functional behavior does not require that each component, step or subroutine must be immediately functional or congruent with natural contingencies. In "behavioral engineering," any strategy or design that will accomplish the goal may be employed.[4]

Receptive labeling deconstructed

Receptive language may be defined as responding non-verbally to spoken words in accordance with conventions in a verbal community. *Receptive labeling* of objects may be described as: *Hear name X – select object Y.* This relation can be established when the speaker names an object while indicating its location (e.g., looking or pointing) and providing reinforcement when the child orients toward it (e.g., *hears the name "apple"- points to apple*). Conversely, if the child orients toward a different object, orients toward the apple when another word is presented, or does not respond, reinforcement is not provided. This idealized contingency is illustrated in Table 1.

Table 1.

Contingencies Involved in Receptive Labeling

Verbal stimulus (Spoken word)	**Response**	**Non verbal stimulus** (Object)	**Consequence**
"Apple"	Orients	Apple	Reinforcement
"Apple"	Orients	Orange	No reinforcement
"Orange"	Orients	Apple	No reinforcement
"Apple"	None	None	Additional cues/assistance

Since a word-object relation is arbitrary (i.e., the word and the object share no common perceptual elements) each label must be learned individually. However, through several interactions the child may acquire new relations more rapidly. Bateson (1972) coined the term "deutro-learning" to refer to a progressive increase in learning within a domain. Along with dimensions such as retention, proficiency and generality, "deutro-learning" is an important consideration at the phenomenological level.

Although receptive labeling is a relatively simple behavioral process, it is not necessarily simple from the point of view of a naïve language learner. During acquisition the learner is faced with several problems that may be referred to collectively as "the problem of induction" (Markman, 1989). Markman described three related issues. First,

> When a child hears a word used to label an object, for example, an indefinite number of interpretations are possible for that word. The child could think that the speaker is labeling the object as a whole, or one of its parts, or its substance, or its color, texture, size, shape, position in space, and on and on. (Markman, 1989, p. 8)

However, the typically developing child does not have a well-developed ability to analyze (i.e., dissect) objects into components or properties but is inclined to regard the whole object as a referent for the word. This bias has been termed the *whole object assumption* (Markman, 1989).

Secondly, the child must extend a word to objects similar to those present during the initial interaction. For instance, if the child has learned to identify a cat when hearing the word "cat," he must extend the word to objects with perceived overall similarity such as different cat, a dog or a raccoon rather than to objects that tend to co-occur with cats such as a bowl of milk or a litter box. Typically developing children commonly generalize the word to objects with perceived overall similarity as opposed to objects that are related thematically. This bias has been termed *the taxonomic assumption* (Markman, 1989).

Lastly, in order to constrain word-object relations and sustain stability of acquired relations, the child must initially refrain from attributing two different labels to the same object. Thus, if a novel word is uttered in the presence of an object of which the child already has learned a name, he tends to reject the new word as an object label. For instance, if the child has learned that an object is called "apple," he is likely to attribute any new word (e.g., "red") directed towards an apple to another feature of the object such as its shape, some part, or its color. This bias has been termed the *mutual exclusive assumption* (Markman, 1989).[5]

Applying the two levels of analysis to receptive labeling, the phenomenological level includes the act of identifying an object given a spoken word in accordance with the aforementioned contingency (see Table 1), whereas the implementation level includes the various learning constraints (whole object assumption, taxonomic assumption and mutual exclusive assumption) and lower level strata including scanning, responding to multiple cues and auditory discrimination (Table 2).

Table 2 Phenomenological and Implementation Levels of Receptive Labeling

Phenomenological level	Implementation level
Responding conventionally to spoken words	Whole object assumption
(Word-object relation; Hear X orient to Y)	Taxonomic assumption
	Mutual exclusive assumption
	Responding to multiple cues
	Scanning
	Auditory discrimination

Children with autism and the implementation level

Apparently, many children with autism demonstrate significant deficits in pertinent tool skills (i.e., implementation level skills) and may therefore fail to acquire receptive labeling in a normative or even highly modified instructional context (e.g., discrete trial instruction). Moreover, many children may not develop these tool skills under such conditions despite abundant practice opportunities. Thus, when these skills are not present they must be targeted explicitly.

Children with autism often attend only to a restricted aspect of a stimulus rather than its overall feature. This "stimulus overselectivity" may account for many learning problems in this population (Lovaas, et. al., 1971) and it is a crucial concern when teaching receptive labeling. For instance, stimulus overselectivity may block the child from attributing the word to the whole object. In such cases the child would not appreciate the abstract property of "sameness" as an overall feature of stimuli and hence have difficulty extending the word taxonomically as manifested in limited and/or idiosyncratic stimulus generalization. Additionally, if the child has difficulty responding to multiple cues, difficulty scanning and shifting attention between stimuli, the conventional contingency of receptive labeling may be ineffective and could even be counterproductive.

Stimulus overselectivity within the visual domain may be ameliorated through a systematic sequence of matching-to-sample (MTS) in which stimulus features change gradually. Subtle changes from identical to non-identical stimuli, including cross-dimension (i.e., picture to object) may improve the child's ability to focus on overall structure as the basis for perceptual categorization. Thus, matching-to-sample may be a critical component in developing receptive labeling. For instance, Barnard and Eisenhart (2001) presented a case study in which the re-introduction of a systematic matching-to-sample sequence after a period of receptive language training enhanced acquisition and retention of receptive labeling in a child with autism.

During acquisition, it is imperative that the child looks at the object to which the speaker points. However, many children with autism do not attend to the speaker's gestures or orientation. When the instructor utters a word while pointing to an object, there is no guarantee that the gesture orients the child to the relevant object. In an effort to ameliorate this deficit one may teach the child to respond reliably to visual directives and to shift attention flexibly from one stimulus to another.

Selection-Based Imitation

Selection-based imitation (SBI) encompasses several of the aforementioned tool skills as it integrates matching-to-sample and imitation. Proficient SBI may therefore aid in the acquisition of receptive labeling for children who struggle to acquire this repertoire.

In SBI the instructor points to a stimulus displayed in one array and the child imitates by pointing to the corresponding stimulus in a separate array. The child is neither required to discriminate between, nor perform distinct response topographies (i.e., clapping, waving and standing up). In SBI the response topography remains the same in every trial whereas the stimulus pointed to changes each time. As opposed to imitation of behavioral topographies, SBI is a joint product of two stimuli: The stimulus to which the model points establishes the evocative effect of another stimulus (i.e., the corresponding stimulus in a separate set), which functions as a discriminative stimulus (SD) for the child's response.

In SBI the instructor "nominates" the target stimulus by pointing to it. Thus, the child must attend to the part of the environment of which another person interacts. This differs from imitation of response topographies where attention is directed to the other person's movement per se. Moreover, the child must shift attention flexibly from the instructor's stimulus field to his own field.

A sequence of implementation

There may be several different sequences that can establish SBI (i.e., the implementation level may vary across children). The present sequence is based on considerable clinical experience with many children. It is organized into several incremental phases where the last phase consists of transferring stimulus control from a visual to an auditory stimulus (Table 3).

Table 3.

Sequence of Implementation

1. Linear configuration
2. Field expansion
3. Linear configuration/different positions
4. Non-linear configuration
5. Two steps
6. Transfer to receptive labeling

Linear configuration. The instructor and the child each have an array of three pictures depicting three different objects. The arrays are arranged so the pictures correspond both horizontally and vertically in sequential order as illustrated in Figure 1. The arrays may be arranged so the pictures face right side up for both the child and the instructor or both arrays may be facing right side up relative to the child. The instructor and the child sit directly across each other at a table.

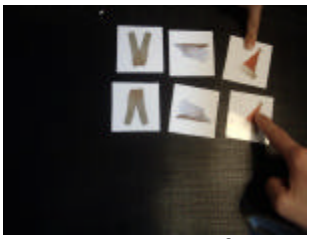

Figure 1. Linear configurations.

The instructor delivers the instruction "do this," points to one of the pictures in her array and manually guides the child to point to the corresponding picture in his array. By using the generic instruction "do this" as opposed to the object name, one ensures that every trial is identical except for the selection of the picture, which changes each trial. This arrangement may increase the likelihood that the child's behavior comes under control of the relevant feature of the task.

It may be helpful to arrange for an additional instructor to administer the manual prompting from behind the child. Prompting should be faded as soon as the child starts to respond to the target instruction. The fields should be reconfigured frequently between trials. Moreover, it is important to maintain short instructional intervals, a high pace of instruction and to afford the child a break based on peak performance. For instance, when the child performs the first independent response, the instructional interval may be terminated. Criteria should be increased systematically contingent on the child's progress and eventually, the child should be able to perform four to six consecutive imitations before earning a break.

The objective in this phase is to ensure that the child attends reliably to the instructor's response and shifts attention flexibly between the two stimulus arrays.

A common problem during this phase is that the child may point to the instructor's array as opposed to his own. Another problem is that the child may fail to attend to the instructor's pointing.

Two strategies may be effective in shaping the child's response to the appropriate array. One strategy consists of increasing the distance between the two arrays in order to make the instructor's field inaccessible to the child. This proximity prompt may induce the child to "settle" for the closer of the two fields. The distance between the two arrays can be decreased gradually. A second strategy consists of blocking access to the instructor's array by gently guiding the child's hand toward his own. A third viable strategy consists of holding the target picture above the table while prompting the child manually to point to the corresponding picture in his array. The picture should be brought closer to the table over successive trials and eventually placed among the other pictures. The efficacy of this strategy derives from initially isolating the target stimulus and shaping discrimination in a nearly errorless fashion.

Field expansion. In this phase the stimulus array should initially be increased to four pictures while maintaining a horizontal and vertical configuration as described in the first phase. The field size (i.e., number of pictures in the array) should be increased gradually to eventually include at least six pictures as illustrated in Figure 2. The procedure described in the previous phase may be employed. The present phase should continue until the child imitates proficiently (i.e., four to six consecutive correct responses).

Figure 2. Field expansion

The objective in this phase is to further strengthen scanning by gradually increasing the field size. The response requirements are the same as in the previous phase and the field size is

increased incrementally. Therefore, there are typically no problems in this phase. However, due to increased scanning requirement, the response latency may be slightly longer. If the child struggles with larger fields, the instructor may decrease the field size and the instructional pace. These dimensions should be altered systematically as the child becomes more proficient.

Linear configuration/different positions. In this phase the fields should be arranged so the pictures no longer correspond with respect to their positions in the arrays as illustrated in Figure 3. When introducing this phase, it may be necessary to scale back to a field of three pictures and gradually increase to a field of six (Figure 4).

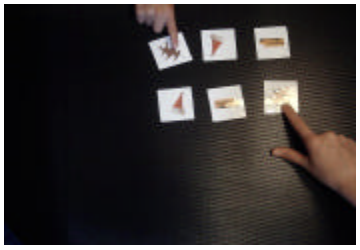

Figure 3. Linear configuration/different positions.

Figure 4. Field expansion.

This phase is designed to solidify scanning (e.g., shifting of attention) and prevent development of "position pointing" in which the child responds to the position of the instructor's finger as opposed to the target picture.

As indicated, a common problem in this phase is that the child may respond to the position of the instructor's finger as opposed to the target picture. Alternatively, the child may first point to the picture corresponding to the position of the instructor's finger and then switch to the correct picture. Clinical experience indicates that even a couple of reinforced trials could establish this pattern of "self-correction."

To ameliorate these patterns, three strategies may be utilized. One strategy consists of scaling back to two pictures and increasing the field size when the child performs proficiently. Another strategy consists of blocking the child's response to permit sufficient scanning time. For instance, the child's response may be prevented physically until he observes the instructor's response and shifts attention (i.e., gaze) to his own array. A third strategy consists of interrupting "position pointing" and initiating a new trial after a very brief delay (two to three seconds).

Non-linear configuration. In this phase the two arrays should be arranged in an incrementally more randomized fashion as illustrated in Figure 5. In the previous phases the child was required to scan horizontally only, whereas in this phase he must scan both horizontally and vertically. The field configuration should be changed incrementally to minimize errors.

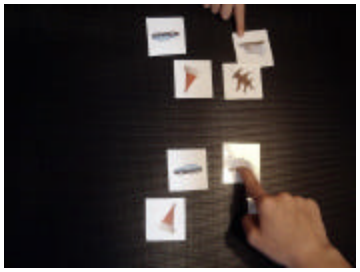

Figure 5. Non-linear configuration.

There are typically no problems in this phase. However, the response latency may be slightly longer. If response latency is considerably longer than in the previous phase, one could return to a linear configuration and build proficiency through more incremental randomization of the arrays. Alternatively, this phase may be introduced by randomizing one of the arrays while maintaining linear configuration of the other.

Two steps. When the child is proficient with single-step imitation, two-step imitation may be introduced. The objective in this phase is to increase flexible scanning and promote attention to more durable and complex antecedent conditions. Although this step may not always be necessary, it is designed to promote flexible scanning and increase attending.

It is critical to ensure that the child does not respond before the instructor completes both steps. Initially, the instructor may insert a short delay between the responses. For instance, the instructor points to one picture and delays the second response until the child performs his first response. This delay must be faded as soon as possible. The field size should increase gradually until the child can perform proficiently in a field of four to six pictures.

A common problem in this phase is that the child responds only to the first or the last picture. Alternatively, the child may point to the pictures in reverse order (i.e., pointing to the last picture first and the first picture last). As discussed, to prevent this pattern, a delay may be used in which the instructor points to one picture and delays the second response until the child performs his first response. Another strategy consists of preventing the child from responding until the instructor completes both steps (e.g., holding the child's hand). A third possible strategy consists of holding the finger on the second picture until the child completes the chain.

Transfer to receptive labeling. In this phase the verbal instruction should be changed from "do this" to the label name (e.g., "car") while continually pointing to the picture. However, in this phase pointing must be recognized as a prompt that must be faded successively as stimulus control transfer to the spoken word. Prompting may be faded by gradually increasing the distance between the instructor's finger and the picture (e.g., from touching the picture to a distance of 10-12 inches).

Initially, the instructor may select two labels to be taught in discrimination. When the child responds correctly to the first label without prompting, the second label should be introduced. The same fading strategy should be used for the second label. However, when teaching the second label the instructor may intersperse the trials by presenting randomly the first and the second label. For example, the instructor names the second picture while pointing, and intersperse the trails by occasionally naming the first label. This procedure should be maintained until the child responds correctly to a random presentation of the two labels without prompting. If the child responds inconsistently during random rotation, pointing may be inserted shortly after the verbal instruction to function as delayed prompting (c.f., Touchette & Howard, 1984). Alternatively, the second label may be practiced in isolation, thus postponing random rotation until prompting is faded. When the child has acquired three to four receptive labels, the instructor's array may be removed and new labels may be taught through more conventional methods (e.g., Leaf & McEachin, 1999).

Discussion

SBI involves several tool skills that are subservient of receptive labeling and it can therefore be used as a basis for developing this repertoire. The sequence of implementation outlined in this paper is based on common behavioral principles such as shaping of antecedent stimulus conditions (i.e., stimulus topography shaping) and transfer of stimulus control through delayed prompting. Moreover, the present description includes vague and relative terms such as "proficient," "as soon as possible," "gradual," "considerably longer," and "sufficient scanning time." However, it is difficult to express the many nuances and dimensions in an unambiguous or absolute manner. Despite this vagueness, the present outline may be of practical value to clinicians.

Although the strategy outlined in this paper has proven effective for several children it is not always sufficient. For many children other strategies must be employed in order to ameliorate deficiencies in receptive labeling. Nevertheless, the theoretical analysis offered in this paper illuminates some pertinent consideration when teaching receptive labeling, such as deficiencies of learning constraints, scanning (flexible shifting of attention between stimuli), and responsiveness to visual directives (i.e., pointing). Thus, the present analysis may serve as a basis for systematic problem solving and development of alternative instructional strategies.

References

Abrahamsen, E.P., & Mitchell, J.R. (1990). Communication and sensorimotor functioning in children with autism. *Journal of Autism and Developmental Disorder, 20*, 75-86.

Baer, D. M. (1982). The imposition of structure on behavior and the demolition of behavioral structure. In D. J. Bernstein (Ed.) *Response structure and organization. Nebraska Symposium on Motivation.* Lincoln, NE: University of Nebraska Press.

Barnard, J. C., & Eisenhart, D. (2001, May). Building a foundation: An analysis of an early match-to-sample program sequence. Paper presented at the *27th Annual Convention of the Association for Behavior Analysis.* New Orleans, Louisiana.

Bateson, G. (1972). *Steps to an ecology of mind.* Ballantine Books, New York

Bondy, A., & Frost, L. (2001). *A picture's worth: PECS and other visual communication strategies in autism*. Woodbine House, Bethesda , MD.

Catania, A., C., Sveinsdottir, I., DeLeon, I., G., Christensen, A., & Hineline, P. N. (2002). The paradoxical vocabularies of topography-based and selection-based verbal behavior. *European Journal of Behavior Analysis, 3,* 81-85.

Leaf, R., & McEachin, J. (1999). *A work in progress: Behavior management strategies and a curriculum for intensive behavioral treatment of autism.* Autism Partnership. DRL Books, L.L.C. New York, NY.

Lovaas, O. I. (1981). *Teaching developmentally disabled children: The me book.* Pro-Ed. Austin, TX.

Lovaas, O. I. (2003). *Teaching individuals with developmental delays: Basic intervention techniques.* Pro-Ed, Austin, TX.

Lovaas, O. I., Schreibman, L., Koegel, R. I., & Rhem, R. (1971). Selective responding by autistic children to multiple sensory input. *Journal of Abnormal Psychology, 77,* 211-222.

Lund, S. K. (2002, May). Establishing elementary rule-governed behavior in children with autism: A proposed sequence of implementation. Paper presented at the *28th Annual Convention of the Association for Behavior Analysis*, Toronto, Canada.

Lund, S. K., & Eisenhart, D. (2002, May). Establishing icon-based communication in children with autism and severe cognitive delay. Poster presented at the *28th Annual Convention of the Association for Behavior Analysis*, Toronto, Canada.

Markman, E. M. (1989). *Categorization and naming in children: Problems of induction*. The MIT Press, Cambridge Massachusetts.

McEachin, J. (2001, May). What to teach and how much is enough? Paper presented at the *27th Annual Convention for the Association for Behavior Analysis*, New Orleans, Louisiana.

Michael, J. (1985). Two kinds of verbal behavior plus a possible third. *Analysis of Verbal Behavior, 3,* 1-4.

Pelios, L. V., & Sucharzewski, A. (2003, May). A literature review on teaching strategies for establishing receptive language. Paper presented at the *29th Annual Convention of the Association for Behavior Analysis,* San Francisco, CA.

Powers, M. D., & Handleman, S. J. (1984). *Behavioral assessment of severe developmental disabilities*. Aspen System Corporation, Rockville Maryland.

Rutter, M., & Schopler, E. (1987). Autism and pervasive developmental disorders: Concepts and diagnostic issues. *Journal of Autism and Developmental Disorder, 17,* 159-183.

Sigman, M., & Ungerer, J. (1984). Cognitive and language skills in autistic, mentally retarded, and normal children. *Developmental Psychology, 20,* 293-302.

The Barnhart Concise Dictionary of Etymology: The Origins of American English Words (1995). Harper Collins Publisher. New York, NY.

Touchette, P. E., & Howard, J. S. (1984). Errorless learning: Reinforcement contingencies and stimulus control transfer in delayed prompting. *Journal of Applied Behavior Analysis,17,* 175-188.

Waterhouse, L., & Fein, D. (1989). Language skills in developmentally disabled children. *Brain and Language, 15,* 307-333.

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Footnotes

Footnote 1: The term "selection-based" is adopted from Michael (1985). It is not an extension of the technical term "selection" as used within a technical discourse, but derived from its colloquial usage (see Catania, et. al., 2002 for a discussion).

Footnote 2: Several clinicians have identified imitation, matching-to-sample, auditory discrimination, scanning and pointing as prerequisite to receptive language (Leaf & McEachin, 1999, Lovaas, 2003; Pelios & Sucharzewski, 2003). Research from traditions outside the field of behavior analysis suggests that language comprehension is correlated with the ability to imitate familiar gestures (Abrahamsen & Mitchell, 1990; Sigman & Ungerer, 1984).

Footnote 3: This distinction is akin to the distinction between molar and molecular behavior (e.g., Powers & Handleman, 1984) or macro and micro behavior (e.g., McEachin, 2001). Molar or macro behavior refers to broader, more global skills such as "eating," whereas molecular or micro skills refer to the sub-skills that constitute the molar skill (e.g., holding a spoon, drinking from a glass, sitting appropriately). The present distinction is somewhat different. It pertains to integrated behavioral units such as "receptive labeling," "imitation," "tacting" and abstract concepts (e.g., nominal and genitive pronouns) that cannot be divided into a chain of independent responses the same way as macro-level skills (e.g., "eating"). The term "phenomenological" as used here, is derived from the original meaning of "phenomenon" (fact, occurrence, manifestation) and should not be confused with the later meaning of "extraordinary occurrence" (The Barnhart Concise Dictionary of Etymology, 1995) or its specific meanings within philosophy (cf., Husserl, Heidegger and Sartre).

Footnote 4: Lund (2002) deconstructed behavior under control of function-altering contingency specifying stimuli and described a sequence in which elementary rule-governed behavior (i.e., "pliance") can be established in children who fail to acquire this repertoire through natural environment teaching. In a similar manner, Lund and Eisenhart (2002) deconstructed behavior involved in picture exchange and described how this repertoire can be established in children who do not acquire it in a normative socio-communicative context such as PECS (Bondy & Frost, 2001). In both cases the repertoires were deconstructed, subcomponents (i.e., implementation level skills) were established in isolation and eventually combined into the target repertoire (i.e., phenomenological level). Several steps were highly contrived.

Footnote 5: Terms, such as “attribute,” “extend,” “referent” and “regard” are vernacular terms with organism-based implications. These are not viewed as theoretical primitives but used for the purpose of ease of communication. A pragmatic reformulation can be provided when a situation demands it.

Treating Seriously Emotionally Disturbed Adolescents
The Views and Working Practice of School Psychologists

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Over three hundred school psychologists were surveyed about their working practice and their views with regard to treating seriously emotionally disturbed adolescents. The survey questionnaire sought the following details: 1) Demographic information; 2) Professional opinions about serious emotional disturbance; 3) Personal working practice with seriously emotionally disturbed students & 4) Recommendations.
Keywords: school psychology; adolescents; emotional disturbance; special education; professional practice, survey.

This paper presents the findings of a survey of a large sample of school psychologists. This survey measured the extent to which the existing practices of school psychologists were evidenced-based when working with seriously emotionally disturbed adolescents? This was the fundamental research question of the survey. The questionnaire used in the survey was designed so that the respondents would not be strongly directed towards particular conclusions. Behavior analysis was not the focus of the survey but it might be of interest to behavior analysts to see the indications of the importance and usefulness of behavioral interventions that emerged from the survey findings.

Is the professional practice of school psychologists evidence-based - particularly when recommending interventions for seriously emotionally disturbed adolescents? Is the decision-making of school psychologists based on clinical experience and judgment that is strongly influenced by particular philosophies, policy, resource availability and theories, but not necessarily by evidence of past success? It might be argued that it is inevitable and unavoidable that school psychologists do base their decision making on information that is not evidence based if it is the case that there is little empirical research and a lack of scientific data on which to base strong conclusions. A survey of school psychologists was carried out to measure the extent to which their existing practices were evidence-based when working with seriously emotionally disturbed adolescents. Additionally, their recommendations for effective school-based interventions were sought.

Theoretical Conceptualizations of Emotional Disturbance

In the United States, there are two main conceptualizations of emotional disturbance that can influence school psychologists and other mental health professionals: psychoanalytic and behavioral. Definitions of emotional disturbance in the United States usually fall into one or other of these two broad categories. A minority of definitions of emotional disturbance may be eclectic and draw on both behavioral and psychodynamic perspectives. A summary of the main theoretical conceptualizations is provided:

Psychoanalytic

The first conceptualization of adolescence described is psychodynamic or psychoanalytical. This approach usually views serious emotional disturbance as an internally instigated disorder in the individual. An individual's behavior or environment can be changed to alleviate the condition but conflicts or forces within the personality of the individual must be resolved and brought into harmony

before emotional health and appropriate behavioral control can be achieved. The origins of this approach lie in the work of Freud, Jung and other early psychoanalysts.

The early psychoanalysts were heralds of a new way of looking at human personality. Instead of seeing behavior largely in moralistic terms, it was interpreted in terms of an individual's experience and development. McWilliams (1999) provides a succinct description of the psychoanalytic/Freudian approach to adolescence. Work by Bowlby (1969, 1973, 1980, 1988) related serious emotional disturbance primarily to attachment difficulties stemming from insufficient bonding and love in childhood.

Research that have been published in the past few years may reflect theories developed from the personal experience of the psychotherapist and may be limited to particular types of client and difficulties, as well as the social settings. Magnavita (2000) describes a theory of integrative relational psychotherapy and points out that many clinicians are aware of the emotional or behavioral difficulties of the child or adolescent sometimes representing a conflict between the parents or within the extended family, and that an effective treatment must address the issues of dysfunctional personal or family relationships. Gil (1996) describes a personal approach to therapy that has been "skewed" by twenty years of dealing with adolescents who have been ordered by courts to receive therapy as a result of earlier childhood abuse and neglect.

Behavioral

The other main conceptualization of serious emotional disturbance is behavioral, viewing emotional disorder as essentially a failure of the individual to act or behave appropriately in particular situations. External forces are seen as more potent than internal ones. Behavioral approaches propose alteration of inappropriate behavior and reinforcement of appropriate behavior as the best intervention for emotional disturbance. The emotionally disturbed might be described as "emotionally and behaviorally disordered" using the acronym EB/D or EBD in preference to SED that is often used in short for "seriously emotionally disturbed".

Multi-Factorial Conceptualizations

A minority of definitions of emotional disturbance may be eclectic and draw on both behavioral and psychodynamic perspectives. A cognitive-behavioral conceptualization might view serious emotional disorder as a deficit that can be improved by training in focused problem solving, conflict mediation and crisis intervention, self-control, or another social skill area where the student behaves inappropriately. Many cognitive and cognitive-behavioral therapies combine both analytic and behavioral components (Sperry, 1999). Serious emotional disturbance can be viewed as a multidimensional problem that may involve not merely social skills deficits and dysfunctional attachment histories but also cognitive styles, attribution patterns, situational problems, unrealistic expectancies, and other factors. While the literature suggests some general patterns may exist, seriously emotionally disturbed adolescents are far from identical with varying types of problem behavior (U.S. Department of Health and Human Services (1999).

Emotionally disturbed behavior has been subdivided into categories of "externalized" or "internalized". This is a main classification in the inventory of emotional disturbance by Reynolds and Kamphaus (1994) that is widely used in the United States. Externalizing behaviors are the most observable ones, causing the greatest disruption in a classroom, or in any setting - emotions are externally expressed in behavior that is often problematic to others. Internalizing forms typically are not disruptive though they may be somewhat behaviorally evident. Achenbach (1985) described

research that shows the internalizing and externalizing social interaction of students in Table 1 as follows:

Table 1. Characteristics of Internalizing and Externalizing Behaviors

INTERNALIZING		EXTERNALIZING	
1.	Social Withdrawal	1.	Delinquent
2.	Depressed	2.	Aggressive
3.	Immature	3.	Hyperactive
4.	Somatic Complaints	4.	Cruel
5.	Uncommunicative	5.	Sex Problems
6.	Obsessive Compulsive		
7.	Anxious-Obsessive		

The term “acting out” is often used instead of “externalizing”, and “withdrawn” in preference to “internalizing”. Acting out or externalizing behaviors are likely to create the greatest difficulty in school and society. It is thus more likely that externalizing behavior rather than withdrawn or covert internalized behavior will form the basis of a request to a school psychologist for an intervention with a student. Quite often externalized behavior might be accompanied by symptoms of internalized emotional disorder. Co-morbidity of externalizing and internalizing behaviors may be overlooked if the problem behavior of the disturbed student is the sole focus (McConaughy & Skiba,1993).

There are gender and cultural differences that might influence the type of behavior that will present as emotional disturbance (Lefkowitz & Tesiny, 1984; Lobovits & Handal, 1985). Conversely, problem behavior can vary in definition according to the cultural and social setting of the adolescent (American Psychiatric Association, 1994; Kauffman, 1993). The expectations of parents and teachers might differ and the school psychologist sometimes may find that with referral the difficulties may lie more within school practices and parental attitudes. There may be intolerance of normal adolescence development where relatively internalized and externalized difficulties may occur within general culturally accepted standards (Kauffman, 1993.)

There are various conceptualizations of emotional disorder including ecological and sociological models but it is the definitions of Individuals with Disabilities Education Act 1990 (IDEA) (U.S. Congress, 1990) and the *Diagnostic and Statistical Manual of Mental Disorders, fourth edition* (DSM-IV) (American Psychiatric Association, 1994) which public authority school psychologists in the United States are mandated to follow when carrying out assessments and making recommendations for individual students. The basis of IDEA is an educational model, and the DSM-IV is essentially a medical model though in the DSM-IV it is claimed its system “promotes the application of a biopsychosocial model in clinical, educational and research settings” (page 25). The range of theoretical backgrounds found in the studies that are reviewed is discussed in Chapter 3. There is discussion in Chapter 6 about social learning, ecological and sociological models that school psychologists might use when carrying out crisis intervention, prevention work or working at a systems level with parent groups and schools.

Definition of Serious Emotional Disturbance

Labels and definitions are critical to understanding how a school psychologist, counselor, special education teacher, or other education professional would identify serious emotional

disturbance in adolescence. The term "serious emotional disturbance" is used in a variety of federal statutes in reference to children under the age of eighteen with a diagnosable mental health problem that severely disrupts their ability to function socially, academically, and emotionally. The term does not signify any particular diagnosis; rather, it is a legal term that triggers a host of mandated services to meet the needs of these children (U.S. Department of Health and Human Services ,1999).

Federal law proscribes a specific definition of emotional disturbance which school psychologists in the United States are required to follow in making a diagnosis of serious emotional disturbance. This definition might be regarded as one that follows an educational model in that a diagnosis of serious emotional disturbance can only be made when the student's educational performance is adversely affected. It is an issue within the American public authority schools system that a student is unlikely to qualify for special services unless this criterion is met. IDEA and IDEA Amendments of 1997 (U.S. Congress, 1997) state:

> As used in this part, the term *child with a disability* means a child evaluated in accordance with §§300.530-300.536 as having mental retardation, a hearing impairment including deafness, a speech or language impairment, a visual impairment including blindness, serious emotional disturbance (hereafter referred to as emotional disturbance), an orthopedic impairment, autism, traumatic brain injury, an other health impairment, a specific learning disability, deaf-blindness, or multiple disabilities, and who, by reason thereof, needs special education and related services.
>
> (i) The term (serious emotional disturbance) means a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance:
>
> (A) An inability to learn that cannot be explained by intellectual, sensory, or health factors.
>
> (B) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.
>
> (C) Inappropriate types of behavior or feelings under normal circumstances.
>
> (D) A general pervasive mood of unhappiness or depression.
>
> (E) A tendency to develop physical symptoms or fears associated with personal or school problems.
>
> (ii) The term includes schizophrenia. The term does not apply to children who are socially maladjusted, unless it is determined that they have an emotional disturbance.
>
> (Individuals with Disabilities Education Act: § 300.7 *Child with a disability*.)

It might be argued that labels hinder understanding of what is a complex phenomenon. However, a detailed and uniform nomenclature can aid communication and understanding among clinicians, education professionals, researchers, school psychologists and others. Public education authorities in the United States often use the DSM-IV to support a decision qualifying a student for special services under the IDEA category of "serious emotional disturbance". The DSM-IV provides taxonomy of mental disorders and symptoms that can be used to describe conditions that persist "over a period of time" and "adversely affect educational performance" (House, 1999). This taxonomy does not provide a single or even composite definition of emotional disturbance

but it is a number of categories of diagnostic criteria on which a clinical judgment of "serious emotional disturbance" is based.

The diagnostic categories of DSM-IV do not automatically correspond to the eligibility categories found in IDEA. The externalized disruptive behaviors, "conduct disorder", "oppositional defiance disorder", and "disruptive behavior disorder not otherwise specified" might usually translate into the handicapping conditions required for an IDEA diagnosis. There might appear to be a very direct correspondence between the DSM-IV categories of "depression" and "mood disorder" and the IDEA requirement of "a general pervasive mood of unhappiness or depression. However, there are cases when a DSM-IV diagnosis might be made by a clinician but be unsupported by IDEA when only a student's academic performance and behavior in school has been used to assess eligibility for special services and it is found that the student is coping in the school setting..

Clarizio and Payette (1990) describe a survey of school psychologists that suggests their practice in treating depression relied more on the operational criteria of the *Diagnostic and Statistical Manual of Mental Disorders*, third edition revised (DSM-III-R) than on IDEA. Other studies that attempted to measure this aspect of the school psychologist's practice with respect to treating other conditions could not be found but the indications from the writer's awareness of school psychology practice and the published work of many school psychologists is that school psychologists do frequently rely on the DSM-IV to make a diagnosis of serious emotional disturbance.

In this paper the definitions provided by IDEA and the DSM-IV are both used, sometimes independently and sometimes conjointly, because that is what is most commonly done in the research literature, and there is no other commonly agreed definition.

Review of the Literature

A preliminary search of the literature identified a number of review articles that have studied the effects of various interventions and include studies where the subjects, or some of them, are seriously emotionally disturbed (Dunlap & Childs, 1996; Singh, Deitz, Epstein & Singh, 1991; Skiba & Casey, 1985; Smith & Glass, 1977). It was found that seldom are seriously emotionally disturbed adolescents defined and studied as a separate group and that the effect of an intervention usually referred to a much wider group of subjects which might include subjects younger or older than adolescents, as well as ones who had different diagnoses (Parish, 1996). Most of the studies cited in these reviews of poor research quality with quasi-experimental designs that are typical of many studies found in social science research literature (Lipsey, 1994).

A literature search was carried out to identify studies that contained information about the outcomes of psycho-educational interventions for seriously emotionally disturbed adolescents. The literature search was restricted to studies where all the subjects were *seriously emotionally disturbed adolescents*. Studies where any of the subjects had diagnoses other than *seriously* emotionally disturbed, or were too young or too old to be defined as *adolescents* were excluded from this review. The eligible studies were subjected to a traditional literature review process, making a critical and narrative analysis of the literature in the field. Then the material in this review was searched for studies that contained outcome data. From this group of studies, a sub-group of those containing quantitative data sufficient to calculate effect sizes for use in a meta-analysis were selected.

There might be criticism that a literature review that follows such a restricted criteria excludes many studies that practicing school psychologists might draw upon to guide them in

their choice of intervention. It can be argued that school psychologists might use clinical judgment and decide that interventions used with subjects who are not seriously disturbed and have other difficulties, are the appropriate ones to use with seriously emotionally disturbed individuals. To perform a literature search of every study regardless of diagnosis or age of the subjects if it contained an intervention that might be used with a seriously disturbed adolescent would be an immense and probably impossible task, that is outside the scope of this study. The literature review in this work follows an experimental design where an important criterion is that the selected studies must have subjects that match the group that is being studied in this work.

Search Method

The search for relevant materials on effective interventions began with computerized bibliographic searches to identify potential studies. Articles were identified through the PsycINFO database that index the international journal literature in psychology and related social and behavioural sciences, the British Education Index, the National Library of Medicine's Medline database, and ERIC database indexes, the Current Index to Journals in Education (CIJE) and Resources in Education (RIE).

Subsequently systematic scanning of these databases from 1974 to 1999 was undertaken with keyword and title search terms specifically selected as relevant and discriminatory in the pilot trawl. This search used the following descriptors:
serious emotional disorder
serious emotional disturbance
SED
disorder
disturbance
emotional
EBD
EB/D
adolescent

and paired these with variations of further descriptors:
evaluation
intervention
outcome
treatment
school
education

Manual searches of the following journals were also carried out to find relevant articles that had not emerged from the computer search:
Behavioral Disorders
British Journal of Educational Psychology
Review of Educational Research
School Psychology Review

Searches were also made to follow up citations from selected articles. Additionally, searches were made of the WWW (using descriptor terms with various search engines and portals), gray literature, conference proceedings, and other sources known to the researchers.

The definitions of adolescence and serious emotional disturbance provided in Chapter 1 were used to include or exclude studies. Studies primarily focused on adults were included if there was clear reference of applicability to adolescents. Studies containing information about the outcomes of psycho-educational interventions were selected.

Since the search procedure for relevant work was very wide the studies found to contain psycho-educational interventions ranged from the very small number meeting some scientific criteria to those that were entirely descriptive and lacking in quantitative data.

The initial search procedure was a qualitative one. This was a process of constructing meaning and an understanding from text of the psycho-educational strategies and their outcomes that were reported in the literature. Without considering whether a study was scientific or contained quantitative data, the initial search procedure and criteria for inclusion in the literature review was simply that it contained information about the outcome of an appropriate psycho-educational strategy. This approach collected relevant studies that might, or might not, contain quantitative data. The search of the computerized databases and abstracts, hand search of books, journals, and gray literature was regarded as extensive if not exhaustive.

The search produced approximately 6,900 items: articles, chapters and other published works. Almost all publications were in English though several translations of foreign-language works were included. There were close to 6,700 references disqualified from the synthesis, as they did not contain any relevant outcome information.

There were 202 studies identified that reported the outcome of a psycho-educational intervention. There were 161 studies that reported the outcome of a psycho-educational intervention but excludes those used in the meta-analysis. Only 41 studies contained outcome data that enabled the calculation of effect sizes.

A best-evidence synthesis of the studies that yielded effect sizes indicated that self-management and self-monitoring interventions were significantly more likely to be effective that most other types of intervention. However, the effectiveness of the self-management or self-monitoring interventions was demonstrated only with students in a self-contained special education class and related to short and medium term improvements in academic attainment or classroom behavior. It was not known to what extent these interventions were successful in improving the long-term mental health and overall functioning of a student.

The finding of the literature review indicated that several self-management and self-monitoring techniques were scientifically credible interventions that were effective in improving the classroom behavior of students in a special class for behaviorally disordered students. Those particular studies would fall within the categories of behavior modification and social skills training. However, these studies were of limited domain and their effectiveness as a long-term solution for wider needs is untested. Whether analyzed by traditional narrative review or meta-analysis, the academic literature showed that relatively little systematic progress had been made over the past twenty-five years in the field of empirically validated psycho-educational interventions for seriously emotionally disturbed adolescents.

Context of the Survey

Other surveys conducted with school psychologists who work in the field were examined to see if they might be helpful in the design of this survey. However, there have been very few

extensive surveys of the working practice of school psychologists. Thomson (1993) carried out a survey in Scotland but this was mostly about their working conditions with little content relating to professional practice and nothing specifically relating to serious emotional disturbance. In the United Kingdom there have been several evaluations of school psychology services (H.M.I. Report, 1990; Mackay, 1999; Department for Education & Employment, 2000), but none have focused on service delivery to serious emotionally disturbed adolescents. In the United States there have been a number of surveys of school psychologists and their working practices, but seldom do they contain anything on serious emotional disturbance. Such research has shown that the professional attitudes and behaviors of school psychologists were influenced by gender (Reschly & Wilson, 1995), degree level (Carlson & Sincavage, 1987; Sheridan & Steck, 1995), years of experience (Sheridan & Steck, 1995; Witt & Robins, 1985), and the age of students with which they primarily worked (Sheridan & Steck, 1995). Pelco, Jacobson, Ries, and Melka (2000) found that school psychologists overwhelmingly supported the general concept of parent involvement in education and saw the involvement of the school psychologist in family-school partnership activities as important. These findings have little bearing on the treatment of seriously emotionally disturbed adolescents. Generally, it was concluded that there were not any studies with similar content that could provide a good model for the design of this one.

Design of the Survey

The design of the survey used in this study was typical of many questionnaires that are used in market research and social science research. It followed recommended content structure and good practice guidelines (Fink & Kosekoff, 1998). The main steps in the design of the survey were:

Research questions and data fields were defined.
Population to study was identified.
Sample to draw from that population was determined.
Methodology for carrying out the survey was decided.
Questionnaire was created.
Questionnaires were mailed to the sample.
Completed questionnaires were received from respondents.
Data was analyzed.
Report of the results was produced.

From demographic information variables such as amount of experience of working with adolescents, level of training, and work context were used. The survey sought views about research including current research, and views about practice in general.

Survey Sample

The target population was all the school psychologists who were members of the New York Association of School Psychologists (NYASP), an organization affiliated to the National Association of School Psychologists (NASP). School psychologists from all of New York State rather than just from New York City alone were chosen as it was thought this would provide greater external validity. In January 2000 a survey questionnaire, together with a cover letter encouraging participation in the study, was mailed to everyone listed in the 1998 NYASP directory of members. There were 1105 questionnaires mailed and 361 completed replies were received. This was a response rate of 32.7 percent and was considered very good as the questionnaire was lengthy. The results of the survey of the members of the New York Association of School Psychologists (NYASP) are provided in Appendices 2.

Content of Survey Questionnaire

The information sought from the school psychologist was organized into four main sections:

- demographics
- professional opinions
- personal working practice
- recommendations

A blank copy of the final version of the questionnaire distributed to the school psychologists in the survey sample is provided in Appendix 1. The information given to the NYASP respondents about the results of the literature search had been intentionally limited in the text of the survey questionnaire to the following statements:

"Serious Emotional Disturbance is defined here according to definitions given in DSM-IV and the International Directory of Diseases. Serious Emotional Disturbance can include behavior disorder, social maladjustment, psychosis, extreme aggression, acting-out, or severe social and emotional withdrawal. ADD and AD/HD are excluded, but Oppositional Defiant Disorder and Conduct Disorder are included. Adolescence is defined here as 11 to 18 years."

"A recent extensive search of the past 25 years of major research produced fewer than 400 studies that reported the use of a school-based intervention with Seriously Emotionally Disturbed adolescents. Only 109 of those studies reported an "outcome" or "result" of a school-based intervention. Many studies did not meet criteria of scientific adequacy and were largely anecdotal."

This information was so restricted so that the answers provided by the respondents would not be strongly directed towards particular conclusions. From the time the questionnaire was completed to the analysis of results some six months later, further studies containing outcome information were identified and the number of studies in this category rose from 109 to 202.

In this chapter the individual questions used in the survey questionnaire are given, but not in the order in which they were presented in the questionnaire. The three basic types of questions used in this survey were multiple choice, numeric open end, and text open end. A Likert rating scale, a particular form of numeric open-end question was used in a number of questions. A novel feature incorporated in this scale was that it did not include a neutral point or a center point where the respondent could neither agree or disagree. Therefore the only options were to choose an agree or disagree reply or to omit the question entirely. This was done to force a choice and avoid too many respondents supplying non-committal answers.

The first group of questions sought demographic information about employment status, gender, working experience, highest degree qualification held, type of community where employed, grade levels worked with, professional training, and use made of the internet.

The second group sought the school psychologist's professional opinions about serious emotional disturbance. Questions 10, 11, and 13 sought the school psychologist's views about research. Questions 12, 15, 16, 17, 19, 20, 21, 23, 24, and 25 were directed at other professional issues:

(RESPONDENT INDICATES ANSWER ON THIS SCALE FOR QUESTIONS 10, 11, 13, 12, 15, 16, 17, 19, 20, 21, 23, 24, and 25)

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree

10. School psychologists often do not hear about current research on seriously emotionally disturbed adolescents and therefore cannot base their decisions on research.

11. Further research on serious emotional disturbance is likely to improve the decision making of school psychologists.

13. Short-term studies of treatment "effectiveness" with results measured over weeks rather than at follow-up months or years later do not have scientific credibility.

12. Effective treatment of seriously emotionally disturbed adolescents requires a multi-disciplinary approach with collaboration between teachers, psychiatrists, psychologists and/or social workers.

15. Once an adolescent is certified as seriously emotionally disturbed and placed in a special education facility there is little hope of that student returning to regular education.

16. An improvement in the family circumstances of the seriously emotionally disturbed adolescent is usually necessary before a return can be made from a special provision to a less restrictive educational setting.

17. For many adolescents with serious emotional disturbance, segregated facilities are the most effective placement that will make any real change.

19. An "early intervention" in treating mildly disturbed adolescents can prevent serious emotional disturbance in most cases.

20. School psychologists spend too much time assessing serious emotional disturbance and not enough time actively treating it.

21. Having effective means of access to up-to-date summaries of existing research findings is more important than spending time and effort doing new research.

23. Interventions for Seriously Emotionally Disturbed adolescents will always be more complex and more costly than those for students with lesser social or emotional problems.

24. The effectiveness of school interventions will always be limited by ongoing family and neighborhood conditions.

25. Segregated special provisions might produce good results within their closed environment, but such gains often fail to generalize or maintain.

The third group of survey questions 14, 18, 22, 26, 27, and 29 asked details about the personal working practice of the school psychologist:

(RESPONDENT INDICATES ANSWER ON THIS SCALE FOR QUESTIONS 14, 18, and 22)

Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree

14. I have an adequate knowledge of interventions for treating seriously emotionally disturbed adolescents.

18. My psycho-educational evaluations of seriously emotionally disturbed adolescents lead to effective interventions.

22. I have adequate staff development opportunities with respect to interventions for seriously emotionally disturbed adolescents.

26. What are the main components of your current work as a school psychologist?
(PLEASE CHECK ALL THAT APPLY, INDICATING HOW OFTEN YOU USED THIS TECHNIQUE)
Often/Several times/Once/Not used/Omitted

Assessment
Work in schools, with teachers/principals
Individual or group counseling
Work with families
Collaboration with agencies and community services
Transition - school to work
Support to teachers where students are mainstreamed
Support to teachers in specialist schools/facilities

27. Which of these interventions have you used in the treatment of seriously emotionally disturbed adolescents?
(PLEASE CHECK ALL THAT APPLY, INDICATING HOW OFTEN YOU USED THIS TECHNIQUE)
Often/Several times/Once/Not used/Omitted
Individual counseling
Family counseling
Group counseling
Psychotherapy
Behavior modification
Social skills training
Teacher consultation
Wraparound planning
Other

29. Which of the following strongly influence your decision making for treating seriously disturbed adolescents?
(PLEASE CHECK ALL THOSE THAT APPLY)
The practice of your employers
Availability of resources
The evidential basis of outcome research
Local policies
National policies
Parents' views
Your theoretical orientation (empirical/philosophic/
psychoanalytical/school of thought/inclusion policy)
Finance
Views/practice of your professional colleagues

Other

The fourth group of survey questions asked for recommendations:

30. Are there particular interventions or therapies that you would recommend for use with emotionally disturbed or seriously emotionally disturbed adolescents?

28. What particular articles, books, web sites, software or other resources relevant to seriously emotionally disturbed interventions have you found useful and would you recommend?

33. What do you think are the major blocks or obstacles to intervening more effectively with seriously emotionally disturbed adolescents?

32. What would be the most effective means for disseminating information about the effectiveness of interventions?

34. Please add any further comments you wish to make.

Data Analysis

Most of the data was either nominal or ordinal and appropriate statistical techniques were applied (Andrews, Klem, Davidson, O'Malley, and Rodgers, 1981.) Chi-square statistics were computed to determine if there were significant differences with gender, degree level, and other variables. The statistical analyses of the completed survey questionnaires were conducted using SPSS Version 8.0 for Windows (1997). The survey results are presented and discussed in order of the four main types of information sought by the survey questionnaire. Some demographic information includes comparisons to items in other sections.

Demographic Information

Ten pieces of demographic information were sought from each respondent:

- employment status
- gender
- years of experience as a school psychologist
- highest degree held
- type of community of work setting
- grade levels with which the respondent works
- experience of work with seriously emotionally disturbed adolescents
- current work with seriously emotionally disturbed adolescents
- acquisition of professional knowledge
- professional use of the Internet, or online services

The results of the demographic content of the survey questionnaire are presented as frequencies and percentages in Appendix 2. The sample group was sufficiently large to permit valid explorations of internal demographic differences. The links between the survey results and demographic characteristics of those who provided the survey responses were explored. It was also possible to compare some of this information to the demographics of other surveys involving school psychologists.

A sizeable amount of the demographic information might appear extraneous but this peripheral information was sought in order to gauge the heterogeneity or homogeneity of the

sample. Some survey information is freestanding and comparisons cannot be made with findings from other surveys. However, where valid comparisons could be made, the sample group seemed alike in composition to the NASP sample that represented all school psychologists throughout the United States.

Over 80 percent of the respondents were employed in full-time positions, close to ten percent in part-time positions. The numbers in the retired and not employed categories were too small to be useful. Chi-square statistics were computed to determine if there were overall differences in the responses and content provided by the various categories of employment status. No significant differences were found. The gender of the respondents was predominantly female with proportionately three females to each male. Differences were found between gender and years of experience with 66% of males in the "more than ten years" category compared to 47% females. A greater proportion of males (97%) than females (83%) had experience of working with seriously disturbed adolescents.

Demographic characteristics of the NASP membership were compared with the survey sample for gender in Table 2, for years of experience as an school psychologist in Table 3, and for highest degree held in Table 4. The NASP membership data was taken from Pelco, Jacobson, Ries, and Melka (2000). General observational comparisons were made and, where appropriate, statistical analysis was conducted.

Table 2. Gender

	Survey Sample	NASP
Males	23.8%	28.6%
Females	73.7%	71.4%
Omitted	2.5%	

Many results appeared to be related to gender and some of these are reported in other sections. The survey sample and the NASP sample both reflected similar ratios for male to female school psychologists as well as similar ratios for those with less or more than 10 years of experience. NASP data to compare the ratio of males to females for years of experience were not available.

Table 3. Working Experience as an school psychologist

	Survey Sample	NASP
0 - 10 years	47.1%	45.7%
More than 10 years	51.5%	54.2%
Omitted	1.4%	

In the NYASP survey sample 66% of males were in the "more than ten years" category compared to 47% females. This might reflect an increase in the number of females who are school psychologists relative to males in recent years. Around 50% had more than ten years experience of working as a school psychologist. Twenty-three percent were in the 4 to 10 years band, and 24% in the 0 to 3 years band. Noticeable differences in many aspects between the years of experience bands and the questionnaire items occurred and this has been reported in the

appropriate section for that item. Fourteen percent of school psychologists with less than ten years experience had doctoral degrees whereas 38% of those with more than ten years of experience had doctoral degrees.

Table 4 Highest degree held *[see note with table 3]*

	Survey Sample	NASP
Non-doctoral	73.4%	74.9%
Doctorate	25.8%	25.1%
Omitted	0.8%	

A quarter of the respondents who replied to the questionnaire held doctoral degrees, 31% with specialist degrees, and 43% masters degrees. These percentages are nearly identical to those within NASP membership. NASP membership statistics were not available for type of community of work setting, grade levels with which they worked, and if they worked with seriously emotionally disturbed adolescents, so it was not possible to make comparisons with the survey sample. Data for demographic features other than for gender, highest degree held, and years of experience were not available. Most of those included in the NYASP survey sample did in fact belong also to the NASP membership. It seemed clear that the survey sample appeared generally representative of the entire group of school psychologists belonging to NASP, and, in effect, represented all school psychologists in the United States.

One third of the sample of school psychologists worked in a suburb of a metropolitan area, 27% worked in a small town or rural area, 19% worked in the central city of a metropolitan area, and 18% answered that they worked in a city or town. The numbers of school psychologists who worked in a city or town, the suburb of a metropolitan area, or in the central city of a metropolitan area, paralleled the variation of the geography and population in New York State. This was a useful finding as it indicated that the various settings within which school psychologists worked in the state of New York might be similar to the range of urban and rural settings found in the U.K.

Table 5 shows the percentages of the sample total of 361 for the various grade levels with which the respondents were working. These categories of grade level were not mutually exclusive and a respondent could indicate that work was done with more than one grade:

Table 5 Percentages of the total sample for the various grade levels with which the respondent school psychologists were working

Preschool or Kindergarten	45.4%
Elementary	66.5%
Middle/junior high	47.4%
Secondary/senior high	46.3%
Two-year college	0.8%
Four-year college	1.9%
Other	1.7%

The proportion of respondents who were currently working with adolescents (i.e. any adolescents not necessarily emotionally disturbed ones) was close to 50%. Ninety-one percent of

school psychologists with more than 10 years experience indicated they had experience working with seriously emotionally disturbed adolescents. For school psychologists with 4 to 10 years experience the figure was 89%. For those with less than four years experience the figure was 81% Table 6 presents the various categories where school psychologists had indicated they had acquired professional knowledge for working with seriously emotionally disturbed adolescents:

Table 6 Sources of professional knowledge for working with seriously emotionally disturbed adolescents

	Percent
Graduate courses	61.8%
Continuing professional development	62.3%
During supervision	36.0%
Other, please specify:	
Work experience/on the job	28.5%
Intern in psychiatric hospital	1.7%
Intern in another setting	4.4%
Books and journals	3.6%
CSWs and psychiatrists	0.3%
Training at a psychoanalytic institute	0.3%
Teaching experience	0.6%
Conferences	0.3%

The various categories are not mutually exclusive. A respondent could indicate having acquired their professional knowledge from more than one category. Two thirds of respondents indicated graduate courses and continuing professional development, but only one third indicated that supervision or work experience provided most of their professional knowledge. Chi-square tests did show that the acquisition of professional knowledge results were significantly related to other variables used in the survey analysis.

Table 7 Professional usage of Internet, or online services

	Frequency	Percent
Almost every day	35	9.7
At least once a week	55	15.2
At least once a month	90	24.9
Less often than once a month	106	29.4
Never	61	16.9
Omitted	14	3.9

Thirty-six percent of male school psychologists used the Internet for professional purposes. Twenty-one percent of females used it professionally . No claim may be made that school psychologists were particularly adept in the professional use of this technology since the estimate by

U.S. Census Bureau (U.S. Department of Commerce Economics and Statistics Administration (2001), given in January 1, 2000, for general use made by the United States population was around 42%,.

Professional Opinion

The results for this section are expressed in percentages and are provided in Appendix 2. Opinion was largely divided over whether it was more important for school psychologists to have effective means of accessing up-to-date summaries of existing research findings or to be able to spend time and effort doing new research. Fifty-five percent of the respondents indicated that having access to existing findings was more important. A majority of respondents (63%) indicated that school psychologists often do not hear about current research on seriously emotionally disturbed adolescents and therefore cannot base their decisions on research. A similar number (64%) agreed that short-term studies of treatment "effectiveness" with results measured over weeks rather than at follow-up months or years later do not have scientific credibility. However, almost all respondents (96%) indicated that further research on serious emotional disturbance is likely to improve the decision making of school psychologists. These results suggest that a majority could not base their decisions on current research on seriously emotionally disturbed adolescents, and presumably viewed such research as unavailable or inadequate. However, the vast majority of respondents did express the opinion that research would help in their work. This is a clear indication that research is needed in this field.

A number of professional opinions appear to be influenced by the gender of the school psychologist. Forty-five percent of men compared to 27% of women indicated local policies strongly influenced their decision-making. This was significant but there was no obvious explanation for this gender difference. It might be speculated that in the rise to the ranks of school administrators and promoted posts there were a greater number of men who were more likely to be compliant with local policies. There was another significant gender difference with the statement, “having effective means of access to up-to-date summaries of existing research findings is more important than spending time and effort doing new research”. Seventy percent of males agreed but only 50% of females.

The response to the same statement also differed for years of experience. Sixty-four percent of school psychologists with more than ten years of experience agreed with this, but only 49% of those with less than ten years experience agreed. These findings might indicate a greater awareness of the difficulty of discovering known effective resources among those who have greater experience of working with the seriously emotionally disturbed adolescents.

Further differences emerged that appeared to be influenced by years of experience. The survey responses indicated a stronger need for staff development among the less experienced practitioners. Seventy-four percent of school psychologists with up to three years experience expressed this. In the 4 to 10 years of experience band, the figure was 63%, and among those with over 10 years experience, it was 61%. It seems that the most experienced school psychologists continue to see that staff development will enhance their practice in treating seriously emotionally disturbed adolescents. These results might seem self-evident with less experienced practitioners seeing a need for more training, but the strong need expressed in all groups was revealing.

Eighty-two percent of school psychologists with more than ten years of experience agreed that interventions for seriously emotionally disturbed adolescents always would be more complex and more costly than those for students with lesser social or emotional problems. The figure for those with less than ten years experience was 66%. This points to a greater awareness among more experienced school psychologists of the difficulty in implementing satisfactory interventions.

Sixty percent of school psychologists with more than 10 years experience indicated they had they used family counseling several times or more. For school psychologists with 4 to 10 years experience it was 53%. For those with less than four years experience it was 38%. Clearly more experienced practitioners had used family counseling more often than those with little experience. Also in item 27, it was found that 34% of school psychologists with more than 10 years experience had used psychotherapy in the treatment of seriously emotionally disturbed adolescents more than once. For school psychologists with 4 to 10 years experience this figure was 27%. For those with less than four years experience it was 16%.

There was very strong agreement (98%) that effective treatment of seriously emotionally disturbed adolescents required a multi-disciplinary approach with collaboration between teachers, psychiatrists, school psychologists and/or social workers. Related to this question there was the statement that the effectiveness of school interventions would always be limited by ongoing family and neighborhood conditions. There was 85% agreement with this statement. The responses to both statements could be construed as supportive of a wraparound planning approach that might involve a number professionals meeting the needs of the family as well as providing a suitable learning environment for the child. Seventy percent agreed that an improvement in the family circumstances of the seriously emotionally disturbed adolescent is usually necessary before a return can be made from a special class or special school to a less restrictive educational setting.

There were further results that underlined the difficulties of working effectively with seriously emotionally disturbed adolescents. Seventy-three percent responded that segregated special provisions might produce good results within their closed environment, but that such gains often fail to generalize or maintain. However, 56% of respondents agreed that segregated facilities were the most effective placement that would make any real change for adolescents with serious emotional disturbance. This implied that the least restrictive environment might sometimes need to be a segregated facility, at least till there was sufficient improvement in the adolescent before reintegration into a regular school setting could take place. A minority (37%), but still a sizeable proportion of the respondents, expressed the view that once an adolescent is certified as seriously emotionally disturbed and placed in a special education facility, there is little hope of that student returning to regular education.

Ninety percent of the respondents agreed that "early intervention" in treating mildly disturbed adolescents could prevent serious emotional disturbance in most cases. Though it is a popular notion and may have intuitive appeal, the scientific data to support it is not apparent in the literature. Another point is that this statement was one of the peripheral items and relates to the field of prevention work rather than treatment. Thus it does not help provide any direct solution to identifying an effective treatment for adolescents who have existing serious emotional problems.

Personal Working Practice

The working practice of school psychologists in the United States can differ considerably from state to state (Fagan, 2003). A school psychologist who specializes in formal testing and assessment may perform only that role. A school psychologist working in the school district may be assigned to a high school and its feeder schools and work at a systems level, ensuring that federal requirements to provide appropriate services are met. In some states or in particular localities, especially rural ones, the school psychologist may have a generic role carrying out assessments as well as participating in reviews, teacher consultation, and doing therapeutic work (Fagan & Wise, 2000). Thus it is necessary to be cautious that the results in this section might to some extent lack

validity when transferring the findings to school psychologists who work outside the state of New York.

Appendix 5.2 contains the results from the personal working practice section expressed in terms of frequency, the number of respondents and the percentage relative to the total number who completed the survey. School psychologists indicated the main components of their current work. As many categories as necessary could be checked by the respondent. These results are shown in Table 8:

Table 8 Main components of the work of a school psychologist

	FREQUENCY	PERCENT CHECKED
Assessment	318	88.1
Work in schools, with teachers/principals	300	83.1
Individual or group counseling	251	69.5
Support to teachers where students are mainstreamed	212	58.7
Collaboration with agencies and community services	202	56.0
Work with families	187	51.8
Support to teachers in specialist schools/facilities	82	22.7
Transition - school to work	36	10.0
Other:		
1 Council for Pre-school Education	10	2.8
2 Crisis Intervention	6	1.7
3 Coordination of multi-disciplinary team	8	2.2
4 Training	6	1.7
5 Council for Special Education chairperson	6	1.7
6 Program development	3	0.8
7 Early intervention	4	1.1
8 Consultation	21	5.8

Logically, the criticism that school psychologists spend too much time or most of their hours carrying out assessments rather than treatment and preventative work, is not necessarily supported by the results shown in table 8. Assessment may be an activity common to the work of most school psychologists but it might not necessarily be the main component of their work. However, most respondents, around 75% of the sample of 361, indicated they spent too much time assessing serious emotional disturbance and not enough time actively treating it.

Interventions that have been used often, several times, or only once to treat seriously emotionally disturbed adolescents are shown in table 9. As many categories as necessary could be checked by the respondent:

Table 9 Interventions used often, several times, only once, or not used to treat seriously emotionally disturbed adolescents

Individual counseling
Often 59.6% Several times 23.3% Once 0.6% Not used 2.2% Omitted 14.4%
Family counseling

Often 14.1%	Several times 34.6%	Once 3.6%	Not used 22.2%	Omitted 25.5%
Group counseling				
Often 35.5%	Several times 26.9%	Once 1.9%	Not used 13.3%	Omitted 22.4%
Psychotherapy				
Often 14.1%	Several times 13.3%	Once 0.6%	Not used 36.6%	Omitted 35.5%
Behavior modification				
Often 54.8%	Several times 24.7%	Once 0.8%	Not used 4.2%	Omitted 15.5%
Social skills training				
Often 43.5%	Several times 29.6%	Once 1.7%	Not used 6.9%	Omitted 18.3%
Teacher consultation				
Often 59.0%	Several times 16.3%	Once 0.3%	Not used 5.8%	Omitted 18.6%
Wraparound planning				
Often 12.5%	Several times 15.0%	Once 2.2%	Not used 27.2%	Omitted 43.2%

In table 10 frequency and percentage figures are shown for the items that the respondents identified when they were asked which ones strongly influenced their decision making for treating seriously emotionally disturbed adolescents. As many categories as necessary could be checked by the respondent:

Table 10 Items identified that strongly influenced the decision making for treating seriously disturbed adolescents

	Frequency	Percentage
Practice of your employers	150	41%
Availability of resources	261	72%
The evidential basis of outcome research	104	28%
Local policies	114	31%
National policies	65	18%
Parents' views	168	46%
Your theoretical orientation	187	52%
Finance	76	21%
Views/practice of your professional colleagues	112	31%
Other:		
Time limits	22	6%
Quality of teaching for student	27	7%
Administration	1	0.3%
Counseling facilities	24	7%

Fifty-three percent of school psychologists with more than 10 years experience responded that parents' views strongly influenced their decision making for the treatment of seriously emotionally disturbed adolescents. For those with 4 to 10 years experience this figure was 42%. For those with less than four years experience it was 38%.

Only 28% of the sample indicated that the evidential basis of outcome research influenced their decision making for treating seriously emotionally disturbed adolescents. A greater proportion of men (37%) to women (26%) indicated they used the evidential basis of outcome research in their decision making for treating seriously emotionally disturbed adolescents, but this did not appear to be related to the finding that a greater proportion of men, rather than women, worked with adolescents. A correlation of these two factors was not significant ($r = 0.184$). The reason that many school psychologists did not use an evidential base is most likely because there is very little material that can be used as an evidential base. It is not clear why there is a gender difference. Knowledge of the interventions most likely to succeed might be only one factor in deciding on the particular intervention(s) to be used.

NYASP school psychologists indicated the main components of their current work in a multiple choice question with an opportunity to expand their answer in an "other" category which was open-ended and invited them to provide components not covered in the multiple choice list. Respondents could check as many components as necessary. Over 80% performed assessment and work in schools with teachers and principals. Individual or group counseling was carried out by 70%. Percentages between 50% and 60% were obtained in response to the items concerning support provided to teachers where students are mainstreamed, the collaboration with agencies and community services, and the work carried out with families. Around 23% of school psychologists indicated that they provided support to teachers in specialist schools/facilities. This figure seems very low in comparison to the figures for other activities of school psychologists but it may be influenced by the specialist roles allocated to particular school psychologists and the fact that the number of specialist facilities is far fewer in number than regular mainstream schools. The low figure of 10% who worked in the area of transition from school to work might be attributed to the fact that others, e.g. teachers and counselors, might be assigned to this work.

Professional experience and training is an important issue for practitioners in the field and it is important to see how better trained and more experienced school psychologists do work differently from others. It was found that 34% of school psychologists with more than 10 years experience indicated they had they used psychotherapy in the treatment of seriously emotionally disturbed adolescents several times or more. For school psychologists with 4 to 10 years experience this figure was 27%. For those with less than four years experience the figure was 16%. In table 11 the interventions that school psychologists have used several times or more to treat seriously emotionally disturbed adolescents are listed in order of the percentage of respondents who checked this item. However, the differences in practice among school psychologists will be inconsequential when there is little difference in effectiveness among the various interventions.

Table 11 Interventions school psychologists have used several times or more.

	Percentage of Respondents
Individual counseling	83%
Behavior modification	80%
Teacher consultation	75%
Social skills training	73%

Group counseling	62%
Family counseling	49%
Wraparound planning	28%
Psychotherapy	27%
Agency liaison	14%
Community resources	1%
Crisis intervention	1%

Recommendations

Few recommended interventions or therapies for use with emotionally disturbed or seriously emotionally disturbed adolescents and those who did expressed it in very broad generic terms. Around two-thirds of the respondents did not recommend any intervention at all. Of those who did make recommendations, cognitive behavioral therapy was the most popular intervention with behavior modification second. As there were only 52% of the respondents who said their psycho-educational evaluations of seriously emotionally disturbed adolescents led to effective interventions, and conversely, almost as many whose interventions were ineffective, it was not clear at all that table 12 provides any indication of what interventions were effective.

Table 12 Interventions or therapies that the respondents recommended for use with emotionally disturbed or seriously emotionally disturbed adolescents

	Frequency	Percentage
1. Cognitive behavioral therapy	121	33.5%
2. Cognitive therapy	10	2.8%
3. Behavior modification	48	13.3%
4. Networking with other agencies	21	5.8%
5. Community/mental health agencies	6	1.7%
6. Socialization and recreation	22	6.1%
7. Psychodynamic therapy	5	1.4%
8. Psychoanalysis	10	2.8%
9. Rational emotive behavior therapy	8	2.2%

In table 12 proposals or recommendations for interventions that the respondents indicated might be effective are shown. One third of the respondents proposed cognitive behavioral therapy as an effective intervention and 13% recommended behavior modification. Both these interventions are general descriptions in the form of a theoretical orientation. The use of self-management and self-monitoring techniques that were shown in the best evidence synthesis to be effective in improving the classroom behavior of students in a special class for behaviorally disordered students could be included as a behavior modification technique, and might also be described as a cognitive behavioral therapy when involving a conscious recognition of the process by the adolescent.
Table 13 shows the frequency and percentage of responses made to the question: “What do you think are the major blocks or obstacles to intervening more effectively with seriously emotionally disturbed adolescents?”

Table 13 Major blocks or obstacles to intervening more effectively

	Percentage of Respondents
Lack of family involvement	30.2%
Lack of resources	24.1%
Lack of time	16.6%
Inadequate staffing or inadequate schools	15.5%
Lack of finance	11.4%
Lack of training	9.4%
IDEA or special education procedures	8.9%
Lack of psychiatrist with experience of working with adolescents	1.1%

In the section about personal working practice, a clear obstacle to intervening effectively was revealed when only 54% of the respondents could answer that they had an adequate knowledge of interventions for treating seriously emotionally disturbed adolescents. In addition, only 30% of respondents said they had adequate staff development opportunities with respect to interventions for seriously emotionally disturbed adolescents. This corroborates with table 5 where the data indicates that some school psychologists believe they have poor training in this area and an inadequate knowledge of effective interventions for seriously disturbed adolescents. It is also possible that since there is a dearth of knowledge about the effectiveness of various interventions, their knowledge may not be due so much to poor training or the lack of knowledge, but rather due to a major void in the field. It was noticeable that "lack of finance", so often a barrier to many things, was quite low on the list, ranking fifth.

School psychologists were asked which particular articles, books, web sites, software or other resources relevant to seriously emotionally disturbed interventions they had found useful. From the 361 survey forms returns there are 73 different books recommended. Over 200 forms were left blank. There were 40 recommendations for named journals. From the 40 recommendations for named journals, 39 of these were for the regular professional journals of NASP, *School Psychology Review*, and *Communique*. There were two recommendations for *Behavioral Disorders*, the journal published by the Council for Children with Behavioral Disorders. Though this journal comes from the field of special education, a substantial number of both those who edit it, and those who write the articles that appear in it belong to the field of school psychology. In most editions it has published one or two articles that were reports of research or a positional paper about serious emotional disturbance. The absence of citations for *Behavioral Disorders* may have been due to a gulf between the fields of school psychology and special education. Overall the journal recommendations may have indicated that the respondents fail to seek information beyond that made available by their professional association, NASP. One the other hand, it might very well have been an indication that most school psychologists felt there was next to nothing of practical relevance to be found in the research literature.

The books listed in Appendix 2 were recommendations by the survey respondents in response to the question: "Which texts would you recommend as useful reading about serious emotional disturbance in adolescents?" They are listed alphabetically by name of the first author, in the form cited by the respondent. It is evident that a number of the books could be considered mainstream evidence-based psychology, while a sizeable proportion originate from the more populist self-actualization literature.

Two books were cited far more than any of the others. Scott P. Sells' *Treating the Tough Adolescent*, and Ross Greene's *The Explosive Child* were each cited around 20 times while none of the others appeared more than five times. The texts that were recommended as useful reading included very few that had empirical or scientific information about outcomes of interventions. Neither of the two books most recommended in the survey results provided useful quantitative data about outcomes of interventions for seriously emotionally disturbed adolescents.

The work by Sells was professional and could be considered to favor an evidential basis. However, the outcome evidence presented was in the form of case studies and without data. Yet, he stated that his 15 step treatment model should be evaluated by the hypothesis testing using a large number of variables and that this research was "in progress." His model employs counseling as a main component but the inclusion of social work in attending to the needs of parents loosely categorizes it as a "wraparound planning" intervention. Greene's work was populist, did not contain any useful quantitative data, and covered a wider age group and many more diagnostic groups of disordered students than seriously emotionally disturbed adolescents. In common with many populist, self-actualization works or ones that draw on clinical experience in the field, both Sells and Greene might help school psychologists in their work and be very useful tools in aiding parents and teachers to understand the theories behind particular interventions, but neither provides a scientific evidential basis for the use of any particular intervention.

Table 14 shows the respondents recommendations for the most effective means of disseminating information about the effectiveness of interventions:

Table 14 Recommendations for the most effective means of disseminating information about the effectiveness of interventions.

	Frequency	Percentage
1 Internet or email	131	36.6%
2 Staff development and training sessions	31	8.6%
3 Site visits	2	0.6%
4 Staff consultations	8	2.2%
5 Professional journals	92	25.5%
6 Conferences and workshops	30	8.3%
7 Graduate courses	16	4.4%
8 Newsletters, snail mail, regular mail	102	28.3%
9 National and state associations, professional organizations	67	18.6%

The Web/Internet, newsletters, and journals with *Communique* and *School Psychology Review* often named specifically were listed as suitable means to disseminate information about the effectiveness of interventions., *Behavioral Disorders* was mentioned only twice. This may reflect that the latter journal is less popular among school psychologists than it is with other professionals working in special education. In the order of most popular first to the least, the respondents main recommendations for the most effective means of disseminating information about the effectiveness of interventions was the use of email or the internet, newsletters or regular mailing, professional journals, and the work of government associations and professional organizations. This was an indication that school psychologists were aware of the increasing use being made of the Internet and

e-mail, and of their effectiveness as a means for communication. Most respondents appeared to favor communication by a passive means, something that they could read in their own time rather than active participation at conferences and workshops.

Appendix 2 contains the collection of statements that were the individual replies to question 34 of the survey questionnaire, further comments that the respondent wished to make. The number preceding each statement is an identifier to connect that particular statement to the completed questionnaire from which it came. Anonymity of the person completing the statement is ensured. There were 66 survey responses to question 34 or about a 20% response rate.

One of the most critical and most powerful statements was the following one:

167
As a new psychologist (3rd year) I find it upsetting to see the differences in training in the field. Many times, colleagues of mine will recommend therapies that have clearly been shown to be ineffective w/ emotionally disturbed youngsters. Many psychologists are not aware of recent research and continue to refer ED kids for individual or other types of therapies that will probably have very little effect on the child's mental health.

There were total of 23 statements that either made comments about inadequacy of training or the ineffectiveness of practice. A further three negative statements of this type were:

128
Schools are not designed to treat disturbed adolescents but to identify them and recommend more restrictive settings.

347
I have never had any direct experience w/ seriously emotionally disturbed adolescents, just what I have learned through my supervisor as she deals w/ them. Frustration seems to be a big problem for her. Frustration w/ administration and teachers, + family environment + and feeling like there is little she can actually do.

094
I feel that I would personally benefit from more training on medication used to treat students with emotional disturbances as well as more in depth case studies of specific interventions used and the results obtained. There needs to be a stronger link between the families, outside agencies, and the schools in order to most effectively work with these students.

It was encouraging that over 30 statements could be viewed as positive ones in that there was a recommendation or need expressed that a particular approach should be taken. Many though might be interpreted as making a masked comment that current practice or training in the field was poor, or not what it should be.

Two examples of this were:
246
I think that it would be a good idea to start a school based on oriental principles, with no medication given to children.

282
Overuse of medications by many practitioners and hospitals does very little (or nothing) to change underlying dynamics. There's a strong need for truly therapeutic environments to

alleviate post-traumatic stress and other pathological reactions which can occur in the face of poor or weak ego development or the unformed or fragile personality found in adolescents.

The collection of statements generally reflected that psycho-educational interventions for seriously emotionally disturbed adolescents require considerable improvement in practice and research.

Key Findings of the Survey

The number of completed survey questionnaires provided a sample sufficiently large and demographically varied to provide a good reflection of the views of NYASP members as representative of the views of all NASP members. While the school psychologists attending to the needs of seriously emotionally disturbed adolescents were experienced and often well-qualified, most saw the need for further training and staff development in the field and many believed their interventions did not lead to effective solutions. Cognitive behavioral therapy was by far the most popular therapy recommended for use. Several of the survey responses indicated wraparound planning and psychodynamic approaches are gaining in popularity. Compared to their extensive use and popularity ten to twenty years ago, behavioral therapies were seldom proposed as a long-term solution, but might be used as components or particular strategies in a treatment plan. Many school psychologists stated that a multi-disciplinary approach was essential. Most indicated that further research work would be useful. Only twenty-eight percent of school psychologists answered that they used the evidential basis of outcome research in their decision making for seriously emotionally disturbed adolescents.

****

Appendix 1

Survey Questionnaire:

IDA project

Intervening with Disturbed Adolescents

Whether you usually work with Seriously Emotionally Disturbed adolescents or not,
PLEASE COMPLETE THIS SURVEY.
Please write "N/A" next to any question that is not applicable to you.
Your views will help develop professional practice and training in school psychology.

Please check the option(s) which apply to you:

1. Employment status: [ ] Full-time [ ] Part-time [ ] Retired [ ] Not employed

2. [ ] Male [ ] Female

3. Years of experience as a school psychologist: [ ] 0 - 3 [ ] 4 - 10 [ ] More than 10

4. Highest degree held: [ ] Masters [ ]Specialist [ ] Doctorate

If employed, please answer questions 5 and 6:

5. In what type of community do you work?
[ ] Central city of metropolitan area [ ] City/town
[ ] Suburb of metropolitan area [ ] Small town/rural area

6. With which of the following grade levels do you work?
(PLEASE CHECK ALL THAT APPLY)
[ ] Preschool or Kindergarten [ ] Elementary
[ ] Middle/junior high [ ] Secondary/senior high
[ ] Two-year college [ ] Four-year college
[ ] Other, please specify_____

7. Have you ever had experience working with seriously emotionally disturbed adolescents?
[ ] Yes [ ] No

8. Do you currently work with seriously emotionally disturbed adolescents?
[ ] Yes [ ] No

9. Where did you acquire most of your professional knowledge for working with seriously emotionally disturbed adolescents?
(PLEASE CHECK ALL THAT APPLY)
[ ] Graduate courses
[ ] Continuing professional development
[ ] During supervision
[ ] Other, please specify_____

Definitions Please read the following information - it is important for this survey:

Serious Emotional Disturbance is defined here according to definitions given in DSM IV and the International Directory of Diseases. Serious Emotional Disturbance can include behavior disorder, social maladjustment, psychosis, extreme aggression, acting-out, or severe social and emotional withdrawal. ADD and AD/HD are excluded, but Oppositional Defiant Disorder and Conduct Disorder are included. Adolescence is defined here as 11 to 18 years.

A recent extensive search of the past 25 years of major research produced fewer than 400 studies that reported the use of a school-based intervention with Seriously Emotionally Disturbed adolescents. Only 109 of those studies reported an "outcome" or "result" of a school-based intervention. Many studies did not meet criteria of scientific adequacy and were largely anecdotal.

Please shade the circle that best describes your view:

10. School psychologists often do not hear about current research on seriously emotionally disturbed adolescents and therefore cannot base their decisions on research.

o --------- o --------- o --------- o --------- o --------- o

Strongly Disagree | Moderately Disagree | Slightly Disagree | Slightly Agree | Moderately Agree | Strongly Agree

11. Further research on serious emotional disturbance is likely to improve the decision making of school psychologists.

o --------- o --------- o --------- o --------- o --------- o

Strongly Disagree | Moderately Disagree | Slightly Disagree | Slightly Agree | Moderately Agree | Strongly Agree

12. Effective treatment of seriously emotionally disturbed adolescents requires a multi-disciplinary approach with collaboration between teachers, psychiatrists, psychologists and/or social workers.

o --------- o --------- o --------- o --------- o --------- o

Strongly Disagree | Moderately Disagree | Slightly Disagree | Slightly Agree | Moderately Agree | Strongly Agree

13. Short-term studies of treatment "effectiveness" with results measured over weeks rather than at follow-up months or years later do not have scientific credibility

o --------- o --------- o --------- o --------- o --------- o

Strongly Disagree | Moderately Disagree | Slightly Disagree | Slightly Agree | Moderately Agree | Strongly Agree

14. I have an adequate knowledge of interventions for treating seriously emotionally disturbed adolescents.

o --------- o --------- o --------- o --------- o --------- o

Strongly Disagree | Moderately Disagree | Slightly Disagree | Slightly Agree | Moderately Agree | Strongly Agree

15. Once an adolescent is certified as seriously emotionally disturbed and placed in a special education facility there is little hope of that student returning to regular education.

o --------- o --------- o --------- o --------- o --------- o

Strongly Disagree | Moderately Disagree | Slightly Disagree | Slightly Agree | Moderately Agree | Strongly Agree

16. An improvement in the family circumstances of the seriously emotionally disturbed adolescent is usually necessary before a return can be made from a special provision to a less restrictive educational setting.

o --------- o --------- o --------- o --------- o --------- o

Strongly Disagree | Moderately Disagree | Slightly Disagree | Slightly Agree | Moderately Agree | Strongly Agree

17. For many adolescents with serious emotional disturbance, segregated facilities are the most effective placement that will make any real change.

o --------- o --------- o --------- o --------- o --------- o

Strongly Disagree | Moderately Disagree | Slightly Disagree | Slightly Agree | Moderately Agree | Strongly Agree

18. My psycho-educational evaluations of seriously emotionally disturbed adolescents lead to effective interventions.

o --------- o --------- o --------- o --------- o --------- o

Strongly Disagree | Moderately Disagree | Slightly Disagree | Slightly Agree | Moderately Agree | Strongly Agree

19. An "early intervention" in treating mildly disturbed adolescents can prevent serious emotional disturbance in most cases.

o --------- o --------- o --------- o --------- o --------- o

Strongly Disagree | Moderately Disagree | Slightly Disagree | Slightly Agree | Moderately Agree | Strongly Agree

20. School psychologists spend too much time assessing serious emotional disturbance and not enough time actively treating it.

o --------- o --------- o --------- o --------- o --------- o

Strongly Disagree | Moderately Disagree | Slightly Disagree | Slightly Agree | Moderately Agree | Strongly Agree

21. Having effective means of access to up-to-date summaries of existing research findings is more important than spending time and effort doing new research.

o --------- o --------- o --------- o --------- o --------- o

Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

22. I have adequate staff development opportunities with respect to interventions for seriously emotionally disturbed adolescents.

o --------- o --------- o --------- o --------- o --------- o
Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

23. Interventions for Seriously Emotionally Disturbed adolescents will always be more complex and more costly than those for students with lesser social or emotional problems.

o --------- o --------- o --------- o --------- o --------- o
Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

24. The effectiveness of school interventions will always be limited by ongoing family and neighborhood conditions.

o --------- o --------- o --------- o --------- o --------- o
Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

25. Segregated special provisions might produce good results within their closed environment, but such gains often fail to generalize or maintain.

o --------- o --------- o --------- o --------- o --------- o
Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

26. What are the main components of your current work as a school psychologist?

(PLEASE CHECK ALL THAT APPLY)

[ ] assessment
[ ] work in schools, with teachers/principals
[ ] individual or group counseling
[ ] work with families
[ ] collaboration with agencies and community services
[ ] transition - school to work
[ ] support to teachers where students are mainstreamed
[ ] support to teachers in specialist schools/facilities

[ ] other (please specify)

_____

27. Which of these interventions have you used in the treatment of seriously emotionally disturbed adolescents?

(PLEASE CHECK ALL THAT APPLY, INDICATING HOW OFTEN YOU USED THIS TECHNIQUE)

Individual counseling	[ ] Often	[ ] Several times	[ ] Once	[ ] Not used
Family counseling	[ ] Often	[ ] Several times	[ ] Once	[ ] Not used
Group counseling	[ ] Often	[ ] Several times	[ ] Once	[ ] Not used
Psychotherapy	[ ] Often	[ ] Several times	[ ] Once	[ ] Not used
Behavior modification	[ ] Often	[ ] Several times	[ ] Once	[ ] Not used
Social skills training	[ ] Often	[ ] Several times	[ ] Once	[ ] Not used
Teacher consultation	[ ] Often	[ ] Several times	[ ] Once	[ ] Not used
Wraparound planning	[ ] Often	[ ] Several times	[ ] Once	[ ] Not used
Other	[ ] Often	[ ] Several times	[ ] Once	[ ] Not used

(please indicate the particular technique used)

_____

28. What particular articles, books, web sites, software or other resources relevant to seriously emotionally disturbed interventions have you found useful and would you recommend?

29. Which of the following strongly influence your decision making for treating seriously disturbed adolescents?

(PLEASE CHECK ALL THOSE THAT APPLY)

[ ] The practice of your employers
[ ] Availability of resources
[ ] The evidential basis of outcome research
[ ] Local policies
[ ] National policies
[ ] Parents' views

[ ] Your theoretical orientation (empirical/philosophic/psychoanalytical/school of thought/inclusion policy)
[ ] Finance
[ ] Views/practice of your professional colleagues
[ ] Other local conditions (please specify)

_____

[ ] Other (please specify)

_____

30. Are there particular interventions or therapies that you would recommend for use with emotionally disturbed or seriously emotionally disturbed adolescents?

31. How often, if ever, do you access the Internet, World Wide Web, or online services to obtain information that will assist you in your work as a school psychologist?

Please check:

[ ] Almost every day [ ] At least once a week [ ] At least once a month
[ ] Less often than once a month [ ] Never

32. What would be the most effective means for disseminating information about the effectiveness of interventions?

33. What do you think are the major blocks or obstacles to intervening more effectively with seriously emotionally disturbed adolescents?

34. Please add any further comments you wish to make:

If you omitted any items, please return to review them now.

If you wish to receive a report of the results of this survey please complete the blue form and enclose it with this survey.

Thank you for your participation. Please return the completed survey in the envelope provided by February 20, 2000.

Appendix 2

1. Demographic Information:

1. Employment status:

Full-time	301	83.4%
Part-time	35	9.7%
Retired	16	4.4%
Not employed	5	1.4%
Omitted	4	1.1%

2. Gender:

Male	23.8%
Females	73.7%
Omitted	2.5%

3. Years of experience as a school psychologist:

0 - 3 years	24.1%
4 - 10 years	23.0%
More than 10 years	51.5%
Omitted	1.4%

4. Highest degree held:

Masters	42.7%
Specialist	30.7%
Doctorate	25.8%
Omitted	.8%

If employed, please answer questions 5 and 6:

5. In what type of community do you work?

Central city of metropolitan area	19.1%
City/town	18.0%
Suburb of metropolitan area	33.6%
Small town/rural area	26.8%
Omitted	2.5%

6. With which of the following grade levels do you work?
(PLEASE CHECK ALL THAT APPLY)

Preschool or Kindergarten	45.4%
Elementary	66.5%
Middle/junior high	47.4%
Secondary/senior high	46.3%
Two-year college	0.8%
Four-year college	1.9%
Other	1.7%

7. Have you ever had experience working with seriously emotionally disturbed adolescents?

Yes	86.1%
No	13.9%

8. Do you currently work with seriously emotionally disturbed adolescents?

Yes	49.6%
No	49.0%

Omitted 1.4%

9. Where did you acquire most of your professional knowledge for working with seriously emotionally disturbed adolescents?

(PLEASE CHECK ALL THAT APPLY)

Graduate courses	61.8%
Continuing professional development	62.3%
During supervision	36.0%
Other, please specify:	
Work experience/on the job	28.5%
Intern in psychiatric hospital	1.7%
Intern in another setting	4.4%
Books and journals	3.6%
CSWs and psychiatrists	.3%
Training at a psychoanalytic institute	.3%
Teaching experience	.6%
Conferences	.3%

31. How often, if ever, do you access the Internet, World Wide Web, or online services to obtain information that will assist you in your work as a school psychologist?

	Frequency	Percent
Almost every day	35	9.7
At least once a week	55	15.2
At least once a month	90	24.9
Less often than once a month	106	29.4
Never	61	16.9
Omitted	14	3.9

2. Professional Opinions

Percentages are shown:

Statements relating to the working practice of school psychologists:.

20. School psychologists spend too much time assessing serious emotional disturbance and not enough time actively treating it.

1.1% ---- 1.9% ---- 7.2% ---- 13.6% ------ 23.0% ----- 34.9% ---- 18.3%
Omitted Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

21. Having effective means of access to up-to-date summaries of existing research findings is more important than spending time and effort doing new research.

2.2% ---- 1.9% ---- 15.0% ---- 24.9% ---- 23.5% ---- 22.2% ---- 10.2%
Omitted Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

Statements that relate to the SPs views about research:

10. School psychologists often do not hear about current research on seriously emotionally disturbed adolescents and therefore cannot base their decisions on research

0.3% ---- 6.4% ---- 13.9% ---- 15.5% ---- 24.4% -- -- 32.4% --- - 7.2%
Omitted Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

11. Further research on serious emotional disturbance is likely to improve the decision making of school psychologists

0.6% ---- 0.6% ---- 0.8% ---- 2.5% ---- 16.1% ---- 43.2% ---- 36.3%
Omitted Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

13. Short-term studies of treatment "effectiveness" with results measured over weeks rather than at follow-up months or years later do not have scientific credibility

0.8% ---- 3.3% ---- 16.3% ---- 16.1% ---- 19.7% ---- 28.8% ---- 15.0%
Omitted Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

Statements that relate to SPs views about practice:

12. Effective treatment of seriously emotionally disturbed adolescents requires a multi-disciplinary approach with collaboration between teachers, psychiatrists, psychologists and/or social workers.

0.6% ---- 1.1% ---- 0 ---- 0.3% ---- 2.2% ---- 9.1% ---- 86.7%
Omitted Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

15. Once an adolescent is certified as seriously emotionally disturbed and placed in a special education facility there is little hope of that student returning to regular education.

0.6% ---- 12.7% ---- 34.1% ---- 15.5% ---- 17.5% ---- 13.9% ---- 5.8%
Omitted Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

16. An improvement in the family circumstances of the seriously emotionally disturbed adolescent is usually necessary before a return can be made from a special provision to a less restrictive educational setting.

0.6% ---- 1.9% ---- 8.3% ---- 14.1% ---- 30.5% ---- 28.8% ---- 16.1%
Omitted Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

17. For many adolescents with serious emotional disturbance, segregated facilities are the most effective placement that will make any real change.

1.4% ---- 5.8% ---- 20.2% ---- 16.9% ---- 27.1% ---- 20.5% --- 8.0%
Omitted Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

19. An "early intervention" in treating mildly disturbed adolescents can prevent serious emotional disturbance in most cases.

1.1% ---- 0.6% ---- 2.5% ---- 6.6% --- 31.6% ---- 36.3% -- 21.3%
Omitted Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

23. Interventions for Seriously Emotionally Disturbed adolescents will always be more complex and more costly than those for students with lesser social or emotional problems.

1.9% ---- 3.0% ---- 9.1% ---- 11.4% ---- 18.8% ---- 32.4% ---- 23.3%
Omitted Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

24. The effectiveness of school interventions will always be limited by ongoing family and neighborhood conditions.

1.7% ------ 0.6% ------- 5.0% --- 7.8% ---- 23.0% --- 37.4% --- 24.7%
Omitted Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

25. Segregated special provisions might produce good results within their closed environment, but such gains often fail to generalize or maintain.

3.0% ---- 1.7% ---- 6.9% ---- 9.1% ---- 31.3% --- 36.6% ---- 11.4%
Omitted Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

3. Personal Working Practice

26. What are the main components of your current work as a school psychologist?

(PLEASE CHECK ALL THAT APPLY)	FREQUENCY	PERCENT CHECKED
Assessment	318	88.1%
Work in schools, with teachers/principals	300	83.1%
Individual or group counseling	251	69.5%
Work with families	187	51.8%
Collaboration with agencies and community services	202	56.0%
Transition - school to work	36	10.0%
Support to teachers where students are mainstreamed	212	58.7%
Support to teachers in specialist schools/facilities	82	22.7%
Other (please specify)		
1 CPSE	10	2.8%
2 Crisis Intervention	6	1.7%
3 Coordination of MD team	8	2.2%
4 Training	6	1.7%
5 CSE chair	6	1.7%
6 Program development	3	.8%
7 Early intervention	4	1.1%
8 Consultation	21	5.8%

27. Which of these interventions have you used in the treatment of seriously emotionally disturbed adolescents?

(PLEASE CHECK ALL THAT APPLY, INDICATING HOW OFTEN YOU USED THIS TECHNIQUE)

Individual counseling
Often 59.6% Several times 23.3% Once 0.6% Not used 2.2% Omitted 14.4%

Family counseling
Often 14.1% Several times 34.6% Once 3.6% Not used 22.2% Omitted 25.5%

Group counseling
Often 35.5% Several times 26.9% Once 1.9% Not used 13.3% Omitted 22.4%

Psychotherapy
Often 14.1% Several times 13.3% Once 0.6% Not used 36.6% Omitted 35.5%

Behavior modification
Often 54.8% Several times 24.7% Once 0.8% Not used 4.2% Omitted 15.5%

Social skills training
Often 43.5% Several times 29.6% Once 1.7% Not used 6.9% Omitted 18.3%

Teacher consultation
Often 59.0% Several times 16.3% Once 0.3% Not used 5.8% Omitted 18.6%

Wraparound planning
Often 12.5% Several times 15.0% Once 2.2% Not used 27.2% Omitted 43.2%

Other:
Agency liaison
Used 13.6 %

Community resources
Used 1.4%

Crisis Intervention
Used 1.4%

29. Which of the following strongly influence your decision making for treating seriously disturbed adolescents?

	Frequency	Percentage
(PLEASE CHECK ALL THOSE THAT APPLY)		
The practice of your employers	150	41.6%
Availability of resources	261	72.3%
The evidential basis of outcome research	104	28.8%

Local policies	114	31.6%
National policies	65	18.0%
Parents' views	168	46.5%
Your theoretical orientation (empirical/philosophic/ psychoanalytical/school of thought/inclusion policy)	187	51.8%
Finance	76	21.1%
Views/practice of your professional colleagues	112	31.0%
Other:		
Time limits	22	6.1%
Quality of teaching for student	27	7.4%
Administration	1	0.3%
Counseling facilities	24	6.6%

14. I have an adequate knowledge of interventions for treating seriously emotionally disturbed adolescents.

0.6% ---- 7.2% ---- 21.1% ---- 14.7% ---- 26.3% ---- 26.3% ---- 3.9%
Omitted Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

18. My psycho-educational evaluations of seriously emotionally disturbed adolescents lead to effective interventions.

8.6% ---- 3.6% ---- 17.2% ---- 15.4% ---- 31.9% ---- 19.7% ---- 3.6%
Omitted Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

22. I have adequate staff development opportunities with respect to interventions for seriously emotionally disturbed adolescents.

5.5% ---- 21.6% ---- 24.1% ---- 18.6% ---- 15.0% ---- 12.2% ---- 3.0%
Omitted Strongly Moderately Slightly Slightly Moderately Strongly
Disagree Disagree Disagree Agree Agree Agree

4. Recommendations

Appendix 2 contains the survey results for the recommendations section.

28. What particular articles, books, web sites, software or other resources relevant to seriously emotionally disturbed interventions have you found useful and would you recommend?

From the 361 survey forms returns there were 73 different books recommended. Thirty-two replies stated "don't know" or similar response. Over 200 were left blank. About 40 recommended named journals, School Psychology Review, NASP *Communique*.

BOOKS RECOMMENDED BY RESPONDENTS:
The books listed below were recommended by survey respondents in New York State, in response to the question: "Which texts would you recommend as useful reading about serious emotional disturbance in adolescents?".

They are listed here alphabetically by name of the first author, in the form cited by the respondent. Some were cited more than once, but frequency counts have not been given here.

Albert, L. (1996). *Cooperative discipline*. American Guidance Service.
Barkley, R. A. (1998). *Attention-deficit hyperactivity disorder: A Handbook for diagnosis and treatment*. Guilford Press.
Barkley, R. A. (1997). *ADHD and the nature of self-control*. Guilford Press.
Beck, A. T. (1991). *Cognitive therapy and emotional disorders*. Penguin Books.
Beck, J. S. (1995). *Cognitive therapy*. Guilford Press.
Bernard, M. E. (1991). *Using Rational-Emotive Therapy effectively: A practitioner's guide (Applied Clinical Psychology)*. Plenum Publishing Corporation.
Bernstein, N. I. (1997). *Treating the unmanageable adolescent: A guide to oppositional defiant and conduct disorders*. Jason Aronson.
Brooks, R. (1991). *The self-esteem teacher*. American Guidance Service.
Brussat, F. & Brussat, M. A. (1998). *Spiritual literacy*. Pocket Books.
Burney, R. ( ). *Codependence/the dance of wounded souls*. Joy to You & Me Enterprises.
Canter, L. & Petersen, K. (1996). *Teaching students to get along*. Lee Canter & Assoc.
Cudney, M. R. & Hardy, R. E. (1993). *Self-defeating behaviors: Free yourself from the habits, compulsions, feelings and attitudes that hold you back*. Harper-Collins.
Dreikurs, R. (out of print). *Psychology in the classroom: A manual for teachers*.
Eggert, L. L. (1994). *Anger management for youth: Stemming aggression and violence*. National Educational Service.
Ellis, A. (1975). *A guide to rational living*. Wilshire Publications.
Ellis, A. & Bernhard, M. E. (1985). *Clinical applications of Rational Emotive Therapy*. Plenum Publishing.
Faber, A. & Mazlish, E. (1999). *How to talk so kids will listen and listen so kids will talk*. Avon Books.
Feindler, E. L. & Ecton, R. B. (out of print). *Adolescent anger control: Cognitive-behavioral techniques*. Psychology Practitioner Guidebooks.
Finn, S. E. (1996). *Manual for using the MMPI-2 as a therapeutic intervention*. University of Minnesota Press.
Garbarino, J. & Smith, C. (1999). *Lost boys: Why our sons turn violent and how we can save them*. Simon & Schuster Books.
Gardner, H. (1999). *Intelligence reframed: Multiple intelligence for the 21st century*. Basic Books.
Gardner, H. (1993). *Frames of mind: The theory of multiple intelligences*. Basic Books.
Gil, E. (1996). *Treating abused adolescents*. Guilford Press.
Glasser, W. (1999). *Choice theory: A new psychology of personal freedom*. Harper Perennial.

Goldstein, A. P. & Glick, B. (1998). *Aggression replacement training: A comprehensive intervention for aggressive youth*. Research Press.
Goldstein, A. P. & McGinnis, E. (1997). *Skillstreaming the adolescent: New strategies and perspectives for teaching prosocial skills*. Research Press.
Goleman, D. P. (1997). *Emotional intelligence*. Bantam Books.
Greene, R. W. (1998). *The explosive child: A new approach for understanding and parenting easily frustrated, 'chronically inflexible' children*. Harper-Collins.
Greenspan, S. I., Weider, S., & Simon, R. (1998). *The child with special needs: Encouraging intellectual and emotional growth*. Perseus Press.
Hackney, H. L. & Cormier, L. S. (1995). *The professional counselor: A process guide to helping*. Allyn & Bacon.
Haley, J. (1993). *Uncommon therapy: The psychiatric techniques of Milton H. Erickson, M.D.* W.W. Norton & Co.
Hallowell, E. M. & Ratey, J. J. (1995). *Driven to distraction: Recognizing and coping with attention deficit disorder from childhood through adulthood*. Simon & Schuster.
Hartwig, E. P. & Ruesch, G. M. (1994). *Discipline in the school (crisis intervention)*. L.R.P. Publications
Henry, J. (out of print) *Pathways to madness*.
Illback, R. J. & Nelson, C. M. (Eds.) (1996). *Emerging school-based approaches for children with emotional and behavioral problems: Research and practice in service integration*. Haworth Press.
Kazdin, A. (1995). *Conduct disorders in childhood and adolescence*. Sage Publications.
Kelly, K., Ramundo, P. & Silver, L. B. (1996). *You mean I'm not lazy, stupid, or crazy?! A self-help book for adults with attention deficit disorder*. Fireside.
Kriesberg, L. & Thorson, S. J. (1991). *Timing the de-escalation of international conflicts (Syracuse studies on peace and conflict resolution)*. Syracuse University Press.
Long, N. J., Morse, W. C. & Newman, R. G. (out of print). *Conflict in the classroom: The education of emotionally disturbed children*.
Magid, K., McKelvey, C. A. & Schroeder, P. (1989). *High risk: Children without a conscience*. Bantam Books.
Masterson, J. F. (1990). *The search for the real self: Unmasking the personality disorders of our age*. Free Press.
Mehrabian, Al. (out of print). *Tactics of social influence*.
Metcalf, L. & Metcalf, R. (1994). *Counseling toward solutions: A practical solution-focused program for working with students, teachers and parents.* Prentice Hall.
Mondimore, F. M. (1999). *Bipolar disorder: A guide for patients and families*. Johns Hopkins University Press.
Morrison, J. R. & Anders, T. F. (1999). *Interviewing children and adolescents: Skills and strategies for effective DSM-IV diagnosis.* Guilford Press.
McGovern, A. & Wurmfeld, H. H. (out of print). *Feeling mad - feeling sad - feeling bad - feeling glad*.
Neill, A. S. & Lamb, A. (1995). *Summerhill School: A new view of childhood*. St. Martins Press.
O'Malley, R. K. (out of print). *Mile high mile deep*.
Phelan, T. W. (1996). *1-2-3 magic: Effective discipline for children 2-12*. Child Management.
Quay, H. C. & Hogan, A. E. (1999). Hand*book of disruptive behavior di*sorders. Kluwer Academic.
Redl, F. & Wineman, D. (out of print). *Controls from within: Techniques for the treatment of the aggressive child*.
Reynolds, C. R. & Gutkin, T. B. (Eds.) (1998). *The handbook of school psychology*. John Wiley & Sons.

Rhode, G., Jenson, W. R. & Reavis, H. K. (1996). T*he tough kid book – Practical classroom management strategies*. Sopris West Inc.
Rosemond, J. K. (1991). *Parent power!: A common-sense approach to parenting in the '90s and beyond*. Andrews McMeel Publishing.
Ross, G. R. (1993). *Treating adolescent substance abuse: Understanding the fundamental elements*. Allyn & Bacon.
Rutter, M. (1990). *Helping troubled children*. Pengiun Books.
Saint-Exupery de, A. (1999). *The little prince*. BBC Audio (tape).
Sprick, R. S. (1995). *Teacher's encyclopedia of behavior management: 100 problems 500 plans* (The Library Management Motivation and Discipline Series). Sopris West.
Sutton, J. D. (1997). *If my kid's so nice….Why's he driving me crazy? Straight talk about the 'good kid' disorder*. Friendly Oaks Publications.
Taffel, R. & Blau, M. (1999). *Nurturing good children now: 10 basic skills to protect and strengthen your child's core self*. Golden Books Publishing Co.
Valentine, M. R. (1994). *How to deal with difficult discipline problems: A family systems approach*. Kendall Hunt Publishing Co.
Villa, R. A., Thousand, J. S., & Stainback, W. (1992). *Restructuring for caring and effective education: An administrative guide to creating heterogeneous schools.* Paul H Brookes Publishing Co.
Villa, R. A. & Thousand, J. S. (1995). *Creating an inclusive schoo*l. Association for Supervision & Curriculum Development.
Wicks-Nelson, R. & Israel, A. C. (1999). *Behavior disorders of childhood*. Prentice Hall.
Winnicott, D. W. (1990). *Human Nature*. Brunner/Mazel.
Wood, M. M. & Long, N. J. (1990). *Life space intervention: Talking with children and youth in crisis*. Pro-Ed.
American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders: DSM-IV (4th Ed)*. American Psychiatric Association Press.

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33. What do you think are the major blocks or obstacles to intervening more effectively with seriously emotionally disturbed adolescents?

	Frequency	Percentage
1 Lack of time	60	16.6%
2 Lack of Training	34	9.4%
3 IDEA or special education procedures	32	8.9%
5 Lack of family involvement	109	30.2%
6 Lack of resources	87	24.1%
7 Lack of psychiatrist with experience of working with adolescents	4	1.1%
8 Inadequate staffing or inadequate schools	56	15.5%
9 Lack of finance	41	11.4%

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32. What would be the most effective means for disseminating information about the effectiveness of interventions?

	Frequency	Percentages
1 Internet or email	131	36.3%
2 Staff development and training sessions	31	8.6%
3 Site visits	2	0.6%
4 Staff consultations	8	2.2%
5 Professional Journals	92	25.5%
6 Conferences and workshops	30	8.3%
7 Graduate courses	16	4.4%
8 Newsletters, snail mail, regular mail	102	28.3%
9 National & State associations, professional organizations	67	18.6%

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30. Are there particular interventions or therapies that you would recommend for use with emotionally disturbed or seriously emotionally disturbed adolescents?

Few named an effective intervention and those who did expressed it in very broad generic terms. Around two-thirds of the respondents did not list any effective intervention. Cognitive behavioral therapy is the most popular "effective intervention" with behavior modification a close second:

	Frequency	Percentage
1. Cognitive behavioral therapy	121	33.5%
2. Cognitive therapy	10	2.8%
3. Behavior modification	48	13.3%
4. Networking with other agencies	21	5.8%
5. Community/mental health agencies	6	1.7%
6. Socialization and recreation	22	6.1%
7. Psychodynamic therapy	5	1.4%
8. Psychoanalysis	10	2.8%
9. REBT	8	2.2%

The following statements are individual replies to question 34 of the survey questionnaire, further comments that the respondent wished to make. The number preceding each statement is an identifier to connect that particular statement to the completed questionnaire from which it came. Anonymity of the person completing the statement is ensured.

347
Positive family changes do make a major difference in the behavior changes of a child. Although family therapy does not occur in the school it will impact major changes in the child's life.

342
Improvements in medication for a variety of emotional disturbance has dramatically increased the number of students who function successfully in their local schools. However, the number of students suffering with depression has increased steadily and compliance with taking medication has become a more frequent counseling issue.

338
I think recent legislation and research are providing exciting opportunities for a better practice of SP and education. And may we can hope the adolescent will also benefit!

326
At the elementary school level I haven't had any experience with the seriously emotionally disturbed.

323
There is a great need for emotional literacy training....it is an after thought in a highly academic environments. It is making the invisible visible! This is a very tough nut to crack among parents and school teachers and administrators.

318
The facility in which I work is a segregated special ed BOCES program offering 6:1:1 classes and 1:30 mental health with vocational supports. Students are drawn from a wide variety of SES groups and environments. I have previously worked with all special and regular populations in city, rural and suburban districts.

307
I think segregated sites often provide the total environment of structure. it is hard to provide consistent structure for a student within a large high school. The key problem is transitioning kids back into the home school. The student body as well as teachers don't easily forget the bad times. Kids can try to convince a student to set out again - be the tough one, teachers as well as administrators can react with great caution or fear - "what will the student do next?"

299
I tend to be outcome-based in counseling. My goal is to help students mange their problem so they can be successful not only in school but in life. I use a variety of techniques, counseling theories, etc. to suit the particular student.

292
I strongly feel that most school psychology programs are severely lacking in courses that prepare the future graduates to effectively intervene with emotionally disturbed children.

241
Greater collaboration between family/guardian and school (along with community agencies),would be extremely helpful.

232
I work in the NYC public school system. It is driven by assessment compliance and discourages treatment as the view is educational rather than mental health treatment. This inappropriate and so I feel referring students to mental health professionals outside the school is more effective.

218
Sometimes it takes two years or more of meeting with parents to establish a productive relationship that addresses the child's problems realistically. I believe in the power of "process" as an important concept to guide and strengthen our efforts to help these children.

005

In my district, I am the psychologist for a student body of appropriately 2500 students which include over 300 Sp. Ed. students. Another psychologist does mandated Sp. Ed. counseling - do everything else - i.e. Child Study Teams, 50+ Plans, all initial evaluations for the CSE + 50% of the triennials, crisis intervention + counseling, etc. for all of the reg ed. students.

282
Overuse of medications by many practitioners and hospitals does very little (or nothing) to change underlying dynamics. There's a strong need for truly therapeutic environments to alleviate post-traumatic stress and other pathological reactions which can occur in the face of poor or weak ego development or the unformed or fragile personality found in adolescents.

262
School psych. training programs also need to address these topics (ED students/adolescents) in training future school psychologists.
School Psych. programs (from my experience) focus very little if at all with this population of students.

246
I think that it would be a good idea to start a school based on oriental principles, with no medication given to children.

249
If schools are to be Mental Health facilities - one needs funding, staff and time (after classes) to treat students.

228
I'm from the U.K. - I didn't know school psychology was alive and well there!

203
I got to walk in an emotionally disturbed teachers shoes the other day and teach her class for the whole day. When children are kept productive and not just kept busy, they really can be well behaved. Prevention not reaction is the key!!

199
I would be interested in working on the research study or any others that are coming up.

190
Although I work primarily with elementary school-age students, the beginnings of SED are seen as early as age 3. I'd like to see more research on early intervention programs to see if we can prevent some of these serious problems.

176
Some questions/comments were too confusing to answer.

033
Another obstacle is that most people are so frustrated w/ their behavior that little support is given. Family systems lack the knowledge + resources to assist support behavior change.

356

I work in a great program but unfortunately most of our kids leave the security of our building and revert to old - but currently used unhealthy strategies that were learned in their home to deal with stress.

170
Checking on medication by parent is sometimes faulty so that the physician may begin to keep records that can be released to school with parental permission.

167
As a new psychologist (3rd year) I find it upsetting to see the differences in training in the field, Many times, colleagues of mine will recommend therapies that have clearly been shown to be ineffective w/emotionally disturbed youngsters. Many psychologists are not aware of recent research and continue to refer ED kids for individual or other types of therapies that will probably have very little effect on the child's mental health.

128
Schools are not designed to treat disturbed adolescents but to identify them and recommend more restrictive settings.

146
Great survey, great topic.
I do have two concerns about the survey itself.
(1) There's no way to ensure anonymity for those (like me) who want a copy of the results, as we're instructed to return the blue request form * with the survey.
(2) This is the only survey I've ever seen using a Likert scale-scale with no center point (neutral). So many items say "Always" in them, and for a few I neither agree nor disagree at all, I would have chosen neutral if it was an option.

121
There is not enough credit given to the cognitive abilities of these adolescents. More focus should be given on motivating themselves from within and having the children monitor their own behavior. (e.g. schoolwide behavior management - children have to do their own tallying and tracking. Restitution is effective because they become less oppositional when they are involved in the whole process.

117
My husband is a lay minister is a lay minister in the prisons. When he describes the changes in Prisoners who make a SPIRITUAL + MORAL Decision to receive Jesus Christ as their savior, I have to say , YEARS of therapy would be needed to make such changes. It is beautiful to witness this change. PLEASE BE OPEN TO TREATING THE WHOLE PERSON + ALLOWANCE SPIRITUAL OR MORAL SOLUTIONS TO BE PART OF PROGRAMS, IF FAMILIES DESIRE. "Research" knows the past. God knows the future.

113
I would really be interested in any further info. or training available at reasonable cost since financially some schools will not provide for cost of training.

108
It's that until a tragedy occurs in the middle class or the suburbs, that the interest level in this problem is totally lacking.

I work in a disadvantaged inner city neighborhood (not the worst) level of abuse, drugs and incarceration of parents are high. AIDS death is high. Lots of agencies, but few programs in the schools to support so many emotional needs.

105
With the "new" authorization of IDEA school districts are really limited in responding to disciplinary problems. The Federal government has really put us in a Catch 22 situation.

104
My experience is limited at this point, but I am pursuing further study and internship opportunities.

103
We don't have all the answers but some answers are simple. we need trained people to help teach parents skills. We need temporary placements to give people a break. We need therapeutic day care and after school program. We need affordable and available in patient and outpatient treatment facilities.
Further questions:
What were the principal ways you learned to deal with E.D. children?
How well versed are you on current research on E.D. children?
How well versed are school psychologists you know professionally to deal with E.D. children?
What research would help improve school psychologists skills in helping E.D. children?

097
In NYC Board of Education there is no understanding by school Principals of the Role of School Psychologists. Since we SBST members have been given over to school principals no one is left to serve the interest - protect the interests of poor ?????? in poor neighborhoods where principals now routinely manipulate services and families to the benefit of school results in testing situations.

094
I feel that I would personally benefit from more training on medication used to treat students with emotional disturbances as well as more in depth case studies of specific interventions used and the results obtained. there needs to be a stronger link between the families, outside agencies, and the schools in order to most effectively work with these students.

087
Many of the ED children have been sinned against. Others may have genetic tendencies to mental illness. Treatment should be more readily available. Disturbance in children should also be more readily acknowledged. "Early intervention" means appropriate medication when the disturbance emerges - usually sooner than adolescence.

084
I believe that in most cases, they were SED prior to adolescence. We cannot cure it. We can barely ameliorate it. We need to view it like we do retardation - a lifelong disease with the need for lifetime planning.

081
Interesting study. I look forward to reading your results, particularly resources and references.

080

I think schools have a very long way to go in meeting the needs of SED students effectively. These students require intensive case management and few schools have persons on staff to do this effectively.

070
Family support is so vital.

063
Continuing studies of pre-natal care, the effects of multiple foster home/group, home placements and children born to children that continue this cycle.

061
SED kids often have disadvantaged home lives which adversely affect their functioning and are well beyond school help.

077
Usually interventions made are to transfer student to a special facility where he can receive more in the depth treatment. Counseling, work of the family, behav, modi..) e.g Residential placements are best for these students.

071
There are few interventions available for helping these students outside of schools. Often their incomes are limited and they can't afford help don't see the need for it. The law supports their rights often over the rights of other students in the classroom. If you want to go the easiest route in the classroom in helping them, it's exhaustingly long and much paperwork is needed. Often we don't have the personnel to help.

057
Often proper services to the seriously emotionally handicapped adolescent can not be provided in the child's "home" school. He/she will need to be placed in a "campus" school or an alternate school/to receive these services, and be monitored more closely by staff. Such placements offer intensive treatment that the school cannot.

054
As sad as this sounds, many times my judgments and actions are based on personal "instincts". I believe in Hard work, the value of work, respect for self and others - and I expect this of my students as well.

042
I have a rather unique position as a school psychologist in my middle school setting. I provide regular psych. services to the whole building (about 700 students), as well as providing counseling and support to about 12 students identified for 6: 1+1 classes due to behavior and emotional problems.

037
Segregation of SED students gives them permission to act "crazy" and misbehave because I am crazy therefore I can act crazy because I am in this class.

029

(Re: ED students in regular school settings)
This, obviously, is a very strong issue for me. I have been injured on the job restraining students with emotional disturbances and making an issue of the impropriety of this use of my skills has caused me to be "persona non grata" and I'm at risk of being forced out of my position. Please let me know where I can obtain support legal advice, if you can.

025
Effective school based interventions for adolescents in crisis are necessary be they are so common and the suffering of families is great.

021
I have found great frustration servicing these students this year! Many of the outside agencies I have referred these students and parents to - have been disappointing. Seems like there has to have been a crisis(i.e.hurting themselves or someone else) to recieve the necessary help. Found most schools and hospitals to work reactively rather than proactively? Feel we are setting ourselves up for an increase in disastrous events!!
How can we change this???
This project is a great idea! Let me know if I can be of any further assistance!

019
A sense of humor is essential in relating to such a population of students. Tangible meaningful rewards the key. Patience and ability to leave stress, work at the job is also essential. Good luck!

017
The students who have emotional difficulties should not be segregated. It only adds to their sense of failure. Use of groups, aides and other pertinent resources such as help with study skills and social skills should be offered in regular education setting.

347
I have never had any direct experience w/seriously emotionally disturbed adolescents, just what I have learned through my supervisor as she deals w/ them. frustration seems to be a big problem for her. Frustration w/ administration and teachers, + family environment + and feeling like there is little she can actually do.

REFERENCES

Achenbach, T.M. (1985). *Assessment and Taxonomy of Child and Adolescent Psychopathology*. Sage Publications, Thousand Oaks, CA

American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders: DSM-IV*. 4th edition. Author, Washington, DC.

Andrews, F.M., Klem, L. Davidson, T.N., O'Malley, P.M., & Rodgers, W.L.(1981). *A guide for selecting statistical techniques for analyzing social science data.* Second edition. University of Michigan, Ann Arbor, MI.

Bowlby, J. (1969). *Attachment and loss: Attachment. Vol. 1.* Basic Books, New York.

Bowlby, J. (1973). *Attachment and loss: Separation, anxiety, and anger. Vol. 2.* Basic Books, New York.

Bowlby, J. (1980). *Attachment and loss; Loss, sadness, and depression. Vol. 3.* Basic Books, New York.

Bowlby, J. (1988). Developmental psychiatry comes of age. *American Journal of Psychiatry 145*, 1-10.

Carlson, C., & Sincavage, J. (1987). Family-oriented school psychology practice: results of a national survey of NASP members. *School Psychology Review, 16*(4), 519-526.

Clarizio, H.F., & Payette, K. (1990). A survey of school psychologists' perspectives and practices with Childhood Depression. *Psychology in the Schools, 27*(1), 57-63.

Department for Education and Employment (2000). *Educational psychology services (England): current role, good practice and future direction.* Department for Education and Employment Publications Centre, London.

Dunlap, G. & Childs, K.E. (1996). Intervention research in emotional and behavioral disorders: an analysis of studies from 1980-1993. *Behavioral Disorders 21*(2), 125-136.

Fink, A., & Kosekoff, J. (1985). *How to conduct surveys: A step by step guide*. Sage, London. (Second edition 1998)

Gil, E. (1996). *Treating abused adolescents.* The Guilford Press, New York.

Greene, R. (1998). *The explosive child: A new approach for understanding and parenting chronically inflexible children.* HarperCollins, New York.

H.M.I. (1990). *Educational Psychology Services in England and Wales.* HMSO, London

House, A.E. (1999). *DSM-IV diagnosis in the schools.* The Guilford Press, New York.

Kauffmann, J. (1993). *Characteristics of Emotional & Behavioural Disorders of Children and Youth, Fifth Edition.* Macmillan Publishing Company, New York

Lefkowitz, M.M., & Tesiny, E.P. (1984). Rejection and depression: Prospective and contemporaneous analyses. *Journal of Abnormal Psychology 98,* 78-85.

Lipsey, M.L. (1994). Identifying potentially interesting variables and analysis opportunities. In: *The handbook of research synthesis.* Cooper,H; Hedges, L.V. (Eds.). Russell Sage Foundation, New York.

Lobovits, D.A, & Handal, P.J. (1985). Childhood depression: prevalence using DSM-III criteria and validity of parent and child depression scales. *Journal of Pediatric Psychology 10,* 45-54.

Magnavita, J.J. (2000). *Relational therapy for personality disorders.* John Wiley & Sons, New York.

MacKay, T. (1999). *Quality assurance in education authority psychological services: Self-*

evaluation using performance indicators. Scottish Executive Education Department, Edinburgh.

McConaughy, S.H., & Skiba, R.J. (1993). Comorbidity of externalizing and internalizing problems. *School Psychology Review 22*(3), 421-436.

McWilliams, N. (1999). *Psychoanalytic case formulation.* The Guilford Press, New York.

Parish, T.S. (1996). Who are "at-risk" and what can we do to help them? *Journal of Reality Therapy, 15*(2), 90-99.

Pelco, L.E., Jacobson, L., Ries, R.R., & Melka, S. (2000). Perspectives and practices in family-school partnerships: A national survey of school psychologists. *School Psychology Review 29*(2), 235-250.

Reschly, D.J. & Wilson, M.S. (1995). School psychology faculty and practitioners: 1986 to 1991 trends in demographic characteristics, roles, satisfactions, and system reform. *School Psychology Review, 24*, 62-80.

Reynolds, C.R. & Kamphaus, R.W. (1994). *Behavior assessment system for children.* American Guidance Service, Inc., Circle Pines, MN.

Sells, S.P. Schiff, N., & Haley, J. (1999). *Treating the tough adolescent: A family-based, step-by-step guide.* The Guilford Press, New York.

Sheridan, S.M., & Steck, M.C. (1995). Acceptability of conjoint behavioral consultation: A national survey of school psychologists. *School Psychology Review 24*(4), 633-647.

Singh, N.N., Deitz, D.E., Epstein, M.H. & Singh, J. (1991). Social behavior of students who are seriously emotionally disturbed: A quantitative analysis of intervention studies. *Behavior Modification 15*(1), 74-94.

Skiba, R. & Casey, A. (1985). Interventions for behaviorally disordered students: A quantitative review and methodological critique. *Behavioral Disorders 10*(4), 239-252.

Smith, M.L. & Glass, G.V. (1977). Meta-analysis of psychotherapy outcome studies. *America Psychologist 32*, 752-760.

Sperry, L. (1999). *Cognitive behavior therapy of DSM-IV personality disorders.* Brunner/Mazel, Philadephia, PA.

Thomson, G.B. (1993). *A national survey of local authority psychological services*. Department of Education, University of Edinburgh.

U.S. Congress (1990). *PL 101-476 - Individuals with Disabilities Education Act.*

U.S. Congress (1997). *PL 105-17 - Individuals with Disabilities Education Act Amendments*.

U.S. Department of Health and Human Services (1999). *Mental Health: A report of the Surgeon General.* US Government Printing Office, Washington, D.C.

Witt, J.C. & Robbins, J.R. (1985). Acceptability of reductive interventions for the control of inappropriate child behavior. *Journal of Abnormal Child Psychology, 13,* 59-67.

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Using Performance Feedback to Increase the Billable Hours of Social Workers
A Multiple Baseline Evaluation

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One of the most frequent staff interventions is performance feedback. Programmatic simplicity, low cost, flexibility, and relative consistency have contributed to its popularity. The present study provided performance feedback to six social workers working in an intermediate care facility for the mentally retarded in an attempt to increase staff productivity and self-management skills. Graphical feedback was presented using a multiple baseline across subjects design. Feedback conveyed past, present, and future performance, and allowed recipients to better manage their time. Results suggest that performance feedback was effective, producing increases of about 10%, and that self-management and consumer satisfaction were also important aspects of the study.
Descriptors: performance feedback; OBM; self-management skills; human service settings

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The focus of organizational behavior management (OBM) is the use of behavior analytic principles and procedures to enhance performance in the work place. From the point of view of applied behavior analysis and human services, OBM focuses on improving the operation of human service agencies by maximizing the quality of staff work performance (Reid & Parsons, 2000). OBM has been used to improve staff performance in residential (Parsons, Reid, & Green, 1993) and day programs (Fleming & Sulzer-Azaroff, 1992) serving both children (Hundert, 1982) and adults (Sigafoos, Roberts, Couzens, & Caycho, 1992) in both the public (Suda & Miltenberger, 1993) and private sectors (Boudreau, Christian, & Thibadeau, 1993) of service provision. Most importantly, improvements in staff performance resulting from OBM applications are accompanied by improvements in measures of client welfare (Fleming & Reile, 1993).

One of the most popular ways in which staff performance has been augmented is by utilizing performance feedback (Komaki, Barwick, & Scott, 1978; Sulzer-Azaroff, 1978; Balcazar, Shupert, Daniels, Mawhinney, & Hopkins, 1989). Programmatic simplicity, low cost, flexibility, and relative consistency have made performance feedback an attractive procedure. An initial review of the literature (Balcazar, Hopkins, & Suarez, 1986) found that feedback did not uniformly improve performance, but that consistency was improved by pairing feedback with additional consequences for performing well. A more recent review (Alvero, Bucklin, & Austin, 2001) extended the previous work up until the present, and found that the consistency was most improved by pairing feedback with antecedents (i.e., goal-setting). Performance feedback has been used with populations as diverse as hockey teams (Anderson, Crowell, Domen, & Howard, 1988) and bank tellers (Crowell, Anderson, Abel, & Sergio, 1988), the electric utility industry (Petty, Singleton, & Connell, 1992), roofing crews (Austin, Kessler, & Riccobono, 1996) and the Russian textile industry (Welsh, Luthans, & Sommer, 1993), and with nursing home staff (Hawkins, Burgio, Lanford, & Engel, 1992) and hotel banquet staff (LaFleur & Hyten, 1995).

The vast majority of OBM research conducted to date has targeted the performance of paraprofessional or direct-care staff in human service agencies. In contrast, the performance of professional staff (other than teachers) has been the focus of OBM investigations much less frequently (Reid & Parsons 2000; Reid, Parsons, & Green, 1989). Professional staff in human services typically includes nurses, doctors, case managers, social workers, vocational counselors, speech pathologists, psychologists, and occupational/physical therapists. In a recent review of 244 OBM studies conducted since 1984 in settings serving people with developmental disabilities, only two investigations involving

professional staff other than teachers were identified (Schell, 1998).

Successful applications with psychiatric nurses (Ayllon & Michael, 1959), as well as other professional staff (Feldstein & Feldstein, 1990; Page, Iwata, & Reid, 1982) suggest that further such investigations are warranted. A recent example is a study by Robinson and Dow (2001) in which graphical feedback was provided to social workers in a mental health facility, and resulted in a 29% increase in billable hours. In another study, Langeland, Johnson, & Mawhinney (1998) presented an intervention package consisting of feedback, goal-setting, and praise to 16 clinical staff members in a community mental health agency. Findings indicated improvements in two of three targeted tasks, with maintenance of performance for more than two years. These studies also support the positive long-term effects of incorporating data based management into the public mental health system.

The present study examined the effectiveness of performance feedback provided to professional staff in a human service agency. In order to increase productivity and self-management skills, six social workers received cumulative graphical feedback that conveyed past, present, and future performance, once per week for 36 weeks.

Method

Participants and Setting

Six social workers, four females and two males, at an intermediate care facility for the mentally retarded (ICFMR) participated in the study. The participants had been in the field from 4 to 21 years and held Masters in Social Work (MSW) degrees. They were all supervised by a MSW who served as a liaison between the authors and the social workers.

Dependent Variable and Data Collection

Each social worker's job description included a prescribed number of billable hours of client casework. Client casework involved meeting with clients and attending to their needs in the home and community. The participants were required to perform 25 hours of case management per week in order for the facility to receive federal reimbursement. Budgets were calculated based on the expectation that each social worker would perform 25 hours of case management per week. If they did not perform these hours, then federal reimbursement would be less than anticipated, creating obvious budgetary/fiscal difficulties for the agency.

Billable hours were gathered by the supervisor and were based on self-reports, which the supervisor verified as needed. Compliance with the program was defined as instances in which participants reported their billable hours to the supervisor on time. When the supervisor did not receive the hours at the end of the week, a written and verbal prompt was then provided. If a participant did not then report their hours, the event was considered an instance of noncompliance.

Experimental Design and Procedure

The presentation of feedback was determined by a multiple baseline across participants design. The first phase (A) was the baseline period, which lasted anywhere from five to 11 weeks depending on the participant. The Governor's announcement is referred to as A' when it occurred, and we maintained that designation during the reversal beginning at week 20. The next phase (B) was the intervention phase that consisted of graphical feedback given to participants on a weekly basis. This period was introduced in a staggered fashion across participants and lasted anywhere from two to eight weeks. The next phase (A') was a reversal period in which graphical feedback presentation was discontinued until further notice.

This condition lasted nine weeks for all participants. The final phase (B) was a return to the intervention condition, which lasted six weeks for all participants.

Programmatic constraints limited the study to 9 months. The baseline period lasted from 5 to 11 weeks, depending on the condition to which the participants were assigned. The length of baseline periods between participants would have been more systematic, but an unexpected event occurred during the course of our study. In the 11th week of the 36-week study, the Governor of the State of Nevada announced cutbacks that would affect the institution where this study took place. This was an unexpected and unavoidable circumstance that may have altered behaviors above and beyond what was already being done.

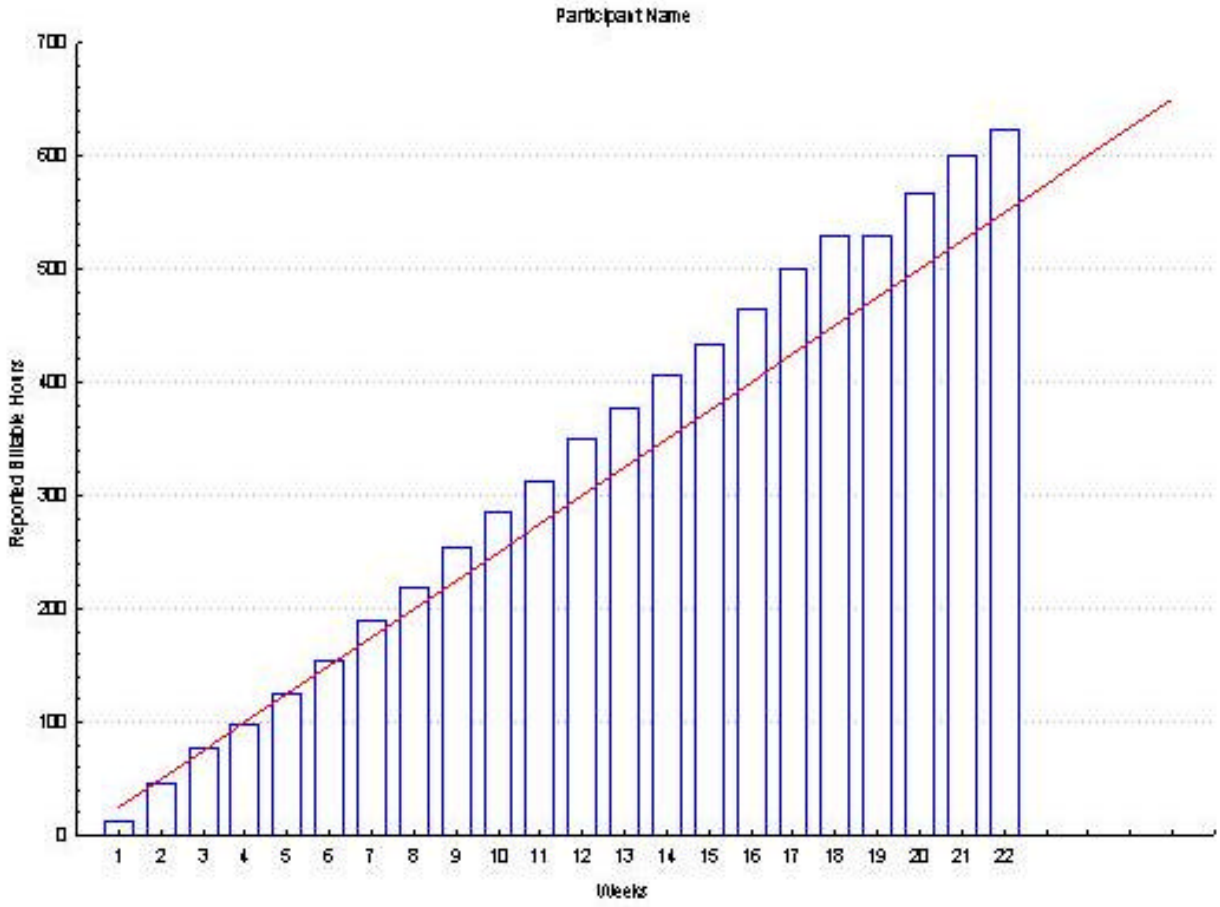

Figure 1. Example of the kind of feedback social workers received showing cumulative number of reported billable hours per week.

Cumulative graphical feedback was delivered, once per week, for 36 weeks (see Figure 1). The ordinate (Y-axis) showed the number of billable hours and each point on the abscissa (X-axis) corresponds to a week of time. The accelerating diagonal line represents the cumulative number of billable hours required by the institution and the state. The bars are the cumulative billable hours reported by the social worker. Performance feedback was cumulative and showed the participants how well they had done in the past, how well they were doing presently, and how well they would need to do in the future. Individual graphs were not publicly posted, at the behest of the agency's director. If and when

participants had questions about how to interpret the feedback, the first author gave a prompt explanation. This explanation was in addition to instructions given to participants at the beginning of the study and again when they received graphical feedback.

Results and Analyses

The Governor's announcement implied layoffs, and the first to go are normally the newest employees. Since only newer employees would be affected by any subsequent layoffs, seniority effects were analyzed and not found to be significant. In fact, none of the participants were particularly vulnerable to layoffs. Those most prone to layoffs in this case were nonprofessional staff, such as direct care workers.

The following conventions apply to all graphs in Figure 2. The abscissa shows the duration of the study in weeks. The study lasted 36 weeks for participants A, C, D, E, F, and 30 weeks for Participant B. The number of reported billable hours is represented on the ordinate. This is the number of billable hours that each participant reported working to his/her supervisor. Figure 2 shows the data graphed for each of the six social workers. There are several dimensions along which we will delineate each of the participants' behaviors: the Governor's announcement, compliance with the overall system, and feedback effectiveness.

The Governor's announcement was universally effective. That is, all participants reported significantly higher numbers of billable hours during this period. Participant C (bottom-left, Fig. 2) was extremely sensitive to the new contingencies, in fact, this participant tended to use the feedback as an anchor, *decreasing* their hours up until the reintroduction of feedback during the 29th week.

Figure 2 on Page 95

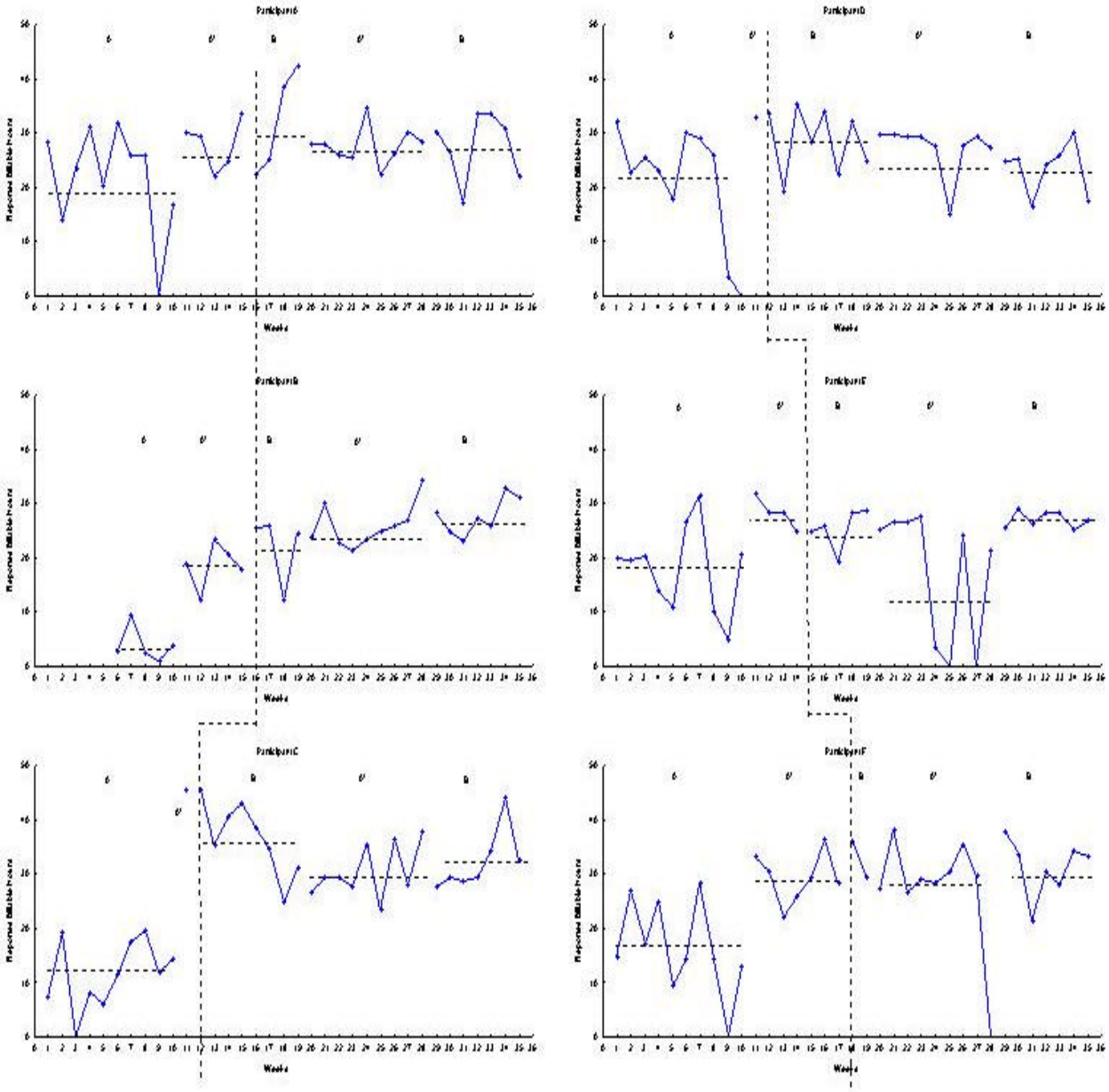

Figure 2. Number of reported billable hours per week. A = Baseline, B = Feedback, C = No feedback, B = Feedback. The ordinate consists of the number of billable hours, and the abscissa shows each of the five conditions or phases.

During treatment, subjects were more likely to report their hours to the supervisor in a timely manner. This was described as compliance. For 4 out of 6 participants (A, C, D, F) there was at least one noncompliance point during baseline. No employee neglected to turn in his/her hours subsequent to the Governor's announcement, or during the first treatment phase that followed. Two participants (E, F) were noncompliant during the reversal condition in which no feedback was given. During the reintroduction of the treatment phase, all of the participants reported their billable client hours to their supervisor.

The effectiveness of graphical feedback is also shown in Figure 2. The dotted horizontal lines overlaying each of the phases represent the means for that series. Three participants (A, B, F) showed an increase in their numbers of reported billable hours during the treatment phase, even after the Governor's announcement inflated the data. Thereafter, a reversal and reintroduction were imposed to evaluate the strength of the intervention without the inflation effect of the Governor's announcement. Withdrawal of the intervention produced predictable results for five of the participants (A, C, D, E, F); their performances decreased upon withdrawal. Inexplicably, participant B's hours increased upon withdrawal. Upon reintroduction of the treatment, one participant's (D) hours decreased. The other participants' (A, B, C, E, F) performances increased accordingly.

Obviously, the data in Figure 2 contain a large amount of variability. Therefore, Figure 3 is introduced in order to make some sense of this variability. It presents a summary of the data, using a box and whisker plot, for all six social workers. This figure condenses the amount of information while retaining the general variability displayed in Figure 2. The points inside each of the boxes represent means. The boxes represent the standard error (SE) of each mean and the whiskers are the standard deviation (SD) of each mean. The SE – computed as the standard deviation divided by the square root of n – is a measure of the accuracy or variability of the sample mean. The SD – computed as the square root of the sum of squared deviations (from the mean) divided by n-1 – is a measure of the variability of the sample. Therefore, Figure 3 conveniently shows the accuracy of each of the means (SE) and the variability of the data itself (SD).

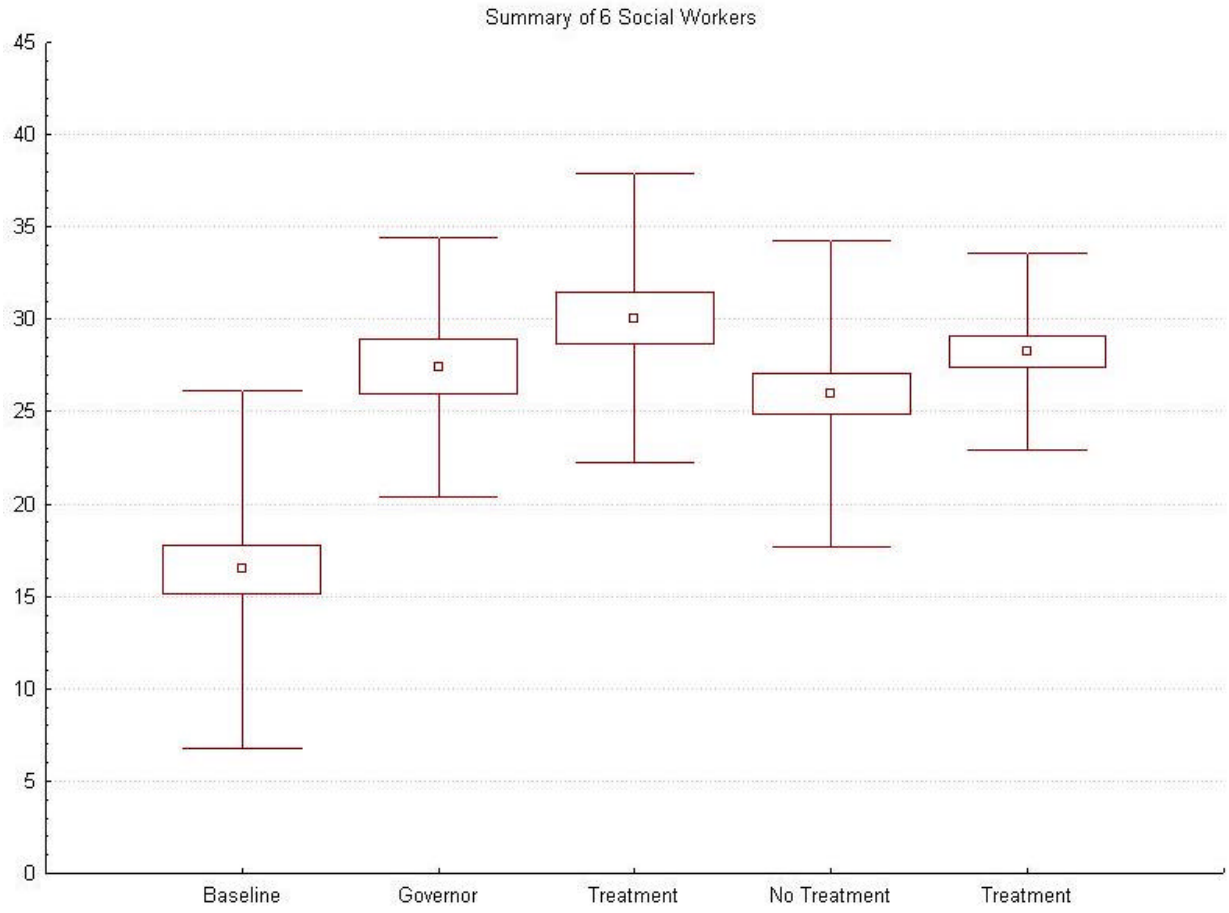

Figure 3. Summary of the six social worker's reported billable hours.

The inclusion of descriptive statistics herein is done solely to facilitate discussion of the large variability in the data, not to conceal it. During baseline, the mean was comparatively low at 16 hours. After the Governor's announcement the mean increased to 27 hours, and then increased 10% to 30 hours during the treatment phase. Upon removal of the treatment the mean decreased to 25.3 hours and then increased 11% to 28.5 hours with the return of graphical feedback. Both the accuracy of the mean and variability in the data improved during the last phase of the study. The standard error and standard deviations were relatively consistent until the last phase when both decreased markedly.

Discussion

The data in Figure 2 indicate that for four of the participants (A, C, E, & F) graphical feedback was effective in increasing the number of reported billable hours. The Governor's announcement makes interpreting the first introduction of feedback (B) problematic, but all four participants reduced their hours upon withdrawal of the intervention (A') and then increased their reported hours when the feedback was reintroduced (B). The variability of the data in Figure 2 and the Governor's announcement prompted the creation of Figure 3. In this figure, the data from all six participants was combined which allows easier interpretation of the intervention's efficacy. Overall, the Governor's announcement dramatically increased the number of reported billable hours. This was obvious and unavoidable, and yet the subsequent introduction of feedback increased those hours even further (10%). The effect was not as dramatic as the previous unintended event, but remarkable given the obvious saliency of the Governor's actions. The number of reported billable hours decreased upon withdrawal of the treatment and then increased 11% following the reintroduction of performance feedback.

An obvious limitation in the current study was the reliance on self-report data. The supervisor verified the hours reported by her staff and assured us that the hours were accurate. Reliability measures were not considered necessary by the supervisor and thus not provided to us. Future studies could be improved in at least two related ways. First, inclusion of reliability checks of the social workers reported and actual hours, and second, focus on *actual* billable hours as the outcome measure as opposed to *reported* billable hours.

To see how they had done, how they were doing, and the number of hours they must work in the future proved useful individually. Staff began to use the figures to plan ahead for vacations by building up a surplus of hours and then taking some time off. According to staff comments, the ability to see how they were doing made their jobs easier by giving them more control over time management and scheduling of their activities. This additional individual control may have contributed to the variability seen in the data. The cumulative nature of the feedback encouraged recipients to vary their hours in an erratic fashion. For example, they could spend 30-35 hours in billable activities one week, and then only spend 15-20 hours on the same activities the following week.

As is often the case with interventions involving professional staff, the most salient feature may have been the self-management component of graphical feedback (Andrasik & Heimberg, 1982). The feedback allowed the staff to manage their time more effectively than they had previously. At the end of the consultant's contract the first author was rehired to implement the feedback system permanently, which involved training staff in the collection of data and the creation of graphs. Informally, this seemed to indicate a high degree of procedural acceptability (Parsons, 1998). The professional staff and administration were satisfied with the intervention, and agreed that they had received useful information in return for their compliance in data collection.

An acceptable intervention using professional staff within a human service setting is a step forward for several reasons. First, management was satisfied with the data they were collecting. It was an objective measure of staff productivity and added some accountability to the system. It was also a very

low cost and easy to implement procedure. Further, these data were required in order to continue receiving financial reimbursement from the state of Nevada. Second, the social workers gained control over their daily activities and were allowed to take a more active role in the budgetary issues that management was already confronting. This type of empowerment was a positive change for staff that had been accustomed to less input regarding their time as well as the resources of the agency. Lastly, the agency-wide acceptance of performance feedback indicates a high degree of social validity, which is a significant accomplishment in itself.

References

Alvero, A. M., Bucklin, B. R., & Austin, J. (2001). An objective review of the effectiveness and essential characteristics of performance feedback in organizational settings. *Journal of Organizational Behavior Management*, *21*(1), 3-29.

Anderson, D. C., Crowell, C. R., Domen, M., & Howard, G. S. (1988). Performance posting, goal setting, and activity-contingent praise as applied to a university hockey team. *Journal of Applied Psychology*, *73*, 87-95.

Andrasik, F., & Heimberg, J. S. (1982). Self-management procedures. In L. W. Frederiksen (Ed.), *Handbook of organizational behavior management* (pp. 219-248). New York: John Wiley & Sons, Inc.

Ayllon, T., & Michael, J. (1959). The psychiatric nurse as behavioral engineer. *Journal of the Experimental Analysis of Behavior*, *2*, 323-334.

Austin, J., Kessler, M. L., Riccobono, J. E., & Bailey, J. S. (1996). Using feedback and reinforcement to improve the performance and safety of a roofing crew. *Journal of Organizational Behavior Management, 16*(2), 49-75.

Balcazar, F. E., Hopkins, B. L., & Suarez, Y. (1986). A critical, objective review of performance feedback. *Journal of Organizational Behavior Management, 7*, 65-89.

Balcazar, F. E., Shupert, M. K., Daniels, A. C., Mawhinney, T. C., & Hopkins, B. L. (1989). An objective review and analysis of ten years of publication in the Journal of Organizational Behavior Management. *Journal of Organizational Behavior Management, 10*, 7-37.

Boudreau, C. A., Christian, W. P., & Thibadeau, S. F. (1993). Reducing absenteeism in human service settings: A low cost alternative. *Journal of Organizational Behavior Management, 13*(2), 37-50.

Crowell, C. R., Anderson, D. C., Abel, D. M., & Sergio, J. P. (1988). Task clarification, performance feedback and social praise: Procedures for improving the customer service of bank tellers. *Journal of Applied Behavior Analysis, 21*, 65-71.

Feldstein & Feldstein (1990). Positive reinforcement for submission of timely reports by professional staff in a residential facility. *Education & Training in Mental Retardation, 25*(2), 188-192.

Fleming, R. K., & Reile, P. A. (1993). A descriptive analysis of client outcomes associated with staff interventions in developmental disabilities. *Behavioral Residential Treatment, 8*, 29-43.

Fleming, R., & Sulzer-Azaroff, B. (1992). Reciprocal peer management: Improving staff instruction in a vocational training program. *Journal of Applied Behavior Analysis, 25*, 611-620.

Hawkins, A. M., Burgio, L. D., Lanford, A., & Engel, B. T. (1992). The effects of verbal and written supervisory feedback on staff compliance with assigned prompted voiding in a nursing home. *Journal of Organizational Behavior Management, 13,* 137-150.

Hundert, J. (1982). Training teachers in generalized writing of behavior modification programs for multihandicapped deaf children. *Journal of Applied Behavior Analysis, 15*, 111-122.

Komaki, J., Barwick, D., & Scott, L. R. (1978). A behavioral approach to occupational safety: Pinpointing and reinforcing sale performance in a food manufacturing plant. *Journal of Applied Psychology, 4*, 434-445.

LaFleur, T., & Hyten, C. (1995). Improving the quality of hotel banquet staff performance. *Journal of Organizational Behavior Management, 15,* 69-93.

Langeland, K. L., Johnson, C. M., & Mawhinney, T. C. (1998). Improving staff performance in a community mental health setting: Job analysis, training, goal setting, feedback, and years of data. *Journal of Organizational Behavior Management, 18*(1), 21-43.

Page, T. J., Iwata, B. A., & Reid, D. H. (1982). Pyramidal training: A large-scale application with institutional staff. *Journal of Applied Behavior Analysis, 15*(3), 335-351.

Parsons, M. B. (1998). A review of procedural acceptability in organizational behavior management. *Journal of Organizational Behavior Management, 18*(2/3), 173-190.

Parsons, M. B., Reid, D. H., & Green, C. W. (1993). Preparing direct service staff to teach people with severe disabilities: A comprehensive evaluation of an effective and acceptable training program. *Behavioral Residential Treatment, 8,* 163-186.

Petty, M. M., Singleton, B., & Connell, D. W. (1992). An experimental evaluation of an organization incentive plan in the electric utility industry. *Journal of Applied Psychology, 77,* 427-436.

Reid, D. H., & Parsons, M. B. (2000). Organizational behavior management in human service settings. In J. Austin & J. E. Carr (Eds.), *Handbook of applied behavior analysis* (pp. 275-294). Reno, NV: Context Press.

Reid, D. H., Parsons, M. B., & Green, C. W. (1989). *Staff management in human services: Behavioral research and application*. Springfield, IL: Charles C. Thomas.

Robinson, K. E., & Dow, R. T. (2001). Using graphical feedback to increase social workers' productivity. *Administration in Social Work, 25*(3), 53-64.

Schell, R. M. (1998). Organizational behavior management: Applications with professional staff. *Journal of Organizational Behavior Management, 18*(2/3), 157-171.

Sigafoos, J., Roberts, D., Couzens, D., & Caycho, L. (1992). Improving instruction for adults with developmental disabilities: Evaluation of a staff training package. *Behavioral Residential Treatment, 7,* 283-297.

Suda, K. T., & Miltenberger, R. G. (1993). Evaluation of staff management strategies to increase positive interactions in a vocational setting. *Behavioral Residential Treatment, 8,* 69-88.

Sulzer-Azaroff, B. (1978). Behavioral ecology and accident prevention. *Journal of Organizational Behavior Management, 2*, 11-44.

Welsh, D. H., Luthans, F., & Sommer, S. M. (1993). Managing Russian factory workers: The impact of U. S. based behavioral and participative techniques. *Academy of Management Journal, 36*, 58-79.

The Thought Change System
An Empirically Based Cognitive Behavioral Therapy For Male Juvenile Sex Offenders
A Pilot Study

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Recent research in treatment of sexual offenders suggests that comprehensive cognitive-behavioral approaches may yield significant decreases in deviant acting-out behaviors. The current pilot study examined such a treatment called the Thought Change System, which is an empirically based cognitive-behavioral therapy, in a residential treatment center, existing in Portsmouth, Virginia. This system includes the identification of the functions of the negative thoughts, feelings, behaviors, and beliefs, and replacing them with transitional thoughts, feelings, behaviors, and beliefs, and finally alternative beliefs. The Thought Change System also implements the Case Conceptualization Method based an adaptation of the Beck (1998) suggested methodology of mode deactivation. The offenders were adolescent males, age's 11- 18, who have a history of failed treatment at prior placements or outpatient treatment centers. The results of this study indicate that a cognitive-behavioral methodology that addresses the underlying personality traits may be effective for severely disturbed sexual offending adolescents; evident by reduced psychological distress, reduced sex offending risk, and reduced aggressive beliefs.
KEY WORDS: cognitive/behavioral treatment; juvenile sexual offenders; cognitive distortions; case conceptualization; sexual offender treatment

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The following description proposes the type of treatment for juvenile sex offenders as treated by the Behavioral Studies Program (BSP) at The Pines Residential Treatment Center (The Pines) in Portsmouth, Virginia. The proposed typology is based on the collected works of Richardson, Kelly, Bhante, and Graham (1997); Awad and Saunders (1991); Monto, Agourides, and Harris (1998); Becker and Kaplin (1991); Becker & Hunter (1998); and Hunter (1989). The Pines offers residential treatment for male and female sex offenders. Ninety-eight percent of residents report a prior history of victimization, including sexual, physical, emotional, and/or environmental abuse(s). In support of Hunter and Becker's (1997) review, these residents report their own victimization to have occurred during an early developmental ages (2-5years). In addition, few residents talked about or acknowledged their abuse(s) until years after the abuse occurred. A prior history of victimization at a young age, and few disclosures appear to be consistent in the histories of those that sexually offend and victimize. Statistical support for this premise is evident in the male population at The Pines. Up to 93% of male BSP residents have been victimized in all four of the above abuse parameters. The juvenile sex offender falls primarily into two major types: those who target children and those who offend against peers or adults (Hunter, 1989). The major difference present in these two groups is based on the age difference between the victim and the offender. Child offenders have been defined as those who target children five or more years younger than themselves (Hunter & Mathews, 1997).

The presence of deviant arousal is often found in juvenile male child molesters who offend against young males, and may be indicative of early onset pedophilia. Indications of non-sexual delinquency and generalized antisocial tendencies have been found most frequently in backgrounds of juveniles who have engaged in aggressive sexual offending. Specific psychological diagnoses are associated for those with a history of prior abuse. For example, a child with numerous early childhood traumas may cause a later diagnosis of Posttraumatic Stress Disorder (PTSD). Johnson, Cohen, Brown, S., and Bernstein (1999) suggest in their longitudinal study that early childhood trauma victims are considerably more likely than those who were not abused or neglected to have Personality Disorders (PD) and elevated PD symptoms, particularly those PD within the Cluster B spectrum as outlined within DSM-IV-TR (APA, 2000). The Cluster B PD

spectrum includes those with an underlying commonality of emotion, or some difficulty with regulating emotion. Cluster B includes the Borderline, Narcissistic, Antisocial, and Histrionic Personality Disorder. However, for those with prior history of abuse, The Pines residents traditionally demonstrate symptoms in the Cluster B spectrum, in addition to symptoms from other clusters, including severe distortions and heightened anxiety. The core curriculum at BSP is based on a unique model of cognitive behavior therapy. The concept is predicated on changing the clusters of dysfunctional beliefs that are prevalent in adolescent sex offenders; this concept is accomplished through BSP's *Thought Change Book* (Apsche, 1999). The Thought Change concept requires each resident to carry a manual and record all negative thoughts. The milieu, the individual therapy, and groups revolve around the record of negative thinking and the associated behaviors as a result of their cognition that propels the resident into his sexual offense system. For those residents who have learning disabilities and reading problems, the entire curriculum is available on audiotape.

The current pilot study examined the effect of the Thought Change System on 10 adolescent inmate sex offenders' beliefs system. This includes the identification of the functions of the negative thoughts, feelings, behaviors and beliefs, and replacing them with transitional thoughts, feelings, behaviors, and beliefs, and finally alternative beliefs. These residents have a history of failed treatment at prior placements or outpatient treatment centers. The results of this study indicate that a cognitive-behavioral methodology that addresses the underlying personality traits may be effective for severely disturbed sexual offending adolescents.

METHOD

Description of Program

Typology and the Thought Change System

The Thought Change Process is designed to treat a conglomerate of personality disorders. The treatment of the higher risk, aggressive sex offender focuses on specific deviant sexual arousal and antisocial sub-structure. For the same-sex offender of young children who continues to show deviant interest in young victims, the Thought Change Process addresses the specific indices of this sub-group. The Thought Change Process explores deficits in self-esteem, social competency, and frequent depression. Many of these youths display severe personality disorders with psychosexual disturbances and high levels of aggression and violence; therefore, the Thought Change Process also focuses on the specific individual indices of these issues by identifying and modifying the complex system of beliefs.

The Thought Change and Belief Change curriculum consists of a structured treatment program, which addresses the dysfunctional beliefs that, endorse sex offending behaviors. Topics in the Thought Change curriculum include the following: Daily Record of Negative Thoughts, Cognitive Distortions, Changing Your Thoughts, Sexual Offense System, System of Aggression and Violence for Sex Offenders, Moods (how to change them), Beliefs (how it all fits together), Responsibility, Healthy Behavior Continuum, Beliefs and Substance Abuse, Beliefs and Empathy, The Beliefs of the Victim/Offender, The Victim/Victimizer, and the Mental Health Medication System. The sections of the Thought Change Book are designed to progress sequentially through therapy. It is a record of dysfunctional beliefs prior to, during, and following the sexual offense.

The offense belief change system is unique to BSP. The Thought Change System also addresses the psychological underpinnings of the prevalent diagnoses of PTSD within sex offender population. The symptomatology of PTSD has been found in varying presentations among juvenile sex offenders, including dysthymia, anxiety reactions, and some sexual and aggressive acting out. The intrusive images and heightened arousal associated with PTSD may be associated with repetition compulsion and reenactment phenomena. Within The Pines program, the cognitive behavior methodology, especially the

Thought Change System in conjunction with antidepressant medication, has been found to be effective in treatment of PTSD.

The Thought Change System includes imagery and relaxation to facilitate cognitive thinking and then balance training. Balance training includes teaching the individual to balance perception and interpretation of information and internal stimuli. This is based on Linehan's (1993) Dialectical Behavior Therapy methodology. The individual first radically accepts that he endorses multiple dysfunctional beliefs. These beliefs are then paired with the behaviors, as the reactive process of the emotional dysregulation of the individual. The individual is taught through collaboration how to address their triggers and to understand how they activate their beliefs and how these beliefs result in problem behavior. By accepting and understanding these beliefs, the individual is able to regulate the emotion and balance their beliefs. The Imagery exercises are implemented to reduce the externalization of the emotional dysregulation.

The program has also been specialized for individuals who are intellectually limited and psychosexually disturbed. All clinical, educational, and vocational programming is presented in a manner consistent with the level of intellectual and psychosocial functioning of these individuals. The curriculum has been tailored to their level of functioning, yet remains consistent with the defined treatment domains within the Thought Change and Belief Change systems.

Case Conceptualization

The Case Conceptualization Method is based on an adaptation of the Beck (1996) suggested methodology of mode deactivation. The purpose of this specific type of cognitive case conceptualization is to holistically and comprehensively identify the multisystem components for each resident, and to specifically identify those personality issues that are impediments to treatment.

Therapeutic Phase System

The treatment of all residents in the program is organized into phases of approximately sixteen weeks duration. All residents must complete three major phases of treatment, with some youths then entering a more prolonged phase of transitional living. Each phase of treatment provides a series of specialty groups (typically 3 to 4), that run concurrently with one another. Residents also participate in on-going individual and family therapies. In addition, adjunctive psychiatric, educational, vocational, and recreational therapeutic services are provided. The program utilizes objective assessment in addition to staff observation to determine resident mastery of therapeutic goals, and readiness to progress to a subsequent phase of treatment.

Participants

Ten male sexual offenders from the Behavioral Studies Program (BSP) at the Pines Residential Treatment Center (6 African-Americans, 2 Eskimo-American, 1 European-American, and 1 Hispanic American) between ages 11 and 18 years (x=13.5) participated in the Thought Change Program. Accumulated data from prior positive treatment outcomes at The Pines has demonstrated that the Thought Change Program is an empirically supported cognitive-behavioral based treatment. All participants were first-time admissions to BSP and had never participated in a cognitive-behavioral based sexual offending treatment program before. Informed consent including the tasks involved, and participants' rights were reviewed. Both verbal and written consent was obtained from the participants. Their mean estimated length of stay was 18.3 months (SD= 3.53, range 12-23), mean estimated number

of victims was 2.4 (SD=3.4, range 1-12). Types of offenses included flashing, fondling, vaginal and anal penetration, or a combination.

Measures

Social History Information - BSP Youth Version is a self-report survey administered during the admission process to acquire background information regarding the resident. *Youth Self-Report (YSR; Achenbach, 1991)* is a multiaxial assessment designed to obtain 11- to 18-year-olds' reports of their own competencies and problems in a standardized format. The means and standards are divided into three categories: internalizing (which measures withdrawn, somatic complaints, anxiety and depression), externalizing (which measures delinquent behavior and aggressive behavior), and total problems (which represent the conglomerate of total problems and symptoms, both internal and external).

Beliefs Assessments (Apsche, 2000)- includes four assessments:

The Beliefs About Intimacy assessment measures specific idiosyncratic means expressing beliefs about close relationships. The factors that are analyzed consist of (a) how our attitudes are related to the attitudes of others (b) what specific elements are included in positive, negative, and overall attitudes.

The Beliefs About Control includes 31 statements which reflect feelings and attitudes toward power, control, and authority.

The Beliefs About Victims includes 20 statements based on faulty beliefs about victims of sexual offenses. It represents a measure of cognitive distortions that sex offenders endorse.

The Beliefs About Aggression consist of 25 statements, which measures dysfunctional beliefs/cognitive distortions about aggression.

Child Behavior Checklist (CBCL; Achenbach, 1991)- The CBCL means and standards are divided in the same format as the YSR. The therapist completed this form.

Fear Assessment (Apsche, 2000) is a 60-question assessment that measures fear and anxiety reactions that are related to or are associated with the symptoms of Posttraumatic Stress Disorder. Mean scores are divided into five sections, which include personal reactive/internal, personal reactive/external, environmental, physical, and abuse. Any mean score above 2 is considered significant. This form was simultaneously completed by both the therapists and the residents

Devereux Scales of Mental Disorder (DSMD; The Devereux Foundation, 1994) illustrates level of functioning in comparison to a normal group, via behavioral ratings. T scores have a mean of 50 and a standard deviation of 10; a score of 60 or higher indicates an area of concern. The therapists completed this form.

Juvenile Sex Offender Assessment Protocol (J-SOAP; Prentky, Harris, Frizzell, Righthand, 2000) is an actuarial risk assessment protocol for juvenile sex offenders.

Procedures

The residents were administered a test packet (resident packet), which included the Beliefs Assessments and Youth Self Report. The objective assessments were completed upon admission and at six months

intervals. The initial administration included a reading exercise to determine the residents' level of reading and comprehension. Within this initial stage of treatment, the assigned therapist was given a clinician's packet (which consisted of the Fear Assessment, DSMD, J-SOAP, and CBCL). The initial assessments within the packet are provided and designed to determine a baseline of behavior. Like the residents' packets, the clinicians' packets were administered at six-month intervals. The following were assessed:

(a) Behavioral and emotional problems, including psychopathology (total scores from DSMD)
(b) Strengths and types of fear (total mean scores on 5 scales from the Fear Assessment)
(c) Level and types of beliefs endorsed; including control, aggression, victim, and intimacy (totals from Beliefs Assessments)
(d) Behaviors and thoughts that are self-reported and observed by residents and therapists (total T scores from YSR and CBCL)
(e) Level of risk to the community (total score from J-SOAP)

RESULTS

Devereux Scales of Mental Disorders

The DSMD has a mean of 50 and a standard deviation of 10. Any score over 60 is considered clinically significant. The following four scales were analyzed: (1) Externalizing, which indicates prevalence of negative overt behaviors or symptoms, (2) Internalizing, which measures negative internal mood, cognitions, and attitudes, (3) Critical Pathology, which represents the severe and disturbed behavior in children and adolescents, and (4) Total, which indicates a conglomerate of all scores including general Axis I pathology, delusions, psychotic symptoms, and hallucinations.

After 12 months of the Thought Change System, mean scores that represent overt behaviors, decreased from 54.4 (SD=10, Range=40-75) to 50.6 (Range=41-71). Results from the internalizing scales illustrate a significant decrease in externalizing behaviors from 64.0 (SD=10, Range 43-95) to 52.2 (Range=40-73). Critical Pathology scores demonstrate a significant change from 57.0 (SD=10, Range=43-84) to 47.50 (42-67), which demonstrates a decrease in severe/disturbed behaviors after 12 months of treatment. The total score were reduced from a mean of 59.4 (SD=10, Range=42-89) to 49.9 (Range=42-67) after a 12-month period.

Child Behavior Checklist

The CBCL means and standards deviations are divided into three categories: internalizing, externalizing, and total problems. The internal mean scores, after a 12- month period decreased from 65.5 (SD=8.6, Range=55-83) to 55.7 (SD=10.06, Range=39-70). The external mean scores decreased, from 67.2 (SD=8.90, Range=47-79) at the initial assessment to 56.9 (SD=12.28,Range=32-75) at final assessments. The total scores decreased significantly from 68.5 (SD=11.2, Range=54-93) in the first round to 57.4 (SD=l 1.6, Range=43-77) in the third round.

Youth Self Report

Internalizing means decreased slightly from 55.4 (SD=7.3 1, Range=41-63) to 52.6 (SD=6.46, Range=43-68), after a 12-month period. Externalizing means decreased from 58.1(SD=7.94, Range=45-67) to 55.6 (SD=6.92, Range=46-66) after the third assessment. The total scores indicate a decrease from 60.5 (SD=8.44, Range=45-70) to 53.6 (SD=6.35, Range=48-68), after a one year period.

Beliefs Assessments

Beliefs About Victims baseline score was 44.2 (SD=10, Range=20-72) and after twelve months in the Thought Change System, the final score was 25.9 (SD=10, Range=20-40). Beliefs About Aggression score decreased significantly from 77.5 (Range=44-119) to 51.3 (SD=10, Range=27-77) after a one-year period. Beliefs About Intimacy total score increased tremendously from 23 (SD=-10, Range=-12-66) to 43.3 (Range=O-78); which represents the desire to engage in an appropriate intimate relationship. Beliefs About Control total score increased from 35.8 (SD=10, Range=3-81) to 59.7 (Range=23-106); which indicates an increase in desire to develop egalitarian relationships.

Juvenile Sexual Offender Adolescent Protocol

The total mean scores decreased from 25.9 (SD=1.67, Range=12-41) at the six months point in treatment to 19.9 (SD=1.44, Range=12-31) at 12 months of treatment.

DISCUSSION

This was a pilot study of treatment of adolescent male sex offenders with a conglomerate of personality disorders. All of the residents had prior unsuccessful treatment outcomes at either another facility or at an outpatient treatment center. The results of this study indicate that a cognitive-behavioral methodology that addresses the underlying personality traits may be effective for severely disturbed, previous treatment failure, sexual offending adolescents.

The combination of results from the DSMD, CBCL, and YSR suggest that CBT treatment is effective for these typologies in reducing internal distress as a result of varying psychological disorders present. As measures indicated, the critical pathology factor was reduced by more than one standard deviation. It also suggests that this particular CBT methodology has an effect on reducing externalizing aberrant behaviors. The CBT, specifically the Thought Change System, also influenced a reduction in aggressive cognition in the typologies. This suggests that there may be a relationship between aggressive cognition and aggressive behavior. The significant reduction in the victim beliefs implies that the individuals may have developed a sense of empathic responses to understand how their dysfunctional cognition is related to their sexual offending behavior.

CONCLUSION

The results suggest that the implementation of the Thought Change System reduced internalizing, externalizing, and critical pathology measures across assessments; however, the small sample size of the pilot may limit generalizability. It is important to note that this pilot study also suggests those sexual offending adolescents, in the described typology, have a conglomerate of personality beliefs. Treating sex offending behaviors without addressing the underlying personality beliefs appears to be related to recidivism. This study represents the first successful empirically validated attempt to treat this specific typology.

REFERENCES

Achenbach, T.M. (I 99 *1). Manual for the Child Behavior Checklist and 1991 Profile.* Burlington, VT: University of Vermont Department of Psychiatry.

Achenbach, T.M. (1991). *Manual for the Youth Self Report and 1991 Profile.* Burlington, VT: University of Vermont Department of Psychiatry.

Amidon, E.J., Amidon, M.G., Apsche, J.A., Silvertnan, M.L., and Stivers, E.H,

(1992). *The Intimacy Manual: Balancing Control and Intimacy in the Bedroom and Boardroom.* Morrisville, PA: International Information Associates.

Apsche, J.A. (I *999) Thought Change Workbook.* Portsmouth, VA: Alternative Behavioral Services,

Awad, G.A. & Saunders, E.B. (1991). Male adolescent sexual assaulters: clinical observations. *Journal of lnterpersonal Violence, 6,* (4), 446-460.

Beck, A.T. (1996). Beyond Belief. A Theory of Modes, Personality, and Psychopathology. In P.M. Salkovskis (Ed.), *Frontiers of Cognitive Therapy* (pp. 1-25). New York, NY: The Guilford Press.

Becker, J.V. & Hunter, J.A. (1997). Understanding and treating child and adolescent sexual offenders. *Advances in Clinical Child Psychology, 19,* 177-196.

Hunter, J.A. (I 999). Adolescent sex offenders. *Handbook of psychological Approaches with Violent Offenders: Contemporary Strategies and lssues, 117-129,*

Hunter, J.A. & Mathews, R. (1997). Sexual deviance in females: psychopathology, theory, assessment, and treatment. *Handbook of Sexual Deviance Theory and Application, 465-480*

Prentky, R., Harris, B., Frizzell, K. and Righthand, S. (2000). An actuarial procedure for assessing risk with juvenile sex offenders. *Sexual Abuse: 4 Journal of Research and Treatment, 12,* (2), 71-93

Richardson, G., Kelly, T.P., Bhante, S.R., and Graham, F. (1997). Group differences in abuser and abuse characteristics in a British sample of sexually abusive adolescents. *Sexual Abuse: A Journal of research and Treatment, 9,* 239-257.

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Due to changes in editorial and production staff, an unedited version of the following article was inadvertently published in BAT Vol. 4, No. 3. The corrected version appears below. All citations for this article relating to BAT 4.3 should be disregarded and the current citation to the following corrected version of the Moxley article (BAT 5.1, Pg. 108) should be used instead. The Editors apologize to our readers for any inconvenience caused by this error.

Pragmatic Selectionism
The Philosophy of Behavior Analysis

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The following presents two sources for the philosophy underlying behavior analysis as it has come to be represented in the tradition of the later B. F. Skinner's radical behaviorism—Darwinian selectionism and pragmatism primarily in the Peircean tradition. Both show organizations according to probabilistic three-term contingencies, but at different levels, Darwin for species, pragmatists for meaning. Peirce shows key similarities with Darwin, and the later Skinner shows key similarities with Darwin and Peirce. In contrast to his early S-R behaviorism supported by mechanism and positivism, the philosophy that characterized Skinner's later work was a pragmatic selectionism.
Keywords: Darwin, Dewey, evolution, James, Peirce, positivism, pragmatism, selectionism, Skinner

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To the extent that behavior analysts support Skinner's radical behaviorism in contrast to his earlier S-R behaviorism, the following presents the philosophy of behavior analysis as a philosophy of pragmatic selectionism. The early Skinner (1931/1999, pp. 478-487) traced the reflex back to Descartes in a history of physiology that included Marshall Hall and Pavlov. Later, Skinner (1963/1969, pp. 223-226) traced his radical behaviorism from Darwin to Romanes to Morgan to Thorndike, all of whom advanced connections with natural selection, and to others who did not ("In his article in the *Encyclopedia Britannica* Watson [had also] traced a concern with the consequences of behavior to C. Lloyd Morgan and Edward L. Thorndike," Skinner, 1981/1987, p. 188). The originator in each historical series is revealing. Descartes advanced the if-then *stimulus* and *response* reflex, and Skinner (1931/1999) saw that by definition the relation between the stimulus and the response was one of "*necessity*" (p. 449) and an essential part of the mechanistic theory he was then advancing. Skinner said, "The stimulus is an essential part of a mechanistic theory of behavior, whether the notion is arrived at through observation…or argued from physical necessity or mechanical analogy, as it was with Descartes" (p. 480). In contrast, Darwin advanced an analysis according to a three-term *probabilistic* contingency of *the conditions of life*, *variation*, and *selection*. Darwin's views soon influenced the views of Peirce and other pragmatists, and eventually the later Skinner. Against the background of his early S-R behaviorism, an outline of Skinner's subsequent pragmatic selectionism follows.

Modernism and Its Support for Early Behaviorism

S-R behaviorism fits in with a cluster of ideas referred to as modernism, a period extending mainly from the 17th to the 20th century (cf. Toulmin, 1983). The sciences and their philosophy in the early years of this period were commonly characterized as mechanistic. Highlighting the Cartesian values of modernism, Toulmin (1990) said, "All the protagonists of modern philosophy promoted theory, devalued practice, and insisted equally on the need to find foundations for knowledge that were clear, distinct, and certain" (p. 70). Modernist values in philosophy reached a high point of abstraction in logical positivism, which became the dominant philosophy of science. According to Day (1980), this dominance extended to psychology: "In the 1930s psychology assumed an epistemological orientation that was dominated by logical positivism" (p. 235). A prominent advocate of such an epistemology was Bertrand Russell, who (1950) said, "I am, as regards to method, more in sympathy with the logical positivists than with any other existing school" (p. 9); and he (1919, pp. 7-8; 1926; 1926/1960, pp. 57-59; 1927/1970)

advanced the stimulus and response behaviorism of John Watson. Skinner (e.g., 1976/1977, pp. 298-99; 1979/1984, p. 10; 1989, pp. 121-122; 1977/1978, p. 113) credited Russell, a particularly strong influence on his early views (Moxley, 2003; Wood, 1986), for leading him into behaviorism and giving him (1931/1999, p. 475) the clue to the definition of the reflex. In line with Russell and logical positivism, Skinner (1938/1966) said of his scientific method, "It is positivistic" (p. 44). Looking back, Skinner (1979/1984) said, "As far as I was concerned, there were only minor differences between behaviorism, operationism, and logical positivism" (p. 161); and Skinner (1989, p. 122) saw a common source for his early views and those of logical positivism in the views of Ernst Mach. Later, in a seeming continuation of his S-R behaviorism, Skinner (1969) said, "Man is a machine" (p. 294), and analogies between factory psychology and Skinner's work have been made (e.g., Schwartz, Schuldenfrie, and Lacey, 1978). But Skinner's 1969 analogy was to a "very complex" machine with feedback (which requires a three-term conception of input, output, and feedback) that is presently "far beyond the powers of men to construct" (p. 294). Perhaps reflecting that his point about complex machines might be misunderstood as defending his early reflexology (and perhaps it was to some extent), Skinner (1981) later said, "Living things are not machines" (p. 504). Skinner's fundamental conception for operant behavior was no longer in terms of the S-R reflex.

In brief, the dominant modernist philosophy was an *if-then* philosophy in a tradition from Descartes and mechanists to Russell and logical positivists. In an *if-then* analysis, the particularly problematic issue as far as empirical evidence goes is establishing the *if* and its certainty. What is? This translates into What is to be assumed? The *then* follows automatically by logic or mathematics. The troublesome *if* is dealt with by assumptions such as assuming an underlying determinism and assuming positively certain elements of sensation. Contexts, including consequences, can be left out or relegated to a subordinate position. Stimulus and response (S-R) psychology exemplified an *if-then* approach and was explicitly supported, if with reservations, by some logical positivists and those with affinities to the logical positivists such as Hans Neurath and Bertrand Russell (Moxley, 2001a).

Natural Selection

Natural selection presented a different method of explanation. In his autobiography, Darwin (1887/1958) indicated he needed three concepts for his theory. The first concept was *variation*:

> During the voyage of the Beagle I had been deeply impressed by discovering in the Pampean formation great fossil animals…secondly, by the manner in which closely allied animals replace one another in proceeding southwards over the Continent; and thirdly by the south American character of most of the productions of the Galapagos archipelago, and more especially by the manner in which they differ slightly on each island….[S]uch facts…could be explained on the supposition that species gradually become modified; and the subject haunted me. (pp. 118-119)

Extensive variations support evolution, but they do not give the means for it. Darwin recounted how he had pursued this means and discovered it in the second concept of *selection*:

> After my return to England.…I soon perceived that selection was the keystone of man's success in making useful races of animals and plants. But how selection could be applied to organisms living in a state of nature remained for some time a mystery to me.
>
> In October 1838, that is fifteen months after I had begun my systematic enquiry, I happened to read for amusement Malthus on Population and being well prepared to appreciate the struggle for existence which everywhere goes on from long-continued observation of the habits of animals and plants, it at once struck me that under these circumstances favourable variations would tend to be preserved, and unfavourable ones to be destroyed. The result of this would be the formation of new species. Here, then, I had at last got a theory by which to work. (pp. 119-120)

However, Darwin found that he still needed a third concept to complete his theory:

> But at that time I overlooked one problem of great importance….the tendency in organic beings descended from the same stock to diverge in character as they become modified. That they have diverged greatly is obvious from the manner in which species of all kinds can be classed under genera, genera under families, families under suborders, and so forth; and I can remember the very spot in the road, whilst in my carriage, when to my joy the solution occurred to me; and this was long after I had come to Down. The solution, as I believe, is that the modified offspring of all dominant and increasing forms tend to become adapted to many and highly diversified places in the economy of nature. (pp. 120-121)

These places provided the niches for adaptation and explained the tendency for diversification in a changing environment. Otherwise, natural selection would weed out the unfit and tend toward uniformity and a perfection of sorts. The *variation* of organisms and the *selection* of the fittest could not be explained without taking the environment, or *The Conditions of Life*, into account. Darwin (1872/1958) said, "Natural *Selection* [emphasis added]….implies only the preservations of such *variations* as arise and are beneficial to the being under its *conditions of life* [emphasis added]" (p. 88). These three terms—*the conditions of life*, *variation*, and *selection*—were frequently repeated in *The Origin of Species*. Afterwards, Darwin tended to assume the first term, *the conditions of life*, and often spoke of *variation* and *selection* without making an explicit connection to *the conditions of life*. Eventually, *natural selection* alone stood for all three concepts.

Analogies. Darwin's view of natural selection was soon seen in analogy to other processes in the culture at large. One of these processes was the political economy, particularly as described by Adam Smith. Another process was that of feedback mechanisms, which had received prominent display as regulators on steam engines. Schweber (1977) not only related Smith to Darwin, but also related feedback mechanisms to Darwin's natural selection by way of Smith and others:

> There is one other strand which relates Adam Smith to Darwin. Gruber in the introduction of *Darwin on Man*, p. 13, points to the importance of the development of "self-regulating machinery" and "the concept of society as a self-regulating system," which became "prominent in the work of Adam Smith and others"; see Otto Mayr, *The Origins of Feedback Control* (Cambridge, Mass.: MIT Press, 1970). Charles Lyell in the eleventh edition of his Principles of Geology which appeared in 1872, commented that "when first the doctrine of the origin of species by transmutation was proposed, it was objected that such a theory substituted a material self-adjusting machinery for a Supreme Creative Intelligence." This view probably reflected his reading of A. R. Wallace's article "On the Tendency of Varieties To Depart Indefinitely from the Original Type," J. Proc. Linn. Soc., August 1858, which states that "the action of this principle is exactly like that of the centrifugal governor of the steam engine." Recall that in the 1830's Lyell had regarded the earth as a self-regulating geological machine. (pp. 278n-279n)

Such analogies have continued to be advanced, especially the analogy with feedback control, as well as some differences between them; e.g., Skinner (1969, pp. 26-27) said in contrasting operant behavior with feedback, "Operant behavior is observed only when there are 'responses uncorrelated with observable stimuli'" (p. 27), but the equivalent analogous relation for *input*, *output*, and *feedback* may be constructed so as not to show uncorrelated output. Similarly, a difference between operant behavior and natural selection is that natural selection requires a gap in time between observed variations and selection which is not required in the response-consequence relation of operant reinforcement.

Pragmatism

Each of the major American pragmatists showed the influence of evolution on their thinking at a time when Darwin's views were still controversial in the scientific community. Peirce saw that Darwin's natural selection was analogous to other processes. Peirce (1871/1992) said, "The law of natural selection…is the precise analogue in another realm of the law of supply and demand" (p. 105; also cf. Marx, 1979, p. 157); and Peirce (1986) saw a close parallel between habit and natural selection: "Habit plays somewhat the same part in the history of the individual that natural selection does in that of the species; namely, it causes actions to be directed toward ends" (p. 46). In his "Minute Logic" of 1902, Peirce (1931-1958) also generalized three-term probabilistic relations as cutting across the discovery of laws of nature, the improvement of inventions, and natural selection:

> We here proceed by experimentation…What if we were to vary our procedure a little? Would the result be the same? We try it. If we are on the wrong track, an emphatic negative soon gets put upon the guess, and so our conceptions gradually get nearer and nearer right. The improvements of our inventions are made in the same manner. The theory of natural selection is that nature proceeds by similar experimentation to adapt a stock of animals or plants precisely to its environment, and to keep it in adaptation to the slowly changing environment.…Just as a real pairedness consists in a fact being true of A which would be nonsense if B were not there, so we now meet with a Rational Threeness which consists in A and B being really paired by virtue of a third object, C. (2.86, vol. & par.)

In contrast to *if-A-then-B* formulations (such as S-R formulations), the *AB-because-of-C* formulation is a general statement that the relation between an event (B) and its context (A) is because of consequences (C). Applied to natural selection, the relation between (A) the environment and (B) the stock of animals adapted to it exists because of (C) the consequences that occurred for previous AB (environment-animal) relations. Applied to Skinner's later three-term contingency, the relation between (A) the setting and (B) behavior exists because of (C) consequences that occurred for previous AB (setting-behavior) relations. The idea that reinforcement strengthens the setting-behavior relation rather than simply strengthening behavior conforms to what Skinner (1945) said, "[T]he contingencies of reinforcement…account for the functional relation between a term, as a verbal response, and a given stimulus" (p. 277; also cf. DeGrandpre, 2000).

James (1890/1983) found Darwin's view "quite convincing" (p. 1275), and he (1880) suggested the evolution of new conceptions in analogy with Darwin's natural selection:

> [N]ew conceptions, emotions, and active tendencies…are originally *produced* in the shape of random images, fancies, accidental outbirths of spontaneous variation in the functional activity of the excessively unstable brain, which the outer environment simply confirms or refutes, adopts or rejects, preserves or destroys,—*selects*, in short, just as it selects morphological and social variations due to molecular accidents of an analogous sort. (p. 456)

For James (1907/1978), Darwin had introduced a new way of looking at thinking in which remarkable design might evolve from chance, "Darwin opened our minds to the power of chance-happenings to bring forth 'fit' results if only they have time to add themselves together" (p. 57).

Dewey (1909/1977) noted how Darwinian evolution had challenged belief in "the superiority of the fixed and final" which had treated "change and origin as signs of defect and unreality" (p. 3). Darwinian thinking was different: "[In] treating the forms that had been regarded as types of fixity and perfection as originating and passing away, the *Origin of Species* introduced a mode of thinking that in the end was bound to transform the logic of knowledge" (p. 3). Applying Darwinian thinking to human behavior, Dewey (1918/1988) said, "[T]he psychologist…must take for his object a certain event studied in its context of other events—its specific stimulus and specific consequences" (pp. 13-14); and one term needed to be understood in relation to the others: "[W]e are aware of the *stimuli* [emphasis added] only in

terms of our *response* [emphasis added] to them and of the *consequences* [emphasis added] of this response" (Dewey, 1925/1988, p. 253; also cf. 1933/1989, pp. 225-231; 1916/1966, pp. 15-16, 29-33). Dewey's three terms were remarkably similar to terms that Skinner would also use for his early three-term contingency.

Among the representatives of pragmatic ideas, Peirce, James, Dewey, and Quine were cited by Skinner in written publications and were most likely to have been read by him. Exposure to pragmatic views were also cited by Skinner in personal communications: Leigland (1997) said, "John Dewey, and especially William James, have been cited as influential in Skinner's graduate training; Skinner, personal communication, 1984" (p. 19). Skinner's friend Willard Quine provided opportunities for discussion. However, Skinner may also have read or discussed other pragmatists who contributed to the cultural climate of pragmatism (cf. Thayer, 1981). Philosophers in Britain with views similar to the early American pragmatists included F. C. S. Schiller, Alfred Sidgwick, and Ludwig Wittgenstein. In *The Meaning of Meaning*—a book that Skinner (1979/1984, pp. 92 & 213) bought and discussed at length with its co-author Richards—Alfred Sidgwick (cited by Ogden & Richards, 1923) succinctly stated the pragmatic position on meaning and truth: "MEANING depends on consequences, and truth depends on MEANING" (p. 162). That book also cited Dewey, James, Peirce, Schiller, and the early Wittgenstein.

However, pragmatism was often misrepresented, leading to the impression that there were serious problems between and within different pragmatic views as well as the impression that citations to pragmatism were a risky support. Although James gave relatively more attention than Peirce to shorter term consequences, the differences between Peirce and James over pragmatism were oversimplified by making that difference a sharp categorical distinction. Making such a distinction in *Keywords*, Williams (1976) differentiates Peirce's pragmatism as a method of *understanding* from James's pragmatism as a method of *justification* and quotes from Peirce: "The method was 'to consider what effects, that might conceivably have practical bearings, we conceive the object of our conception to have…Our conception of these effects is the whole of our conception of the object' (ibid., V, 2)" (p. 202). However, immediately after the original source for that quote in the *Collected Papers of Charles Sanders Peirce*, the editors bracketed a definition of pragmatism by William James which focused primarily on *understanding* and showed no inconsistency with Peirce:

> [The doctrine that the whole "meaning" of a conception expresses itself in practical consequences either in the shape of conduct to be recommended, or in that of experiences to be expected, if the conception be true; which consequences would be different if it were untrue, and must be different from the consequences by which the meaning of other conceptions is in turn expressed. If a second conception would not appear to have other consequences, then it must really be only the first conception under a different name. In methodology it is certain that to trace and compare their respective consequences is an admirable way of establishing the differing meanings of different conceptions.] (5.2; also cf. James, 1911/1979, p. 37)

Although most of James's definition concerns *understanding*, his "conduct to be recommended" indicates an interest in *justifying* a particular action, and James prominently speculated on *which* consequences to select. A limiting factor might be time: "[W]e often *cannot* wait but must act, somehow; so we act on the most *probable* hypothesis, trusting that the event may prove us wise" (James, 1911/1979, p. 112). Peirce, if not within his pragmatic maxim, also justified a need for action. Peirce's work on ubiquitous abductive cycles acknowledges a need to act upon meanings as they are revealed (Moxley, 2002a). Until the long run was reached, Peirce (1931-1963) considered *truth* as an investigated resolution of doubt for the time being: "[T]he only method of ascertaining the truth is to repeat this trio of operations: conjecture; deductions of predictions from the conjecture; testing the predictions by experimentation (not necessarily what is technically so called, but essentially the same thing,—trial)" (7.672). This process might occur consciously or unconsciously. For Peirce (cited in Brent, 1998), "I perform an abduction when I [do so much] as express in a sentence anything I see. The truth is that the

whole fabric of our knowledge is one matted felt of pure hypothesis confirmed and refined by induction" (p. 72). Considering that for Peirce (1931-1963), "Deductions are either *Necessary* or *Probable* (2.267), this method allowed for increasingly closer approximations and perhaps even a final determination of truth. Actions are entailed in this process; and Peirce (cited in Hardwick, 1911/1977), like James, acknowledged the importance of consequences in *justifying* an individual action, "[I]f a soldier is sure that a certain line of action is the only one that can save him & those he commands he ought to believe it *will* save him, because that belief will enhance the success or the chances of it (p. 141). The belief justifies the action. The differences between James and Peirce over pragmatism are less, or other, than Williams presented.

In particular, critics have misrepresented James's views when he used a word that invited the attribution of a pejorative essentialist interpretation (cf. Garver, 2003, p. 504)—a temptation that many in the role of critic have found difficult to resist, whether in the work of James or other writers. In his introduction to James's *Some Problems of Philosophy*, Peter Hare (1979) points out that following the publication of *The Will to Believe and Other Essays in Popular Philosophy*, James was "upset by the charge repeatedly made that he was encouraging self-indulgent license and dogmatic make-believe (p. xxxiv);" and James, finding the term *will* problematic, thought "he would have been less misunderstood if he had spoken only of the Right to Believe" (p. xxxiii). Accordingly, James (1911/1979) used "Faith and the Right to Believe" for the title of the Appendix in *Some Problems of Philosophy*. Similar misrepresentations had followed his (1907/1978) use of the term *expedient* to explain pragmatism: "'*The true,' to put it very briefly, is only the expedient in the way of our thinking, just as 'the right' is only the expedient in the way of our behaving*" (p. 106). Those who believed words had essential meanings could seize on a term like *expedient* to claim that its essential meaning entailed only short-term ends. However, James was not claiming that people could not make problematic judgments in the short term or that more adverse consequences could not follow (just as Skinner did not claim adverse consequences could not follow short-term reinforcement; e.g., as with drugs).

Those who required a context for interpreting the meaning of a term would immediately see that James's *expedient* had a much more extensive application. James's initial sentence in that paragraph was immediately followed by

> Expedient in almost any fashion; and expedient in the long run and on the whole of course; for what meets expediently all the experience in sight won't necessarily meet all farther experiences equally satisfactorily. Experience, as we know, has ways of *boiling over*, and making us correct our present formulas. (p. 106)

James (1956) reiterated these long run considerations, "[W]e must go on experiencing and thinking over our experience, for only thus can our opinions grow more true; but to hold any one of them…as if it never could be reinterpretable or corrigible [is] tremendously mistaken" (p. 14). Hilary Putnam (1997) observed that "Misreadings of James's views on truth were almost always based upon" (p. 179) the section italicized above and its immediately following paragraphs and that "Critics typically cite only the first sentence" (p. 180). James (1909/1978) also brought out the need to see truth and satisfaction in terms of approximations to a long term reality:

> I am, of course, postulating here a standing reality independent of the idea that knows it. I am also postulating that satisfactions grow *pari passu* with our approximations to such reality…Our whole notion of a standing reality grows up in the form of an ideal limit to the series of successive termini to which our thoughts have led us and still are leading us. Each terminus proves provisional by leaving us unsatisfied. The true idea is the one that pushes farther; so we are ever beckoned on by the ideal notion of an ultimate completely satisfactory terminus. (pp. 254-255)

Complete satisfaction was a long term affair as Peirce (1908/1998; also Dewey, 1991, p. 343n) affirmed: "[I]f truth consists in satisfaction, it cannot be any *actual* satisfaction, but must be the satisfaction which *would* ultimately be found if the inquiry were pushed to its ultimate and indefeasible issue" (p. 450; also cf. 1931-1963, 5.555-5.564). When James (1909/1978, p. 297). says, "[N]otions [of reality] appear true only because they work satisfactorily," working satisfactorily should be interpreted in that light, as belonging to a process over time.

Nevertheless, James had been given a bad press. Russell (1935/1941) linked James's views to "the modern cult of unreason" (p. 76) and to notorious politicians: "Hitler accepts or rejects doctrines on political grounds, without bringing in the notion of truth or falsehood. Poor William James, who invented this point of view, would be horrified at the use which is made of it" (p. 77). Russell may have thought the connection between fascism and pragmatism had been confirmed by Mussolini's endorsement in the London *Sunday Times* of April 1926: "The pragmatism of William James was of great use to me in my political career. James taught me that an action should be judged rather by its results than by its doctrinary basis" (Perry, 1936, p. 575). After the war, Russell (1948/1992, pp. 439-440) linked pragmatism to Karl Marx. Understandably, some might hesitate to advance their views by citing William James in support.

Skinner's Pragmatism and Selectionism

Introducing "radical behaviorism" and other new views in "The Operational Analysis of Psychological Terms," a later Skinner (1945) wanted to address "a wider range of phenomena than do current streamlined treatments, particularly those offered by logicians (e.g., Carnap) interested in a unified scientific vocabulary" (p. 271). Commenting on his 1945 paper, Skinner (Blanshard & Skinner, 1966-1967) said, "The physicalism of the logical positivist has never been good behaviorism, as I pointed out twenty years ago (Skinner, 1945)" (p. 325). Skinner (1945, p. 380) also attacked the positivist reliance on rules or logic, referring to the positivists Herbert Feigl and Rudolph Carnap for illustration. Rules did not come first, probabilistic three-term contingencies came first. Afterwards, Skinner (1990/1999) associated early behaviorism with the logical positivism he had rejected, saying, "Anticipating logical positivism, they [Watson and other early behaviorists] argued that an event seen by only one person had no place in a science" (p. 671). Instead, Skinner turned to views that were similar to pragmatism and natural selection.

This change is evident in one of Skinner's (1968/1969) more complete definitions of his later operant of probabilistic three-term contingencies and is consistent with pragmatic views:

> We construct an operant by making a reinforcer contingent on a response, but the important fact about the resulting unit is not its topography but its probability of occurrence, observed as rate of emission.…Any stimulus present when an operant is reinforced acquires control in the sense that the rate will be higher when it is present. Such a stimulus does not act as a goad; it does not elicit the response in the sense of forcing it to occur. It is simply an essential aspect of the occasion upon which a response is made and reinforced.…An adequate formulation of the interaction between an organism and its environment must always specify three things: (1) the occasion upon which a response occurs, (2) the response itself, and (3) the reinforcing consequences. The interrelationships among them are the "contingencies of reinforcement." (p. 7)

This formulation contrasts with the formulation for the stimulus-response reflex in virtually every feature and contrasts with Skinner's (e.g., 1938) early operant formulations of two paired reflexes in necessary relations that dominated his self-styled "positivistic" (p. 44) approach in *The Behavior of Organisms*. Speaking of that book's commitment to the reflex, Skinner (1989) said, "Unfortunately, I decided to use reflex as the word for any unit of behavior. In doing so, I no doubt contributed to the fact that you will still find a behavioral analysis called *stimulus-response psychology*" (p. 131). In using the "reflex as the word for any unit of behavior," Skinner also used the word *reflex* in a context of

formulations and interpretations consistent with traditional uses of the term *reflex.* The following shows pragmatism and selectionism in the order of their prominent appearance and development in Skinner's views.

Skinner's Pragmatism

Several behavior analysts have noted the similarity between Skinner's radical behaviorism and pragmatism (e.g. Baum, 1994; Day, 1980; Greer, 2002, p. 151; Hayes & Brownstein, 1986; Lamal, 1983; Leigland, 1999; Morris, 1988; Moxley, 2001a, 2001b, 2001/2002, 2002, 2003; Schneider, 1997; Staddon, 2001, p. 96; Zuriff, 1980, 1985); and various passages from Skinner (e.g., 1945, pp. 293-294; 1953, p. 139; 1957, p. 428; 1966/1969a, p. 141; 1974, p. 235) have been presented as exemplifying a pragmatic approach. In "The Operational Analysis of Psychological Terms," Skinner introduced radical behaviorism, accepted private events, introduced a three-term contingency for operant behavior, and advanced consequences in a pragmatic way that was similar to James's (1909/1978) view of ideas that "work satisfactorily" (p. 297) or "work successfully" (p. 174). Skinner (1945) said:

> The ultimate criterion for the goodness of a concept is not whether two people are brought into agreement but whether the scientist who uses the concept can operate successfully upon his material—all by himself if need be…this does not make agreement the key to workability. On the contrary, it is the other way round. (pp. 293-294).

Skinner's 1945 essay was highly consistent with pragmatic views and was favorably referred to by Dewey and Bentley (1947). Later, speaking of his critical distinction between rule-governed and contingency shaped behavior, Skinner (1966/1969a) referenced the issue to the American pragmatists:

> The distinction between rule-governed and contingency shaped behavior resolves an issue first raised in its modern form by C. S. Peirce, William James, and John Dewey: the distinction between truth and belief. Truth is concerned with rules and rules for the transformation for rules…Belief is a matter of probability of action and the probability is a function of the contingencies. (pp. 170-171)

Although Skinner's watershed alignment with pragmatism came in 1945, Skinner's strongest explicit identification with pragmatism came in his response to the question, *"Do you see operant conditioning as close to any existing philosophical system?"* Skinner (1979) singled out C. S. Peirce's pragmatism as "very close…to an operant analysis":

> The method of Pierce was to consider all the effects a concept might conceivably have on practical matters. The whole of our conception of an object or event is our conception of its effects. That is *very close* [emphasis added], I think, to an operant analysis of the way in which we respond to stimuli. (p. 48).

Skinner also said, "I think Peirce was right. He was not a positivist" (p. 48). It is interesting to note that *not-being-a-positivist* was a point in Peirce's favor.

Skinner (1979) was responding, at least partly, to Raymond Williams's (1976) account of the term *pragmatic.* But it is questionable whether Skinner was responding exclusively to the two snippets of quotations provided by Williams when Skinner said that Peirce's pragmatism was "very close…to an operant analysis." More complete statements by Peirce (1923/1998) closer to radical behaviorism and an operant analysis can be found in *Chance, Love and Logic,* a book included in Skinner's (1979/1984, p. 41) growing library. The second essay in that book was "How to Make Our Ideas Clear," and Skinner's statement that Peirce's method was very close to an operant analysis is more understandable if Skinner had read that essay. In it, Peirce (1878/1992) included an acceptance of private events:

> [S]ince belief is a rule for action, the application of which involves further doubt and further thought, at the same time that it is a stopping-place, it is also a new starting-place for thought. That is why I have permitted myself to call it thought at rest, although thought is essentially an action…The essence of belief is the establishment of a habit; and different beliefs are distinguished by the different modes of action to which they give rise. (pp. 129-130)

Belief was a rule for action, and thought was essentially an action. Accepting private events in his radical behaviorism, Skinner (1974) also considered potential behavior as a kind of action or as rules for action:

> [O]ur knowledge *is* action, or at least rules for action…There is room in a behavioristic analysis for a kind of knowing short of action and hence short of power. One need not be actively behaving in order to feel or to introspectively observe certain states normally associated with behavior. (pp. 139-140)

Skinner's first sentence of the above—when he says that "knowledge is action, or at least rules for action"—paraphrases in reverse order Peirce's (1878/1992) "belief is a rule for action" and "thought is essentially an action" (p. 129). Three paragraphs later, Peirce presented a three-term contingency for meaning that anticipates an operant formulation:

> [W]hat a thing means is simply what habits it involves. Now, the identity of a habit depends on how it might lead us to act, not merely under such circumstances as are likely to arise, but under such as might possibly occur, no matter how improbable they may be. What the habit is depends on *when* and *how* it causes us to act. As for the *when*, every *stimulus* [emphasis added] to *action* [emphasis in original] is derived from perception; as for the *how*, every purpose of action is to produce some sensible *result* [emphasis added]. Thus we come down to what is tangible and practical, as the root of every real distinction of thought, no matter how subtile [sic] it may be; and there is no distinction of meaning so fine as to consist in anything but a possible difference of practice. (p. 131).

There are three distinct steps in this account of meaning by Peirce: 1) a *stimulus* to act, 2) an *action*, and 3) a sensible *result*, which are against the background of Peirce's probabilism. Peirce's account of meaning is basically an analysis of meaning in terms of a probabilistic three-term contingency. In the second paragraph after his formulation above of *stimulus*, *action*, and *result*, Peirce makes an early statement of his pragmatic maxim, a variant of which Williams quoted. If Skinner (1979) was also responding to what he had previously read in this stretch of paragraphs, his conclusion that Peirce's method was very close to an operant analysis would be more understandable—with Peirce on private events in thinking as acting and a three-term contingency for habits, points that were not included by Williams.

Skinner's Selectionism

After his pragmatic statements in 1945, Skinner (e.g., 1953, pp. 90, 430; 1963/1969, p. 132; 1966/1969b, p. 174; 1974, p. 205; 1981; 1990, p. 1208) spent more time linking his views with Darwin than linking his views with Peirce or any other pragmatist. In "The Phylogeny and Ontogeny of Behavior," Skinner (1966/1969b) discussed how a habit might support the acquisition of an instinct:

> [Darwin] seems to have assumed that ontogenic contingencies contribute to the inheritance of behavior, at least in generating responses which may then have phylogenic consequences. The behavior of the domestic dog in turning around before lying down on a smooth surface may have been selected by contingencies under which the behavior made a useful bed in grass or brush. If dogs now show this behavior less frequently it is presumably because a sort of phylogenic extinction has set in (p. 178).

Ghiselin (1984/1988, pp. 426-427), editor of the 1997 Lightbinders CD on Darwin, was in substantial agreement with Skinner here.

Further support for Skinner's concern with the importance of habits in evolution can be found in the many examples provided by Avital and Jablonka (2000) who detail the case for the inheritance of acquired habits and link that view with Lloyd Morgan, one of the sources Skinner identified in tracing the history of his radical behaviorism:

> In the late nineteenth century, J. M. Baldwin, Lloyd Morgan and Fairfield Osborne independently suggested how selection could bring about a transition from a learnt to an instinctive response. Their idea, which is now known as the Baldwin effect [or the genetic assimilation of learnt behavior], was clearly expressed by Morgan:
>
> > Any hereditary variations which coincide in direction with modifications of behavior due to acquired habit would be favoured and fostered…While still believing that there is some connection between habit and instinct, we may regard the connection as indirect and permissive rather than direct and transmissive.
>
> According to Morgan, if learnt habits enable an organism to survive, selection will favour hereditary changes that mimic these learnt habits. (p. 317)

This is not a direct inheritance of acquired characteristics through a means such as Darwin's pangenesis, but an indirect transmission through operant behavior, social learning, genetic assimilation, and natural selection. Individual operant behavior and social learning will have successful behaviors selected; and natural selection through genetic assimilation will select structures responsible for successful behaviors and for making them more likely to occur at less cost (cf. Avital & Jablonka, 2000; Schneider, 2003, p. 146).

In "The Shaping of Phylogenic Behavior," Skinner (1975) drew a parallel with the shaping of operant behavior; and in "Selection by Consequences," Skinner (1981) drew analogies between natural selection, the behavior of the individual, the evolution of cultures, and (indirectly) feedback mechanisms. He generalized such accounts as replacing mechanistic explanations: "Selection by consequences is a causal mode found only in livings things, or in machines made by living things.…it replaces explanations based on the causal modes of classical mechanics" (p. 501). Skinner drew further parallels with natural selection in "The Evolution of Behavior" (1984/1987), "The Evolution of Verbal Behavior" (1986/1987), and "Genes and Behavior" (1988/1989).

To avoid confusion, it should be noted that Skinner's selectionism differs from the selectionism of Donald Campbell's evolutionary epistemology. Campbell (1974, p. 447) rejected pragmatism and formulated a selectionism different from Darwin's (Moxley, 2001a; Skagestad 1978; Thagard, 1980; also cf. Medawar's comments, Ayala & Dobzhansky, 1974, p. 161). The term *pragmatic selectionism* distinguishes Skinner's selectionism from Campbell's.

In brief, the philosophy that supports Skinner's radical behaviorism is a pragmatic selectionism: a probabilistic *AB-because-of-C* philosophy in the tradition of Darwin and the pragmatists Peirce, James, and Dewey. At the level of behavior, the relation between the setting (A) and the behavior (B) is because of consequences (C). It focuses on answering the questions, How do things come to be as they are? and How can things be changed? In one way or another, the three-term contingency is applicable to all behavior including verbal behavior and meaning (Moxley, 2001-2002; Skinner, 1945, p. 271; 1957, pp. 13-14; 1968, p. 203; 1974, pp. 90-92). The meaning of a term for the speaker is its three-term contingency, and the meaning of that term for the listener is another three-term contingency. Although

various differences exist between Skinner and pragmatists, such as his concern with immediate consequences, his standout theoretical contribution for pragmatism is to meaning (Moxley 2001-2002).

Conclusion

As an overall distinction between logical positivism and pragmatism, positivists focused on what is, pragmatists focused on how things come to be. As the pragmatist C. I. Lewis (1941/1970) put it in distinguishing the *content* of logical positivism and the *method* of pragmatism,

> With logical positivism it is the *content* of science as exact formulation in physical terms upon which emphasis falls; with pragmatism, it is the *method* of science and its experimental and instrumental point of view—its attitude of regarding all accepted findings as in some degree provisional, and as attesting themselves by their value as working hypotheses and their usefulness in application—which is emphasized. (p. 10).

As may be evident, the role of consequences is more dominant in pragmatic method than in logical positivist content.

As a way of understanding the transformation in Skinner's philosophical views within broader cultural changes, his changes may be understood in parallel with the changes in Wittgenstein's views. Wittgenstein's (1922/1981) *Tractatus Logico-Philosophicus* highly influenced logical positivists, but he later turned away from the position adopted there to views similar to pragmatism. Wittgenstein's and Skinner's (Moxley, 2003) earlier regard for Russell became less so. The later Wittgenstein (1967) found Russell had become "immeasurably shallow and trivial" (p. 82e), and Wittgenstein (1969) moved closer to pragmatism, saying, "So I am trying to say something that sounds like pragmatism" (p. 54e). Lakatos (1978) said, "The later Wittgenstein certainly was a pragmatist" (p. 230n; but see Goodman, 2002, on the complexity of the relationship between Wittgenstein and James).

Another way of understanding Skinner's change in philosophical perspectives—regardless of the issue of direct influences—is to see Russell as a guide to Skinner's early views (Moxley, 2003) and Peirce as a guide to Skinner's later views (Moxley, 2001a, 2001b, 2002b) with implications as to where these later views lead. Expanding on his three-term analysis of habits, Peirce (e.g., 1931/1992, pp. 245-279) speculated that it applied to the entire universe. Peirce viewed everything in the universe, including all its attributed natural laws, in terms of acquired habits. According to Peirce (1891/1992),

> [T]he only possible way of accounting for the laws of nature and for uniformity in general is to suppose them results of evolution. This supposes them not to be absolute, not to be obeyed precisely. It makes an element of indeterminacy, spontaneity, or absolute chance in nature…Now philosophy requires thorough-going evolutionism or none. (pp. 288-289)

Behavior analysts might well consider the appealing consistency of adopting a similar view, not as a certainty, but as a possibility.

References

Ayala, F. J., & Dobzhansky. T. (Eds.). (1974). *Studies in the philosophy of biology*. Berkeley, CA: University of California Press.

Avital, E., & Jablonka, E. (2000). *Animal traditions: Behavioral inheritance in evolution*. Cambridge, England: Cambridge University Press.

Baum. W. M. (1994). *Understanding behaviorism*. NY: HarperCollins.

Blanshard, B., & Skinner, B. F. (1966-1967). The problem of consciousness—a debate. *Philosophy and Phenomenological Research, 27,* 317-337.

Brent, J. (1998). *Charles Sanders Peirce: A life*. Bloomington, IN: Indiana U. Press.

Calinescu, M. (1987). *Five faces of modernity*. Durham, NC: Duke University Press.

Campbell, D. T. (1974). Evolutionary epistemology. In P. A. Schilpp (Ed.), *The Philosophy of Karl Popper* (pp. 413-463). Vol. I. La Salle, IL: Open Court.

Darwin, C. (1958). *The autobiography of Charles Darwin* (N. Barlow, Ed.). New York: Norton. (Original work published 1887)

Darwin, C. (1958). *The origin of species* (6th ed.). NY: Mentor. (Original work published 1872).

Day, W. F. (1969). On certain similarities between the *Philosophical Investigations* of Ludwig Wittgenstein and the operationism of B. F. Skinner. *Journal of the Experimental Analysis of Behavior, 12,* 489-506.

Day, W. F. (1980). The historical antecedents of contemporary behaviorism. In R. W. Rieber & K. Salzinger (Eds.), *Psychology: Theoretical-historical perspectives* (pp. 203-262). New York: Academic Press.

DeGrandpre, R. J. (2000). A science of meaning: Can behaviorism bring meaning to psychological science? *American Psychologist, 55,* 721-739.

Dewey, J. (1966). *Democracy and education*. New York: Macmillan. (Original work published 1916)

Dewey, J. (1977). The influence of Darwinism on philosophy. In J. A. Boydston (Ed.), *John Dewey: The middle works, 1899-1924: Vol. 4: 1907-1909* (pp. 3-30). Carbondale, IL: Southern Illinois University Press. (Original work published 1909)

Dewey, J. (1988). Concerning alleged immediate knowledge of mind. In J. A. Boydston (Ed.), *The middle works, 1899-1924: Vol. 11: 1918-1919* (pp. 10-17). Carbondale, IL: Southern Illinois University Press. (Original work published 1918)

Dewey, J. (1988). In J. A. Boydston (Ed.), *John Dewey: The later works, 1925-1953: Vol. 1: 1925: Experience and nature.* Carbondale, IL: Southern Illinois University Press. (Original work published 1925)

Dewey, J. (1989). *How we think* (rev. ed.). In J. A. Boydston (Ed.), *John Dewey The later works, 1925-1953: Vol. 8: 1933: Essays and How we think*, revised edition (pp. 105-352). Carbondale, IL: Southern Illinois University Press. (Original work published 1933)

Dewey, J. (1991). Logic: The theory of inquiry. In J. A. Boydston (Ed.), *John Dewey: The later works, 1925-1953: Vol. 12: 1938*. Carbondale, IL: Southern.

Dewey, J., & Bentley, A. (1947). "Definition." *The Journal of Philosophy, 44,* 282-306.

Eco, U. (1984). Postscript. In his *The name of the rose* (pp. 505-536, W. Weaver, Trans.). NY: Harcourt, Brace, & Co.

Garver, N. (2003). Review of *Wittgenstein and William James*. *Transactions of the Charles S Peirce Society, 39*, 503-507.

Ghiselin, M. T. (1997). *Darwin* (2nd ed.). [CD-ROM]. San Francisco, CA: Lightbinders.

Ghiselin, M (1998). B. F. Skinner versus Dr. Pangloss. In A. C. Catania & S. Harnad (Eds.), *The selection of behavior: The operant behaviorism of B. F. Skinner: Comments and consequences* (pp. 426-428). Cambridge: Cambridge University Press.

Goodman, R. B. (2002). *Wittgenstein and William James*. Cambridge, UK: Cambridge University Press.

Greer, D. T. (2002). *Designing Teaching Strategies: An Applied Behavior Analysis Systems Approach*. San Diego, CA: Academic Press.

Hare, P. (1979). Introduction. In William James, *Some problems of philosophy* (pp. xiii-xli). Cambridge, MA: Harvard University Press.

Hardwick, C. S. (Ed.). (1977). *Semiotic and significs: The correspondence between Charles S. Peirce and Victoria Lady Welby*. Bloomington, IN: Indiana University Press.

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.

James. W. (1880). Great men, great thoughts, and the environment. *The Atlantic Monthly, 46,* 441-459.

James, W. (1956). *The will to believe and other essays in popular philosophy*. NY: Dover. (Original work published 1897)

James, W. (1978). *Pragmatism*. In *Pragmatism and the meaning of truth* (pp. 1-166). Cambridge, MA: Harvard University Press. (Original work published 1907)

James, W. (1978). *The meaning of truth*. In *Pragmatism and the meaning of truth* (pp. 167-352). Cambridge, MA: Harvard University Press. (Original work published 1909)

James, W. (1983). *The principles of psychology*. Cambridge, MA: Harvard University Press. (Original work published 1890)

James, W. (1979). *Some problems of philosophy*. Cambridge, MA: Harvard University Press. (Original work published 1911)

Lakatos, I. (1978). *Mathematics, science and epistemology: Philosophical papers: Vol. 2* (J. Worrall and G. Currie, Eds.). Cambridge, England: Cambridge University Press.

Lamal, P. A. (1983). A cogent critique of epistemology leaves radical behaviorism unscathed. *Behaviorism, 11,* 103-109.

Leigland, S. (1997). Systems and theories in behavior analytic science: An overview of alternatives. In L. J. Hayes & P. M. Ghezzi (Eds.), *Investigations in behavioral epistemology* (pp. 11-31). Reno, NV: Context Press.

Leigland, S. (1999). Pragmatism, science and society: A review of Richard Rorty's *Objectivity, relativism, and truth: Philosophical papers volume 1. Journal of the Experimental Analysis of Behavior, 71,* 483-500.

Lewis, C. I. (1970). Logical positivism and pragmatism. In J. D. Goheen & J. L. Mothershead (Eds.), *Collected papers of Clarence Irving Lewis* (pp. 92-112) Stanford, CA: Stanford University Press. (Original work published 1941)

Marx, K. (1979). *The Letters of Karl Marx* (S. K. Padover, Ed.). Englewood Cliffs, NJ; Prentice-Hall.

Monk, R. (1990). *Ludwig Wittgenstein: The duty of genius*. NY: Penguin.

Morris, E. K. (1988). Contextualism: The world view of behavior analysis. *Journal of Experimental Child Psychology, 46,* 289-323.

Moxley, R. A. (2001a). The modern/postmodern context of Skinner's selectionist turn in 1945. *Behavior and Philosophy, 29,* 121-153.

Moxley, R. A. (2001b). Sources of Skinner's pragmatic selectionism in 1945. *The Behavior Analyst 24,* 201-212.

Moxley, R. A. (2001-2002). The selectionist meaning of C. S. Peirce and B. F. Skinner. *The Analysis of Verbal Behavior, 18,* 71-91.

Moxley, R. A. (2002a). Abduction in postmodern research. In S. P. Shohov (Ed.), *Advances in psychology research* (pp. 3-23). Vol. 15. Hauppauge, NY: Nova Science Publishers.

Moxley, R. A. (2002b). Some more similarities between Peirce and Skinner. *The Behavior Analyst, 25,* 201-214.

Moxley, R. A. (2003). Some early similarities and later differences between Bertrand Russell and B. F. Skinner. *The Behavior Analyst, 26,* 111-130.

Ogden, C. K., & Richards, I. A. (1989). *The meaning of meaning*. New York, NY: Harcourt Brace Jovanovich. (Original work published 1923)

Peirce, C. S. (1931-1958). *Collected papers* (C Hartshorne, P. Weiss, & A. Burks. Eds.). 7 Vols. Cambridge: Harvard University Press.

Peirce, C. S. (1986). Logic. Chapter I. Thinking as cerebration. In *Writings of Charles S. Peirce: A Chronological Edition: Vol. 4: 1879-1884* (pp. 45-46). Bloomington, IN: Indiana University.

Peirce, C. S. (1992). *Fraser's* the works of George Berkeley. In N. Houser & C. Kloesel (Eds.), *The essential Peirce: Selected philosophical writings* (pp. 83-105).

Vol. 1. Bloomington, IN: Indiana University Press. (Original work published 1871)

Peirce, C. S. (1992). The fixation of belief. In N. Houser & C. Kloesel (Eds.), *The essential Peirce: Selected philosophical writings: Volume 1 (1867-1893)* (pp. 109-123). Bloomington, IN: Indiana University Press. (Original work published 1877)

Peirce, C. S. (1992). How to make our ideas clear. In N. Houser & C. Kloesel (Eds.), *The essential Peirce: Selected philosophical writings: Volume 1 (1867-1893)* (pp. 124-141). Bloomington, IN: Indiana University Press. (Original work published 1878)

Peirce, C. S. (1992). The architecture of theories. In N. Houser & C. Kloesel (Eds.), *The essential Peirce: Selected philosophical writings* (pp. 285-297). Vol. 1. Bloomington, IN: Indiana University Press. (Original work published 1891)

Peirce, C. S. (1992). A guess at the riddle. In N. Houser & C. Kloesel (Eds.), *The essential Peirce: Selected philosophical writings* (pp. 245-279). Vol. 1. Bloomington, IN: Indiana University Press. (Original work published 1931)

Peirce, C. S. (1998). A neglected argument for the reality of God. In N. Houser, J. R. Eller, A. C. Lewis, A. D. Tienne, C. L. Clark, & D. B. Davis (Eds.), *The essential Peirce: Selected philosophical writings* (Volume 2, 1893-1913, pp. 434-450). Bloomington: Indiana University Press. (Original work published 1908)

Peirce, C. S. (1998). A sketch of logical critics. In N. Houser, J. R. Eller, A. C. Lewis, A. D. Tienne, C. L. Clark, & D. B. Davis (Eds.), *The essential Peirce: Selected philosophical writings* (Volume 2, 1893-1913, pp. 451-462). Bloomington: Indiana University Press. (Original work written 1911)

Peirce, C. S. (1998). *Chance, love, and logic* (M. Cohen, Ed.). Lincoln, NE: University of Nebraska Press. (Original work published 1923)

Perry, R. B. (1936). *The thought and character of William James*. Vol. 2. Boston: Little, Brown, and Company.

Putnam, H. (1997). James's theory of truth. In R. A. Putnam (Ed.), *The Cambridge companion to William James* (pp. 166-185). Cambridge, England: Cambridge University Press.

Russell, B. (1919). On propositions: What they are and how they mean. *Aristotelian Society, Supplementary Volume II*, 1-43.

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

Russell, B. (1941). The ancestry of fascism. In his *Let the people think: A selection of essays* (pp. 61-79). London: Watts & Co. (Original work published in 1935)

Russell, B. (1950). *An inquiry into meaning and truth: The William James lectures for 1940 delivered at Harvard University by Bertrand Russell*. London, England: Routledge.

Russell, B. (1960). *On education: Especially in early childhood*. London: Unwin. (Original work published 1926)

Russell, B. (1970). *An outline of philosophy*. London: George Allen & Unwin. (Original work published 1927)

Russell, B. (1992). Human knowledge. London: Routledge. (Original work published 1948)

Schneider, S. M. (1997). Back to our philosophical roots: A journal review of *Transactions of the Charles S. Peirce Society*. *The Behavior Analyst, 20,* 17-23.

Schneider, S. M. (2003). Evolution, behavior principles, and developmental systems: *A Review of Gottlieb's* synthesizing nature-nurture: Prenatal roots of instinctive behavior. *Journal of the Experimental Analysis of Behavior, 79,* 137-152.

Schwartz, B., Schuldenfrei, R., & Lacey, H. (1978). Operant psychology as factory psychology. *Behaviorism, 6,* 229-254.

Schweber, S. S. (1977). The origin of the *Origin* revisited. *Journal of the History of Biology, 10,* 229-316.

Skagestad, P. (1978). Taking evolution seriously: Critical comments on D. T. Campbell's evolutionary epistemology. *The Monist, 61,* 611-621.

Skinner, B. F. (1945). The operational analysis of psychological terms. *The Psychological Review, 52,* 70-277, 291-294.

Skinner, B. F. (1953). *Science and human behavior*. New York: Macmillan.

Skinner, B. F. (1957). *Verbal behavior*. New York: Appleton-Century-Crofts.

Skinner, B. F. (1966). *The behavior of organisms*. Englewood Cliffs, NJ: Prentice-Hall. (Original work published 1938)

Skinner, B. F. (1968). *The technology of teaching*. Englewood Cliffs, NJ: Prentice-Hall

Skinner, B. F. (1969). Operant behavior. In his *Contingencies of reinforcement: A theoretical analysis* (pp. 105-312). New York: Appleton-Century-Crofts. (Original work published 1963)

Skinner, B. F. (1969a). An operant analysis of problem solving. In his *Contingencies of reinforcement: A theoretical analysis* (pp. 133-171). New York: Appleton-Century-Crofts. (Original work published 1966)

Skinner, B. F. (1969b). The phylogeny and ontogeny of behavior. In his *Contingencies of reinforcement: A theoretical analysis* (pp. 172-217). New York: Appleton-Century-Crofts. (Original work published 1966)

Skinner, B. F. (1969). The role of the environment. In his *Contingencies of reinforcement: A theoretical analysis* (pp. 3-28). New York: Appleton-Century-Crofts. (Original work published 1968)

Skinner, B. F. (1969). The inside story. *Contingencies of reinforcement: A theoretical analysis* (pp. 267-297). New York: Appleton-Century-Crofts.

Skinner, B. F. (1974). *About behaviorism.* New York: Alfred A. Knopf.

Skinner, B. F. (1975). The shaping of phylogenic behavior. *Journal of the Experimental Analysis of Behavior,* 24, 117-120.

Skinner, B. F. (1977). *Particulars of my life*. New York, NY: McGraw-Hill. (Original work published 1976)

Skinner, B. F. (1978). The experimental analysis of behavior (a history). In his *Reflections on behaviorism and society* (pp. 113-126). Englewood Cliffs, NJ: Prentice-Hall. (Original work published 1977)

Skinner, B. F. (1979). Interview with B. F. Skinner (J. Morrow, Ed.). *Behaviorists for Social Action, 2,* 47-52.

Skinner, B. F. (1981). Selection by consequences. *Science, 213* (4507), 501-504.

Skinner, B. F. (1984). *The shaping of a behaviorist.* Washington Square: New York University Press. (Original work published 1979)

Skinner, B. F. (1987). Pavlov's influence on psychology in America. In his *Upon further reflection* (pp. 185-189). Englewood Cliffs, NJ: Prentice-Hall. (Original work published 1981)

Skinner, B. F. (1987). The evolution of behavior. In his *Upon further reflection* (pp. 65-74). Englewood Cliffs, NJ: Prentice-Hall. (Original work published 1984)

Skinner, B. F. (1987). The evolution of verbal behavior. In his *Upon further reflection* (pp. 75-92). Englewood Cliffs, NJ: Prentice-Hall. (Original work published 1986)

Skinner, B. F. (1989). Genes and behavior. In his *Recent issues in the analysis of behavior* (pp. 49-56). Columbus, OH: Merrill. (Original work published 1986)

Skinner, B. F. (1989). The behavior of organisms *at 50*. In his *Recent issues in the analysis of behavior* (pp. 121-135). Columbus, OH: Merrill.

Skinner, B. F. (1999). The concept of the reflex in the description of behavior. *Cumulative record: Definitive edition (pp. 475-503).* Acton, MA: Copley Publishing Group. (Original work published 1931)

Skinner, B. F. (1999). Can psychology be a science of mind. *Cumulative record: Definitive edition (pp. 661-673).* Acton, MA: Copley Publishing Group. (Original work published 1990)

Staddon, J. R. (2001). *The new behaviorism: Mind, mechanism, and society*. Philadelphia, PA: Psychology Press.

Thagard, P. (1980). Against evolutionary epistemology. *Proceeding of the Biennial Meeting of the Philosophy of Science Association, 1,* 187-196.

Thayer, H. S. (1981). *Meaning and action: A critical history of pragmatism*. Indianapolis, IN: Hackett.

Toulmin, S. (1983). The construal of reality: Criticism in modern and postmodern science. In W. J. T. Mitchell (Ed.), *The politics of interpretation* (pp. 99-117). Chicago: University of Chicago Press.

Toulmin, S. (1990). *Cosmopolis: The hidden agenda of modernity*. Chicago, IL: University of Chicago Press.

Williams, R. (1976). *Keywords*. New York: Oxford University Press.

Wittgenstein, L. (1967). *Zettel* (G. E. M. Anscombe & G. H. von Wright, Eds., D. Paul & G. E. M. Anscomb, Trans.). Berkeley, CA: University of California Press.

Wittgenstein, L. (1969). *On certainty* (G. E. M. Anscombe & G. H. von Wright, Eds.). NY: Harper & Row.

Wittgenstein , L. (1981). *Tractatus Logico-Philosophicus* (C. K. Ogden, Trans.). London: Routledge & Kegan Paul. (Original work published 1922).

Wood, W. S. (1986). *Bertrand Russell's review of* the meaning of meaning. *Journal of the Experimental Analysis of Behavior, 45*, 107-113.

Zuriff, G. E. (1980). Radical behaviorist epistemology. *Psychological Bulletin, 87*, 337-350.

Zuriff, G. E. (1985). *Behaviorism: A conceptual reconstruction*. New York: Columbia University Press.

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Toward A Behavioral Theory of "Creativity"

A Preliminary Essay

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Abstract

"Creativity" is an ordinary language term that appears to have value to the culture. "Creativity" is often determined admission of "creative" behavior. Creative behavior is a term that can be deconstructed by behavior analysts leading to train procedures to increase this behavior. Behavior analysis is a theory of context akin to evolutionary theory. In this type of theorizing the question is not if the context can be arranged to lead to greater amount of "creative" behavior but how to a the context to select for such behaviors. This paper attempts to serve as a preliminary essay on the selection of creativity, the production of novel products and forms of behavior through contingency co-adduction and derived stimulus relations, and the arrangement of the context to set the occasion for exploratory behavior that some would term "curiosity." Special emphasis i placed on such use in incentive programs to increase creativity.

Keywords: Creativity, verbal behavior, novelty

Introduction

In the operational analysis of psychological terms, Skinner (1948) discussed the importance of taking ordinary language phenomena and attempting to determine the contexts in which they occur. Skinner did not clearly lay out the determinants for whether an ordinary language phenomenon is significant for behavior analyst to explo specifically; however a general read of the work suggests a two prong test. Prong one- the term would need to be meaningful in the sense that properties or functions ascribed to the behavioral event would produce conditions tha define the event. In addition, prong two the fruitfulness by specifying the functions and defining conditions, we can predict new events or control (increasing or decreasing the occurrence of such events according to cultural values Creativity appears to be an ordinary language term that would meet this two-pronged test, for it is a term that has important social interest, particularly in the school system and for employers and it appears that behavior analyst' can do work to specify contexts to increase its occurrence.

As Skinner (1974) pointed out, definitional issues have always plagued the study of creativity. Many woul like to drive creativity into the organism and speak of a "creative mind"; however, the concept of the "creative mi has always been plagued with problems including issues of mind-body dualism (Skinner, 1974).

Behavior analysis represents an alternative tradition. Broadly viewed, the problems facing behavior analy studying creativity are the same as behavior analyst's interested in food and water seeking activities or for that ma any class of behavior. In essence, the problem is one of understanding behavioral variability. In coping with the problem, the behavior analyst is confronted with the task of specifying functional relationships that may exist betw the behavior being observed, the relevant conditions and factors that affect the behavior, and biological constraint the behavior. In sort the questions become how do we define "creativity?" What factors make the person act "crea

Behavior analysis takes a unique focus in the study of creativity as opposed to psychology because they a interested in developing a theory of context (Hayes & Hayes, 1992; Morris, 1988; Zuriff, 1980, 1985). This theory

focuses on answering why questions as to orderliness and the workings of the phenomenon in reference to these environmental / contextual conditions. Context is not just setting specific but also the on going action in time (Mor 2003). In behavior analysis, the context is broken down over scales of analysis that roughly correlate with differer reference points. Thus, in the tradition of behavior analysis all behavior is:

> the joint product of (i) contingencies of survival responsible for natural selection and (ii) contingencies of reinforcement responsible for the repertoires of individuals, including (iii) the special contingencies maintained by an evolved social environment (Skinner, 1981 p. 501 abstract).

Given the above, for behavior analysts "creativity" is the result of the interaction between a person's gene endowment and environmental experiences including the experiences, which might be termed culture. Since intervention at the phylogenic/genetic level (level 1) is unethical and/or impossible at this time, the focus is prima on selection at the ontogenetic level (levels 2 and 3). Thus to begin a behavior analysis of creativity we should lo the contexts that the term is used. When we speak of creativity, it is often in terms novel response productions. Fo example, Getzels and Jackson (1975) were able to distinguish two groups of adolescents attending private school group was a group that the peers labeled as "highly intelligent" and the other group was a group the peers label as "highly creative." The groups were equal in their academic standing. The group labeled "creative" was seen as n "novel in work", "spontaneous" and "playful." Guilford (1957, 1966) proposed that the distinction between conve and divergent response production is a good place to begin the study of creativity. In a convergent response produ the responses can be classified as an integration of established stimuli (summation of stimulus control) for a relev response. Divergent response production entails responses with less stimulus control between the response and th "correct answer." Guilford characterized the divergent mode as "creative." Some research appears to support tha those children labeled as "creative" have increase rates of "idea"(for our purposes verbal productions that meet stimulus control criteria)- called ideational fluency. For example, asking a child to tell some things that are round. Garcia (1980) found that children labeled as "creative" were much better at verbalizing novel strategies to solve problems. This view of creative behavior in children remain consistent, as children who engage in higher rates of behavior categorized as "spontaneity," "playfulness," and even at a young age the ability to see the humorous side things (Dasnky, 1980; Dansky and Leiberman, 1977).

An operant analysis of the producer can help increase the amount of "creative" or novel works. In addition operant analysis of the effects of creative works can inform about the nature of society and the community in whic live. Skinner (1974) in *Beyond Freedom and Dignity* stated that it would be by the arts that a culture was transfor

Creativity refers to a kind of behavior in which a person is likely to engage in under certain circumstances behavior analysts characterize creativity as an operant class1, (behavior, which operates on the environment to pr

1 In Baer's (1982) account all responses in a class are related directly, and an event that produces an increase or decrease in the probability of one member is correlated with a similar change in the probability for all members. Baer developed the concept of response class from Skinner's (1938) concept of response induction. Baer further elaborated that response classes were hierarchical in nature with higher order and lower order elements. Baer's (1982) theoretical concept of response class hierarchies was shown in a number of studies including Russo, Cataldo, & Cushing (1981). In this study, it was shown that noncompliance co-varied with a number of antisocial behaviors. Intervention on noncompliance showed rapid change in the other areas without directly targeting those behaviors. Programs that specifically work on child compliance may have generalized effects to other areas of aggressive functioning (Russo, Cataldo, & Cushing, 1981). These programs greatly enhanced the treatment of children with conduct difficulty, because

an effect). This class of behavior is often characterized as either novel or unusual, while still producing a desired Indeed in Winston and Baker's (1985) review of operant studies of "creativity" they noticed that one or both of th following measures were used (a) the variety of behaviors that are emitted such are increased number of geometri forms; and (b) occurrence of behaviors that were not previously shown by the individual (novel) or the occurrenc behaviors considered original. Holman, Goetz and Bear (1977) summarized creativity studies as containing the following characteristics: novelty, originality, and uniqueness. The question of creativity then becomes "How can environment be arranged and incentive programs be designed to select for 'creative' behavior?" This paper will a to explore this issue in five parts of the context- history, setting events, antecedents, behavior- behavior relations, consequences.

History Effects

History is a complicated behavioral phenomenon. Most behavior analysts view history as a process of cumulative acquisition over time based on selection of behavior by consequences, because the environment in wh children and adults live tends to be stable (Patterson, 1993) patterns such as creativity tend to be stable. For exam Harrington, Block, and Block (1983) reported the results of a longitudinal study of creativity spanning over seven from four years of age to eleven years of age. The study found that children identified as creative at four were usu rated by teachers at eleven as highly creative. History can increase or decrease a person's ability to emit creative novel responses. Two history phenomena are well established in the literature in particular two known topics fron cognitive literature do not need much work to operationalize behaviorally. They are proactive and retroactive interference. In proactive interference, old learning blocks the acquisition of new learning. In retroactive interfere new learning blocks the performance of a previously learned activity or skill. Since the primary effect of these tw variables is on performance, they are easy to remove from the "retrieval" and "storage" language and their effects performance in particular in children's production of verbal correspondence about what children see and what the later report that they have seen is clear (see Bruck & Ceci, 1999).

Setting the Stage.

Precurrent Behavior

Creativity can be seen as the search for possible responses. In this case an analysis of pre- current behavi

such children typically have large repertoires of disruptive behavior that to target specific individual elements of would make treatment very difficult. By the late 1980's, Carr (1988) began to describe varying response topographies as functionally equivalent. Thus non-compliance could be seen as a variety of elements to escape assignments. If this is the case then reinforcement of functionally equivalent incompatible responses could increase compliance rates. Some research supports this idea. Incorporating the concept of behavioral momentum and reinforcement matching may enhance compliance programs (Strand, 2001; Walher & Herring, 1999; Strand, Wahler, & Herring, 1999) by reinforcing child social approach. Children might be more likely to comply with requests after their social approach has been rewarded with attention (Walher & Herring, 1999). Thus the concept of the response class has moved the treatment of disruptive behavior from the impossible targeting of hundreds of behaviors, to the very difficult task of targeting compliance, to the relatively easy reinforcement of social approach programs.

would be in order (Skinner, 1953, 1974). Pre-current behavior is behavior that operates on the environment to cre the opportunity for responding. In this view stimuli that are generate by pre-current behavior are reinforcing. Pre-current behaviors change the present situation. Examples of simple, pre-current behavior's maybe thoughts and/or feelings.

More complex pre-current behaviors maybe arranging objects in groups, rearranging the order of things, o generating a rule. Pre-current behavior for creative responses may include teaching sequences to arrange objects teaching people to identify and describe their own emotional responses to guide the creation of a picture. In the ne section, we explore a form of pre-current behavior sometimes called "curiosity"

Setting the stage for creativity by setting the stage for "curiosity"

Behavior analysts view "curiosity" as classes of exploratory behavior. Often this form of behavior emerge response to particular setting events such as to reduce environmental uncertainty or as the result of particular establishing operation (such as a person who is food deprived looking in his refrigerator to find food or settings th would produce "boredom"). A large body of evidence suggests that novel and thus uncertain stimuli set the occasi for exploratory behavior (Butler, 1953; Harlow, 1950; Montgomery, 1951, 1953, 1955; Thompson & Heron, 195 Barnes and Baron (1961) found that stimulus novelty could increase exploratory behavior. Consequently, informational reinforcement (Foxall, 1995) and ecological reinforcement[2] (Bijou & Bear, 1965) plays a critical ro the selecting for this class of behavior. Researchers since the 1950's have shown that discrimination learning can established when the only apparent reinforcer is the opportunity to engage in exploratory behavior (Bulter, 1953; Harlow & McClearn, 1954; Montomery & Segall, 1955). The significance of this phenomenon is crucial in understanding the evolution of our culture and the process of science. For example, a scientist may speak of the "excitement" of finding novel ways of conceptualizing a case or classifying a phenomenon and this seems to desc critical reinforcer but little is known about the context in which makes such "excitement" reinforcing. Usually, suc contexts occur when the temporal proximity to effective behavior are "close" in the sense that the discriminative stimuli are clear.

The relation between organism's movements and the engagement in exploratory behavior is particularly st in the face of aversive stimulation. Aversive stimulation can lead to an increase in exploratory behavior from a "s distance" (Berlyne, 1950; Whiting & Mower, 1943). Several researchers have demonstrated a similar approach p in children when a child asks to see again an object that frightened them (Woodworth, 1921; Valentine, 1930). Woodworth & Marquis (1947) found similar behavior in adults. This exploration decreases the uncertainty of the environment by providing information as to potential ways to avoid future aversive stimulation.

Exploratory behavior is a good first step to ensuring the creation of "creative works." Children who explo

their surroundings will come into greater contact with models, who will demonstrate unique behavior to be added their repertoire. For example, the child who is able to "surf the net" may be exposed to many different WebPages,

[2] Bijou and Baer (1965, p5) define exploratory behavior as "a sequence of operant interactions that is strengthened and maintained by contingent ecological stimuli under specifiable setting factors." This lead to the concept of ecological reinforcement, which is similar to the concept of affordance introduced by J.J. Gibson (1979). Affordance is considered to be the various properties of an object which at the ecological level specify how such object relate to the observer. These properties demonstrate an automatic reinforcing effect such as a pleasant smell.

he can draw from later in producing his own website.

Antecedents

Antecedents acquire their ability to affect behavior by their association with consequences. Repetitive presentation of antecedents without consequences leads to habituation (Lowe, 1979; Pomerantz & Gardener, 1973 particular interest in the study of "creative" behavior would be the study of antecedents, which increase the proba of creative responses. In cognitive psychology, an enormous amount of research has been conducted on what they "priming effects." (see Tipper, 1985, 1991, 2001). Priming effects can be inhibitory or excitatory and roughly correspond to the Sd and S-delta phase of response acquisition training.

Nonverbal Antecedents

Nonverbal forms of creativity may emerge from novel production of concepts. Concepts are discriminated behavior in relation to stimuli (Etzel, Milla, & Nicholas, 1996; Quine, 1953). Concept formation has received increasing study by behavior analysts (Etzel, Milla, & Nicholas, 1996). Differences in concept development are representative of a child's past interactions with the stimuli (Bijou, 1976). For a concept to be formed, enough of relevant stimuli in the environment must be present to discriminate same features from different. For example, if T is asked to separate the black from the read card and is observed to do so we may conclude, "Terrell knows red fr black." Concept formation is critical in model production and can lead to unique methods for solving problems in "creative" or novel way (see Skinner, 1969).

Researchers have used the setting of play as way to assess creativity and the types of material as antecede for divergent or convergent play. For example, Pepler and Ross (1981) presented children 3 to 4 years old with various play material. They looked for divergent responses and convergent responses in the play. The convergent materials consisted of color pieces that would fit together on a form board. The divergent play material consisted unrelated pieces of paper. These pieces were in the form of random colors and shapes. They concluded that the divergent material was able to stimulate more divergent play.

Verbal Antecedents

Verbal antecedents in the study of "creativity" have the potential to be a very productive area. Verbal bel is serves as discriminative stimuli for performance or discriminative stimuli nonperformance of a behavior. Often antecedents take the form of verbal instruction or rules (Skinner, 1969; Ceruti,). For example, Howe (2002) show that in children with blocked correspondence from retroactive interference are unblocked by instructing the child "forget" the blocking behavior.

As Skinner (196) pointed out, though the evolution of culture or verbal communities, people contact shift environments (Skinner, 1986). For example, they listen to different speakers, watch different television shows, rea different newspapers and books, log onto the Internet at different rates and times, etc. This leads to different verb stimuli to serve as antecedents.

Looking at the speaker, it is interesting to note how speakers create rules. Often given the environmental co people create their own rules to serve as discriminative stimuli to guide them through the context (Skinner, 1969). rule generation, we refer to the term of "facts" as rules that the environment tacts to the world (Skinner, 1986).

However, rules are responses and their construction lends itself to variation between responses.

In general, autoclitics are how tacts and intraverbals are tacted together. We will discuss some of the facto hold these rules together under the section on recombinative generalization and contingency co-adduction but for n autclitics are selected for based on their effects on the listener. Thus, the autoclicts used to entice rule following interesting within themselves. For example rather then "nagging" children about not talking to strangers (the rule v want them to follow), parent's just tell them the story of Little Red Riding Hood and ask the child for the "moral" story. This form of rule training has considerable advantages. First in makes repetition much easier then simple di Children will often ask for parents to tell the story again. Second, the autoclitics that surround the rule make the st much more descriptive of the types of environmental contingencies that may result from failure to follow the "rule

Instruction Fidelity

Facts not under tight stimulus control of the environment are more prone to mutation and thus can be said to a higher mutation rate. It might be question then that "facts" could be more prone to selection forces if tight stimulu control is not promoted by the verbal community; however, increasing the mutation rate for the sake of accelerated evolution could easily backfire. There is a basic law of complexity, which goes like this: Complexity is limited by fidelity of replication. Therefore, accelerated mutation rates could quite easily result in a degeneration of the adaptations already in place. So, there might be a paradox. More forms of a particular instruction may just lead to functional forms. In this respect decreasing the mutation of instruction rate may accelerate the evolution rate (evolu in this sense meaning better fit with the social and nonsocial environment). The complexity of the instruction is increased. As with genes with more critical sites of error are now possible. In the history of culture, the printing p increased the fidelity of human instruction, allowing for increased complexity. That was in 1434. And look what happened to science, a literal explosion of work. Also, compare cultures, which have a written language with thos without.

Response variation to instructions are produced by methods that are "at least partly random" (p.73) much mutation (Popper, 1975). Given enough time and enough reciting, instructions will mutate. Mutations may better st selection pressure. First these mutations may serve as metaphors (Skinner, 1957) but quickly selection pressure en and leads to rejection of the points, which are metaphoric, and serves to lead to tighter control by the environment (Skinner, 1957). The processes of "instruction" and "selection" can be viewed as a form of adaptation (Popper, p. 73). Scientific theories serve as "structures" (Popper, 1975 p. 73) or as Skinner termed them "autoclitic frames (Skinner, 1957 cited in Vaughan, 1989 pp. 102-103) that are transmitted by instruction through social tradition and imitation. If mutation occurs, than these new instructions arise from within the organism (from the history in behav analytic terms). These new rules are exposed to certain pressures, challenges, or problems (i.e., are selected or deselected).

Another interesting point about rules and instructions is that not all elements may be "tacted" equally. This have profound effects on the use of instruction and rules in the future. For example, as Skinner (1957) pointed out,

stories may vary with repeated telling. Sometimes the retelling creates inconsistencies. Vygotsky (1971) noted in analysis of a fable how often fables contradict the "moral" of the story. One experimental technique that Vygotski (1971) utilized in studying the "rules governing the fable" (p. 96) was through experimental deformation. In experimental, deformation one element of the fable is changed and the effect it has on the retelling. Many readers probably had the experience of reading the same tale by different authors and noticing the differences.

Compiling of rules and the recombining of rule elements

Whetherby (1978) proposed the need to study the building of stimulus classes offering Esper's (1925, 193 matrix account is an account of analogy learning. The stimulus classes are formed in this account by their associati with positive consequences or feedback. For example, the trainer would say "correct" or " that's right." Analogy learning has a role in the study of creativity because often the novel production is not a completely novel productio the wedding of two or more previous forms of a solution from different contexts. In matrix training the environmer arrangement of stimuli is used to facilitate the acquisition of verbal behavior for a new stimuli.

"Under what conditions would rule fragment and recombine?" is a question of particular interest to those who study creativity. Whetherby's approach has been quite productive in building generalized language skills in children with severe developmental disorders (see research on recombinative generalization- Goldstein, 1983 & Mineo & Goldstein, 1990). This makes recombinative generalization studies (Goldstein, 1983, 1985, 1993) an a of future interest for behavior analysts studying creativity. Indeed, many of the early work by Esper created novel responses. Esper (1925, 1973) organized artificial linguistic systems into matrices. He assigned two word nonser combinations to color shapes and taught them to adults. Esper (1973) proposed through analogy adults learn responds to untrained shapes and was successful in demonstrating this.

In the standard training procedure, a matrix is created with a set of words on the ordinate and a set of loca or actions on the abscissa (Goldstein & Mineo, 1990). Each cell represents the product of the two points or the combination. The desired result of the matrix training procedure is to gain recombinative generalization, which is defined as "differential responding to novel combinations of stimulus components that have been included previou in other stimulus contexts"(Goldstein, 1985, p. 281) As Whetherby (1974) pointed out this research could lead to insights into Skinner's (1957) autoclitic frames. Skinner described autoclitic frames as:

> "Something less than full-fledged relational autoclitic behavior is involved when partially conditioned autoclitic 'frames' combine with responses appropriate to specific situations. Having responded to many pairs of objects with behavior such as the hat and the shoe and the gun and the hat, the speaker may make th response the boy and the bicycle on a novel occasion. If he has acquired a series of responses such as the boy's gun, the boy's shoe, and the boy's hat, we may suppose that the partial frame the boy's _____ is available for recombination with other responses. The first time the boy acquires a bicycle, the speaker ca compose a new unit the boy's bicycle. This is not simply the emission of two responses separately acquire The process resembles the multiple causation of Chapter 9. The relational aspects of the situation strengthe a frame, and specific features of the situation strengthen the responses fitted into it."(Skinner, 1957, p. 336

Using an object-location matrix, persons with severe retardation through training of four basic elements to establish the frame, generalized to more than forty-nine new combinations (Goldstein & Mousetis, 1989). Also, gi four expressive combinations of object-preposition-location, ninety untrained responses emerged (Goldstein &

Mousetis, 1989). Matrix training is still in its infancy. Elements of two and three word combinations are interestin what of complete sentences and elements of stories, musical scores or essays? Can training matrixes develop to c more original and novel production in these areas?

Bottle necks, Rules, and Founder Effects,

Two important phenomena are needed before a discussion of the "rule governed" behavior literature can b placed into perspective. The first phenomenon is akin to biology. In the biological literature, gene frequencies ofte change dramatically when a few individuals leave a large population and take up residence away from other mem of their own species. If these "pioneers" succeed in starting a new population, its gene pool will reflect the distrib of the genotypes present in the founders. This "founder effect" may lead to a gene distribution that varies substanti from the original population. Another phenomena, the bottleneck effect is related to the founder effect and occurs v only a small portion of the original population survives to serve as the sole source of the population. Akin to this behavioral level is the availability of behavioral repertoires. The literature on "rule governed" behavior is reple with bottlenecks and founder effects. For example in the typical study, subjects enter into a novel situation and the given instructions. These founder instructions serve to organize the behavior, especially if the instructions undergo survive a level of selection/reinforcement.

Behavior

Creativity as a Behavior Response class

Verbal Response Class of Creativity

Krasner (1958) was one of the first behaviorists to recognize that response classes could and probably sho be applied to verbal behavior. Since this time, behavior analyst's have recognized that verbal behavior is class-li sequential, and novel (Krasner, 1958; Salzinger, 1967, 1967; Garcia & DeHaven, 1974; Harris, 1975; Risely, 197 Wetherby, 1978; Whitehurst, 1971). For example, many researchers have demonstrated how various types of wo may be emitted without direct training. Emergence without direct training appears to occur as a function of reinfor the occurrence of a few similar words (Krasner, 1958; Salzinger, 1959). Other researchers have demonstrated an increase in the probability that words not directly reinforced will be emitted in a vocal imitation task if a second is reinforced (Brigham and Sherman, 1968). Harris (1975) reviewed the adequacy of the response class in explai all novelty in verbal behavior and created a detailed critique.

The Role of Selection

Selection plays a critical role in the development of creative works. This is immediately apparent in speak with artists. Painters will often recreate the same painting twenty to thirty times keeping elements that they "like" trying "new things" in areas that they don't like. A writer might rewrite a chapter of his/her book a dozen times to the chapter the way they "want it to be. " Thus, it appears that automatic reinforcement plays a critical role in the shaping of artistic works. Often a painter will compare the results of what they have accomplished with the some criteria. This form of automatic shaping, where the artist attempts successive approximations to target criteria, is critical to the long hours that often are required in creation of painting or writing. For example, "I wanted a brigh effect" or "I was hoping that it would look sadder" are often statements that artists will make in reviewing their w

Some artists have difficulty articulating the exact effect that they desire verbally but report that they will "know w they see it."

In addition, the role of momentum in creative work has yet to be explored. Some artwork and clothing styl continue long after they have stopped being fashionable. Such resistance to extinction is an interesting study in its right.

Selection and Contingency Co-Adduction

Andronsis's (1984) work on contingency co-adduction is critical to understanding the role of selection. In adduction, large response classes of behavior merge together to produce novel responses based not on stimulus characteristics but on characteristics of the contingencies of reinforcement. Often this leads to completely novel a abstract behavior termed "symbolic"

Selection and derived stimulus relations

One of the most important contributions to behavior analysis over the last thirty years has been the study o equivalence relations. In the standard equivalence training paradigm if A being trained to B and B is trained to C if a subject is shown C and responds with A, we say that equivalence has occurred (Sidman & Cressons, 1973). Equivalence relations might represent a broader category of arbitrary relational responding in humans (Barnes, H & Smeet, 1997; Hayes, 1994) and approximates what is termed in ordinary language "symbolic" behavior and "meaning." However, in some respects equivalence is greater then meaning. For example, when I tell the story of cat dying, the words often evoke images and feelings of sadness. Good writers need to be particularly skilled in u equivalence relations. An example would be in reading the sentence "the small boy wanted holding two chickens hands, while his tiny dog pranced beside him" the reader may being to have images of the boy walking with his d The ability to invoke rapid and clear images is critical to a good storywriter. Speechwriters have to be similarly skilled. The ability to evoke rapid images and emotions is critical to a well-written speech. A good writer can ha profound effects on his reader. Thus better exploration of equivalence relations can be helpful in exploring and fo relational classes.

The study of equivalence relations has particular relevance to the study of "creativity." In the standard equivalence format a matching to sample situation is set up and subjects are trained to match A to B, then subjects trained to match B to C. In the test condition, the untrained A to C relation is tested. If when A is presented the su responds with C, the experimenter concludes that equivalence has been achieved (Sidman, 1994; Zentall & Smeet 1996). One interesting point of equivalence research is called transfer of function without direct interaction (Doug Markham, 1996).

Equivalence training may ease transfer of function across modalities of speaker and listener behavior (Sid & Cressons, 1973; Goldstein, 1993). Still more research needs to be done in area of formulation of stimulus relat (McIvlane, Dube, Greene, & Serna, 1993).

Consequences to Strengthen creativity

Selection and Novelty

Research conducted with both the animals (Pryor, Haag, & O'Reilly, 1969) and humans to generate novel responses (Goetz & Bear, 1973; Goetz & Salmonson, 1972; Holman, Goetz, & Bear, 1972; Nueriger, 1986, 1992; Nueringer & Voss, 1993; Winston & Baker, 1985). Research on animals has demonstrated that dolphins can be tra to emit "creative" responses (Pryor, Haag, &.O'Reilly, 1969).

Multiple studies have been conducted on the generation of novel responses. Goetz and her colleagues have spent a considerable amount of time in increasing diversity of responses. Some studies have increased the diversit children's block building (Goetz & Bear, 1973), easel painting (Goetz & Salmonson, 1972), and felt pen drawing lego building (Holman, Goetz, and Bear, 1977). Analysis of the procedure used demonstrates the selection of beh through the use of reinforcement. In these studies, the behaviors are usually behaviors already within children's repertoires (e.g. block building) and then reinforcement placed on novel forms. Once a sufficient number of novel forms of behavior have been reinforced creativity emerges as a generalized response class.

In more complex studies with adults (Nueriger, 1986, 1992; Nueringer & Voss, 1993), the research questi became "Can a person be trained to behave completely randomly?" Nueringer (1986, 1992) set out to answer this question. He programmed a computer system to determine if number sequences that he gave were truly random. If sequence was random the computer would signal so, if not the computer would signal this was not the case. Using technique Nueringer was able to train subjects to behave completely randomly. As an interesting point of the study subjects were not able to identify "how" they were coming up with the numerical sequences, yet they were able to so. This shows that unpredictable behavior can be strictly deterministic.

Conclusion

While the purpose of this paper was to briefly introduce what behavior analysis has to offer in the study of training of the creative, it is clear that much greater amounts of research need to be conducted in this area. Creatin environments, which maximize the potential of artists and writers to produce their work, will lead to greater enjoy for all. Curriculums that produce greater creativity in children will have countless pay-offs for children even outs the arts.

References

Baer, D.M.(1982). The imposition of structure on behavior and the demolition of behavioral structures. In Howe (Ed.), *Nebraska symposium on motivation*, 29, 217-254.

Barnes, G.W. & Baron, A. (1961). Stimulus complexity and sensory reinforcement. *Journal of Comparati and Physiological Psychology, 54,* 466-469.

Barron, F. & Harrington, D.M.(1981). Creativity, intelligence, and personality. *Annual Review of Psycho 32,* 439-476.

Berlyne, D. E. (1950). Novelty and curiosity as determinants of exploratory behavior. *British Journal of Psychology, 41*, 68 - 80.

Bijou, S. W.(1976).*Child development: The basic stage of early childhood.* Englewood Cliff, NJ: Prenti Hall, Inc.

Bijou, S. W. & Bear, D. M. (1965). *Child development, Vol. 2: Universal stage of infancy*. New York Appleton-Century- Crofts.

Brigham, T.A., & Sherman, J.A. (1968). An experimental analysis of verbal imitation in preschool childre *Journal of Applied Behavior Analysis 1*, 151-160.

Brunk, M. & Ceci, S.J. (1999). The suggestibility of children's memory. *Annual Review of Psychology*, 5(419-439.

Butler, R. A. (1953). Discrimination learning by rhesus monkeys to visual - exploration motivation. *Journ Comparative and Physiological Psychology, 46*, 95 - 98.

Carr, E.G. (1988). Functional equivalence as a mechanism of response generalization. In R.H. Horner, G. Dunlap, & R.I. Koegel (Eds.) *Generalization and maintenance: Life-style changes in applied settings (pp. 221-* Baltimore: Paul H. Brookes Publishing.

Esper, E.A. (1925). A technique for the experimental investigation of associative inference in artificial linguistic material. *Language Monographs No. 1*.

Esper, E.A. (1933). Studies of linguistic behavior organization: I. Characteristics of unstable verbal reacti *Journal of General Psychology*, *8*, 346-379.

Etzel, B. C., Milla, S. R., & Nicholas, M. D.(1996). Arranging the development of conceptual behavior: A technology for stimulus control. In S. W. Bijou & E. Ribes (Eds.) *New directions in behavioral development (pp. 127).* Context Press: Reno: NV.

Gaines, R. & Price-Williams, D.(1990). Dreams and imaginative processes in American and Balinese art *Psychiatric Journal of the University of Ottawa, 15(2)*, 107 - 110.

Garcia, E.E. and DeHaven, E.D. (1974). Use of operant techniques in the establishment and generalization language: A review and analysis. *American Journal of Mental Deficiency, 79*, 169-178.

Goetz, E. M. & Salmonson, M. M. (1972). The effects of general and descriptive reinforcement on "creati in easel painting. In G. B. Semb (Ed.), *Behavior analysis in education, 1972 (pp. 53-61)*. Lawrence, KS: Univers Kansas Support and Development Center for Follow Through.

Goldstein, H.(1983). Recombinative generalization: Relationship between environmental conditions and t linguistic repertoires of language learners. *Analysis and Interventions in Developmental Disabilities, 3*, 279-29

Harrington, D.M., Block, J. & Block, J. H. (1983). Predicting creativity in pre- adolescence from diverge thinking in early childhood. *Journal of Personality and Social Psychology, 45,* 609-623.

Harlow, H. F.(1954). Motivational forces underlying learning. In *Learning theory, personality theory, c clinical research- The Kentucky Symposium*. New York: John Wiley & Sons.

Harlow, H.F. & McClearn, G.E. (1954). Object discrimination learned by monkeys on the basis of manipu

motives. *Journal of Comparative and Physiological Psychology, 47,* 73-76.

Hebb, D. O. & Thompson, W. R. (1954). The social significance of animal studies. In G. Lindzey's (Ed.) *Handbook of Social Psychology.* Reading, Mass.: Addison-Wesley Publishing Company.

Holman, J., Goetz, E.M., & Baer, D.M. (1977). The training of creativity as an operant and an examinatior its generalization characteristics. In B.C. Etzel, J.M. LeBlanc, & D.M. Bear (Eds.), *New Developments in behavi research, theory, methods, and application: In honor of Sidney W. Bijou (pp. 441-472).* Hillsdale, NJ: Erlbaum.

Kogan, N. (1983). Stylistic variation in childhood and adolescence: Creativity, metaphor, and cognitive st P.H. Mussen (Ed.), *Handbook of child psychology (vol. 3).* New York: Wiley.

Krasner, L. (1958). Studies of conditioning of verbal behavior. *Psychological Bulletin, 55,* 148-170.

La Greca, A.M. (1980). Can children remember to be creative? An interview study of children's thinking processes. *Child Development,* 51, 572-575.

Lowe, D.G. (1979). Strategies, context, and the mechanisms in response inhibition. *Memory & Cognition,* 74-80.

Mineo, B.A. & Goldstein, H. (1990). Generalized learning of receptive and expressive action-object resp by language delayed preschoolers. *Journal of Speech and Hearing Disorders, 55,* 665-678.

Montgomery, K. C.(1951). The relation between exploratory behavior and spontaneous alteration in the w rat. *Journal of Comparative and Physiological Psychology, 44,* 582 - 589.

Montgomery, K. C.(1953). The effects of hunger and thirst drives upon exploratory behavior. *Journal of Comparative and Physiological Psychology, 46,* 315 - 319.

Montgomery, K. C.(1955). The relation between fear induced by novel stimulation and exploratory behavi *Journal of Comparative and Physiological Psychology, 48,* 254 - 260.

Montgomery, K.C. & Segall, M. (1955). Discrimination learning based upon the exploratory drive. *Journa*

Comparative and Physiological Psychology, 48, 225-228.

Morris, E. K. (1988). Contextualism: The world view of behavior analysis. *Journal of Experimental Chi Psychology, 46,* 289 - 323.

Morris, E.K.(2003) Context and contextualism: Conceptual confusion, contextual classification. In K.S. Bu T. Stokes (Eds.). *A small matter of proof: The legacy of Donald M. Baer. (pp. 139-150).* Context Press: Reno, N

Neuringer, A.(1986). Can people behave "randomly?": The role of feedback. *Journal of Experimental Psychology: General, 115 (1),* 62-75.

Neuringer, A.(1992). Choosing to vary and repeat. *Psychological Science, 3(4),* 246 - 250.

Neuringer, A. & Voss, C. (1993). Approximating chaotic behavior. *Psychological Science, 4(2),* 113 - 119.

Patterson, G.R. (1993) Orderly change in a stable world: the antisocial trait as a chimeria. *Journal of Consulting and Clinical Psychology.*

Pepler, D.J. & Ross, H.J. (1981). The effects of play on convergent and divergent problem-solving. *Child Development, 52,* 1202-1210.

Pomerantz, J.R. & Gardner, W.R. (1973). Stimulus configurations in selective attention. *Perception & Psychophysics, 14,* 565-569.

Popper, K. (1975). The rationality of scientific revolutions. In R. Harre (Ed.*) Problems of Scientific Revolution: Progress and Obstacles to Progress in the Sciences (pp. 72-101).* Cambridge University Press.

Pryor, K.W., Haag, R., & O'Reily, J. (1969). The creative porpoise: Training for novel behavior. *Journal of the Experimental Analysis of Behavior, 12,* 653-661.

Risely, T.R. (1977). The development and maintaince of language: An operant model. In B.C. Etzel, J.M. LeBlanc, and D.M. Baer (Eds.), *New Developments in Behavioral Research.* Laurence Erlbaum Associates, Hillsdale, N.J.

Russo, D.C., Cataldo, M.F., & Cushing, J.P.(1981). Compliance training and behavioral covariation in the treatment of multiple behavior problems. *Journal of Applied Behavior Analysis, 14,* 209-222.

Salzinger, K. (1959). Experimental manipulation of verbal behavior: A review. *Journal of General Psychology, 61,* 65-94.

Salzinger, K. (1967). The problem of response class in verbal behavior. In K. Salzinger and S. Salzinger (Eds.), *Research in verbal behavior and some neurophysical implications.* Academic Press, New York.

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

Skinner, B.F. (1938). *The behavior of the organism.* Appleton-Century-Croft. New York.

Skinner, B.F. (1957). *Verbal behavior.* New York: Appleton-Century-Crofts.

Skinner, B.F. (1969) An operant analysis of problem solving.

Skinner, B.F. (1974). *Beyond Freedom and Dignity*. Appleton-Century-Croft. New York.

Skinner, B. F. (1979). *About behaviorism.* New York: Knopf.

Skinner, B. F. (1981). Selection by consequence. *Science, 213*, 501 - 504.

Skinner, B. F.(1986). The evolution of verbal behavior. *Journal of the Experimental Analysis of Behavic* 115-122.

Strand, P.S. (2001). Momentum, matching, and meaning. *The Behavior Analyst Today, 2(3),* 170-176.

Strand, P.S., Wahler, R. G., & Herring, M. (1999). The impact of behavior-specific reinforcement and ger maternal responsiveness on child compliance to mother directives. In P. S. Strand's symposium, *Application of Matching theory and behavioral momentum to child behavior therapy*. Presented Association for the Advancem Behavior Therapy's 33rd Annual Convention in Toronto.

Thompson, W. R. & Heron, W.(1954). The effects of early restriction on activity in dogs. *Journal of Comparative and Physiological Psychology, 47*, 77 - 82.

Tipper, S.P. (1985). The negative priming effect: Inhibitory effects of ignored primes. *Quarterly Journal Experimental Psychology: Human Experimental Psychology, 37*, 45-47.

Tipper, S.P. (1991). Less attentional selectivity as a result of declining inhibition in older adults. *Bulletir the Psychonomic Society, 29*, 45-47.

Tipper, S.P. (2001). Does negative priming reflect inhibitory mechanisms? A review and integration of conflicting views. *Quarterly Journal of Experimental Psychology, 54*, 321-343.

Valentine, C. W.(1930). The innate bases of fear. *Journal of Genetic Psychology, 37*, 394 - 419.

Vaughan, M.(1989). Rule-governed behavior in behavior analysis: A theoretical and experimental history.

S.C. Hayes (Ed.) *Rule- governed behavior: cognition, contingencies, and instructional control (pp. 97-* Plenum Press

Vygotsky, L. S. (1971). Analysis of the fable. In L.S. Vygotsky's *Psychology of art (pp. 89-117)*. The MIT Press.

Walher, R., Herring, M. & Edwards, M. (1999). A reinforcement matching law interpretation of the mothe responsiveness-child compliance correlation. In P. S. Strand's symposium, *Application of matching theory and behavioral momentum to child behavior therapy.* Presented Association for the Advancement of Behavior Thera 33rd Annual Convention in Toronto.

Wahler, R. G., Williams, A., & Cerezo, M. A. (1990). The compliance and predictability hypothesis: A sequential and correctional analysis of coercive mother-child interactions. *Behavioral Assessment, 12,* 391-407.

Whetherby, B.(1978). Miniature languages and the functional analysis of verbal behavior. In R.L. Schiefel (Ed.), *Bases of Language Intervention (pp. 397-448).* University Park Press, Baltimore.

Whitehurst, G. J. (1971). Generalized labeling on the basis of structural responses classes by two young children. *Journal of Experimental Child Psychology, 12,* 59-71.

Whitehurst, G. J. (1972). Production of novel and grammatical utterances by young children. *Journal of Experimental Child Psychology, 13*, 502-515.

Whiting, J. W. M. & Mowrer, O. H.(1943). Habit progression and regression- a laboratory study of some factors relevant to human socialization. *Journal of Comparative Psychology, 36,* 229 - 253.

Winston, A. S. & Baker, J. E.(1985). Behavior analytic studies of creativity: A critical review. *The Beha Analyst, 8,* 191 - 205.

Woodworth, R. S. (1921). *Psychology.* New York: Holt.

Woodworth, R. S.(1947). Reinforcement of perception. *American Journal of Psychology, 60,* 119 - 125.

Woodworth, R. S., & Marquis, D. G.(1947). *Psychology. (5th ed.)* New York: Holt.

Zentall, T.R. & Smeets, P.M. (Eds.) (1996). *Stimulus class formation in humans and animals.* North-Hol Elsevier Science.

Zuriff, G. E. (1980). Radical behaviorist epistomology. *Psychological Bulletin, 87,* 337 - 350.

Zuriff, G. E. (1985). *Behaviorism: A conceptual reconstruction*. New York: Columbia University Press.