Video Modeling: A Window into the World of Autism

Article *in* The Behavior Analyst Today · January 2003

DOI: 10.1037/h0100025 · Source: DOAJ

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Volume 4 Issue 3

THE BEHAVIOR ANALYST TODAY

A Context for Science with a Commitment to Behavior Change

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PUBLISHER'S STATEMENT

VOLUME 4, ISSUE 3

Published: December 8, 2003

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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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.

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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 Beth Rosenwasser at ibrosie@aol.com 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.

From Hypotheses to Interventions: Applied Challenges of Intervening with Escalating Sequences of Problem Behavior

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Abstract

It is generally accepted that behavioral interventions must follow systematic hypotheses regarding variables that maintain problem behavior. Hypotheses-based interventions are more likely to address behavioral functions and decrease or eliminate all problem behavior, often by teaching functionally equivalent appropriate responses as replacement behaviors. However, in some cases initial functional assessment/analyses may not lead to hypotheses that result in effective interventions. In such cases, it is important to continue functional analysis procedures to look more precisely at behavioral functions. This case study discusses how behavioral interventions were modified for a 27 year-old woman with severe disabilities, following systematic analyses of behavioral functions when initial interventions were ineffective.

Keywords: Functional assessment, hypothesis-based intervention, response sequences, covariation

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A thorough understanding of the relationships between behavior and ecological/environmental variables has long been the foundation for effective treatment of problem behavior in community settings (Kern, Childs, Dunlap, Clarke, & Falk, 1994; Mace & Lalli, 1991; Selinske, Greer, & Lodhi, 1991). This process has assumed even increased prominence with the current focus on further refinement of the functional assessment technology to ensure effective delivery of intervention (Borrero & Vollmer, 2002; Galiatsatos & Graff, 2003; Kennedy, Meyer, Knowles, & Shukla, 2000). Review of the professional literature makes it quite clear that best practice regarding the delivery of behavioral support requires the use of functional assessment and analysis procedures to guide the design of functionally appropriate intervention strategies (Carr, Robinson, & Palumbo, 1990; Day, Horner, & O'Neill, 1994; Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991; Iwata, Vollmer, & Zarcone, 1990; Repp & Karsh, 1994; Sprague & Horner, 1992; Steege, Wacker, Berg, Cigrand, & Cooper, 1989).

Recent reviews of the professional literature show that there has been some lag between identifying functional assessment as a best and essential practice in behavioral support, and the actual use of these procedures in reports appearing in the published literature (Blakslee, Sugai, & Gruba, 1994). Although this may reflect publication lag and may be changing (Blakslee et al., 1994), contacts with community practitioners, teachers, family members, and paraprofessionals at local and regional workshops and conferences suggest that a wide gap still exists between research and clinical practice in community settings. It remains very important that the factors that contribute to lack of use of functional assessment and support strategies may be identified.

One such factor may be the difficulty encountered in some cases in identifying behavioral functions and generating adequate hypotheses to guide development of effective support interventions (Holden, 2002). Initial assessment information and initial hypotheses may not be accurate or may lack sufficient precision to guide effective intervention. Factors that may complicate functional assessment and hypothesis development include the fact that problem

behaviors may serve multiple functions (Day, Horner, & O'Neill, 1994; Iwata, Pace, Cowdery, & Miltenberger, 1994), that problem behaviors may be controlled by contextual variables, some of which may not be easily identified or isolated (Carr, 1994; Haring &Kennedy, 1990; Smith, Iwata, Goh, & Shore, 1995), escalation in problem behavior may place the participants/therapist at risk (Smith & Churchill, 2002), that multiple topographies of problem behaviors within a response class may covary systematically, with the occurrence of some behaviors influencing the probability of occurrence of other, subsequent behaviors (Albin, O'Brien, & Horner, 1995; Kennedy, et al., 2000; Lalli, Mace, Wohn, & Livezey, 1995; Sevin, Gullota, Sierp, Rosica, & Miller, 2002), and that functions of problem behaviors may change over time (Lerman, Iwata, Smith, Zarcone, & Vollmer, 1994).

The current case study was initially designed as an analysis of response covariation that took the form of behavioral escalation (Albin, et al., 1995; Shukla & Albin, 1996). Initial functional assessment and analysis led to a set of hypotheses guiding the implementation of two intervention strategies. Before implementing these strategies, however, an analysis of the effects of extinction of some responses within a response class was done in order to assess covariation of responses within the response class. When hypotheses-driven interventions were implemented, the results were negative. This led to further examination of assessment information and the development of a more precise hypothesis regarding variables controlling problem behaviors. Analysis of this subsequent hypothesis was then conducted within the context of an antecedent intervention strategy (i.e., reducing verbal demands during task performance). The case study illustrates both the ongoing nature of a functional assessment and hypothesis development process, and also presents further data documenting the effects of extinction on response covariation within a functional response class.

METHOD

Participant and Setting

Shannon was 27 years old at the time of the study and was labeled as having a severe intellectual disability. She had no verbal language but used some manual signs to communicate when specifically prompted to respond to requests. She shared a home with four other female housemates. She engaged in multiple problem behaviors that included less severe topographies (e.g., whining and shaking her body from side to side), but that also escalated to more severe responses (e.g., screaming and crying, pushing, hitting, scratching, and grabbing others, and occasionally hitting herself). Experimental sessions with Shannon were conducted in her home environment. Her housemates and support persons were not present in the immediate task area during most experimental sessions, but often "passed through" to access other areas of the house. An observer, using a camcorder, was also present during all of the experimental sessions throughout the study.

Measurement

Direct observation of behavior. Videotaped observation was used for all data collection activities. Data were coded using a software package (Portable Computer Systems for Observational Use) developed for simultaneous real-time recording of multiple behaviors by assigning a keyboard key for each variable (Repp, Harman, Felce, Van Acker, & Karsh, 1989; Repp, Felce, & Karsh, 1991). The software program allowed us to record (a) frequency of events (i.e., each keystroke is recorded as a one-second occurrence), (b) duration (i.e., a key is pressed at the onset and offset of an event), and (c) sets of mutually exclusive events (i.e., only one key in a set can be activated at a given time).

Assessment of Conditional Probability. Video data coded on desktop computers were analyzed using the Sequential Data Analysis (SDA) program developed by Sprague and Shamee (1992). The SDA program generates conditional probabilities and also Z scores, based on recommendations by Whitehurst, Fischel, DeBaryshe, Caufield, and Falco (1986). The Z scores determine the statistical significance of conditional probabilities, when compared to the base rates for each variable. Conditional probabilities were computed at lag 1 for the Demand and Attention conditions (Functional Analysis) and for Contingent Assistance and Functional Communication Training (Initial Intervention) phases to assess the sequential relationship between Shannon's less and more severe problem behaviors and instructor behaviors.

Two sets of hypotheses regarding sequential relationships between variables (Bakeman & Gottman, 1986) were of interest for Shannon: (a) More severe problem behavior (scream/cry, hit/grab instructor, hit self) would most likely follow less severe problem behaviors (whine, shake); (b) Problem behavior would most likely to follow instructor cues/prompts, physical block, giving break from task, making the offer to help, and prompting communication.

Video data were uploaded to a desktop PC for a sequential analysis of the behavior pattern and for determining conditional probabilities between critical variables.

Measurement Variables

The rate per minute and conditional probability of Shannon's problem and adaptive behaviors were the primary dependent variables for the study. Instructor behaviors were also recorded throughout the study to determine the relation between instructor and participant behaviors. (Operational definitions and the units of measurement are available upon request from the first author.)

Interobserver Agreement

Interobserver agreement was calculated using the Reliable Program from the same software package noted above. Across each phase for the study, a second independent observer coded 35% of the videotaped sessions to determine interobserver agreement. This study used a tolerance setting of 3-s, meaning that an agreement was scored if both observers pressed the same key within +/- 3 s of each other. Reliability assessments were evenly distributed across all of the phases of the study. Overall agreement for all variables across all experimental conditions was 98% (range, 50 to 100).

Experimental Design

An ABABCBA design was initially used to document the results of functional analysis procedures, where A represented “No Demand” (control condition), B represented “Demand,” and C represented “Attention” conditions (O'Neill, Horner, Albin, Storey, Sprague, & Newton, 1997). Two additional designs were used to document the effects of intervention procedures. First, an ABA design was used to document the effect of the use of extinction, where A represented continuous reinforcement for all problem behaviors and B represented EXT for less severe topographies while continuously reinforcing (CRF) more severe topographies. Finally, an AB-CDC design was used to document the effects of various intervention strategies. In this design A represented Contingent Assistance for Less Severe problems behaviors, B represented functional communication training (FCT) plus extinction (EXT) for less severe topographies, C represented Low Demand plus CRF for all problem behavior and D represented [High] Demand

plus CRF for all problem behavior. The use of each design noted above reflects the challenge of analyzing the pattern when behavioral functions change rapidly. Thus, all intervention procedures may also be considered an extension of functional analysis procedures.

Functional Assessment of Problem Behavior

Functional assessment interviews and direct observations were conducted to obtain preliminary information on events and conditions that predicted and maintained Shannon's problem behavior (O'Neill, et al., 1997). Descriptive data indicated that Shannon engaged in multiple topographies of problem behavior, mostly when task demands were placed on her suggesting an escape function for her problem behavior. An experimental analysis of problem behavior in the natural setting (Karsh, et al., 1994) was conducted to isolate specific variables that controlled problem behavior. No Demand and Demand conditions were presented in alternate phases to test an escape hypothesis. In addition, a single phase of Attention was conducted to test the effect of instructor attention on problem behavior. Each condition is described below:

No Demand. This was a control for the Demand condition. Shannon and the instructor (first author) sat in the living room, watched TV, or looked at magazines. No demands were made on Shannon and noncontingent attention (social interaction) was provided at 1-min intervals throughout the session.

Demand. A set of household activities (e.g., sweeping, mopping the floor, cleaning the refrigerator, or making her bed) was presented within 10-min sessions. The instructor presented task related cues/prompts and delivered praise contingent upon completion of a step. The instructor provided a 40-s contingent time-out (escape). During the break, the instructor left the task area and all verbal interactions were stopped. Sometimes Shannon's problem behavior (e.g., crying and screaming) continued even during the break. In fact, frequently she followed the instructor instead of taking a break alone, as expected. The task was resumed after 40 seconds. A session was terminated if Shannon's aggressive behaviors (hit, grab, pinch, scratch instructor) continued for more than 1 minute during a session.

Attention. This condition was implemented to test the effect of instructor attention on Shannon's problem behavior. Because the previous Demand condition showed decreases in rate, trend, and level of problem behavior, it was believed that the task aversiveness was reduced due to instructor attention. During this condition, attention was manipulated in the context of instructional tasks. The instructor presented the task to Shannon, waited for her to start the task, and then left the task area by saying, "You can keep doing ___. I'm going to go over and see what ____ is doing." The instructor then left the task area while the observer continued videotaping. The instructor provided attention (e.g., return to task area and ask, "What is the matter? Do you need help?") contingent upon each occurrence of problem behavior. The instructor stayed in the task area until problem behaviors stopped. It was hypothesized that the rate of problem behavior would increase if maintained by instructor attention.

Analysis of Extinction

Extinction analysis was conducted primarily to study the (a) effect of covariation between the different members of the response class when some but not all responses were placed on extinction (Shukla & Albin, 1996), and (b) simultaneous effects of the escape plus attention contingencies, which were identified as maintaining variables during the initial Functional Analysis. Shannon's problem behaviors were differentiated into "More Severe" (screaming/crying, aggression, and self-injury) and "Less Severe" (whining, shaking) topographies (Grace, Kahng, & Fisher, 1994). The specific conditions are described below:

CRF (All). This condition (baseline) was similar to Demand condition in the functional analysis where all problem behaviors produced a break on a CRF schedule of reinforcement. However, in this condition, when a break was provided, it was combined with instructor attention (i.e., Escape + Attention). The living room was designated as the "break area," and when a break was given contingent upon problem behavior, both Shannon and the instructor went to the break area, watched TV, looked at magazines, or engaged in social interaction for 1 minute.

EXT (Less Severe). An extinction contingency was implemented for less severe behaviors (whining and shaking), i.e., these behaviors did not produce a break. More severe behaviors continued to be contingently reinforced with escape + attention on a CRF schedule. This phase was followed by a reversal to the CRF (All) condition.

ANALYSIS OF INTERVENTION PROCEDURES

Contingent Assistance for Less Severe Responses. During the last phase of Extinction Analysis, Shannon did not take a break despite being offered breaks, continuing to work for 3 of the 6 sessions. In fact, she escalated to more severe responses when asked to take a break following less severe responses. However, she took a break at the end of the task. This suggested that taking a break before the task was completed was not necessarily reinforcing for Shannon. Therefore, during this condition, when a less severe response occurred, the instructor said, "Here, let me help you" and provided the necessary assistance in order to reduce the presumed aversiveness of the task. More severe responses continued to receive escape + attention on a CRF schedule.

Functional Communication Training + EXT (Less Severe). Functional communication training (FCT) plus extinction for less severe responses was implemented because contingent assistance did not prevent escalation to more severe topographies in the response class (Shukla & Albin, 1996). During this phase, Shannon was prompted to sign "break." She already had the response in her repertoire and the purpose of this phase was to provide prompts to sign break. Less severe responses were placed on extinction and more severe responses resulted in escape + attention without Shannon signing for a break.

Extended Analysis and Hypotheses Development. All of the hypotheses regarding the function of Shannon's problem behavior were tested. A summary of data from previous experimental conditions and conditional probability analysis showed that Shannon's less severe problem behavior occurred when the instructor presented cues/prompts to work faster or corrected her errors. However, more severe problem behavior occurred at high rates when (a) escape was the only contingency, (b) less severe responses were placed on extinction, (c) assistance was provided by making direct statements using the word "help," and (d) she was asked to take/sign break. Problem behavior occurred at low rates when escape + attention were provided concurrently contingent upon the occurrence of less severe responses. No problem behavior occurred during any of the three experimental phases in the No Demand condition. On the basis of these findings, a more precise hypothesis developed. It was that the task itself may not be
aversive but that some features of the demand context were aversive enough to produce problem behavior. It was likely that prompts to sign break were perceived as "demands" by Shannon. It was also noted during the Attention condition, that there were more sessions without problem behavior compared to the Demand phase. This appeared to be a reflection of the condition where demands were low because the instructor was away from the task area for a longer period of time. These hypotheses were confirmed by the conditional probability data described in the Results section. Therefore, an experimental analysis of low versus high rate of instructor demands was

conducted to test the new hypothesis that high rate of demands, especially verbal behaviors on the instructor's part, were discriminative for Shannon's problem behaviors, and that all problem behavior would decrease if the rate of task demands was reduced.

Low Demand. This condition was similar to all of the previous Demand conditions except that the rate of task demands was deliberately kept very low (≤ 1.2 per min). Shannon was prompted to start a task and then cues/prompts were withheld. The instructor, however, was physically present in the task area. If Shannon was slow to start a step in the task, the instructor allowed Shannon the time (latency) to respond. Instead of modeling a step for her by saying, "Watch how I do this" (as in the previous conditions), the instructor modeled the step without the verbal behavior. This was coded as task assistance. Rate of demands was also cut down by not telling Shannon to work faster. Tasks that had resulted in the occurrence of problem behavior in the past sessions (sweeping, mopping, loading dishwasher, making bed) were included in this phase too. All occurrences of problem behavior produced a break (escape + attention) on a CRF schedule. It was hypothesized that if the instructor's verbal behavior triggered Shannon's problem behavior, minimizing the rate of requests would decrease the likelihood of problem behavior.

High Demand. This condition was identical to the three Demand conditions described in the extinction analysis and was followed by a reversal to the Low Demand condition.

Results

Initial Functional Analysis

Data show that no problem behaviors occurred during any of the three phases of No Demand conditions (see panel 1, 3, and 7 in Figure 1). For the three phases of the Demand (CRF - All) condition, data showed high rates of problem behaviors (range, 0.0 to 3.0), but each phase was also characterized by high variability in rates of problem behaviors (range, 0.0 to 3.0 panel 1; 0.0 to 0.2, panel 2; 0.0 to 1.4, panel 3). Four of 31 sessions in the Demand condition were terminated. For the Attention condition (see panel 5, Figure 1), rates of problem behaviors were also high but very variable with changes in both trend and level, observed within the session (M= 0.4 per min; range, 0.0 to .8).

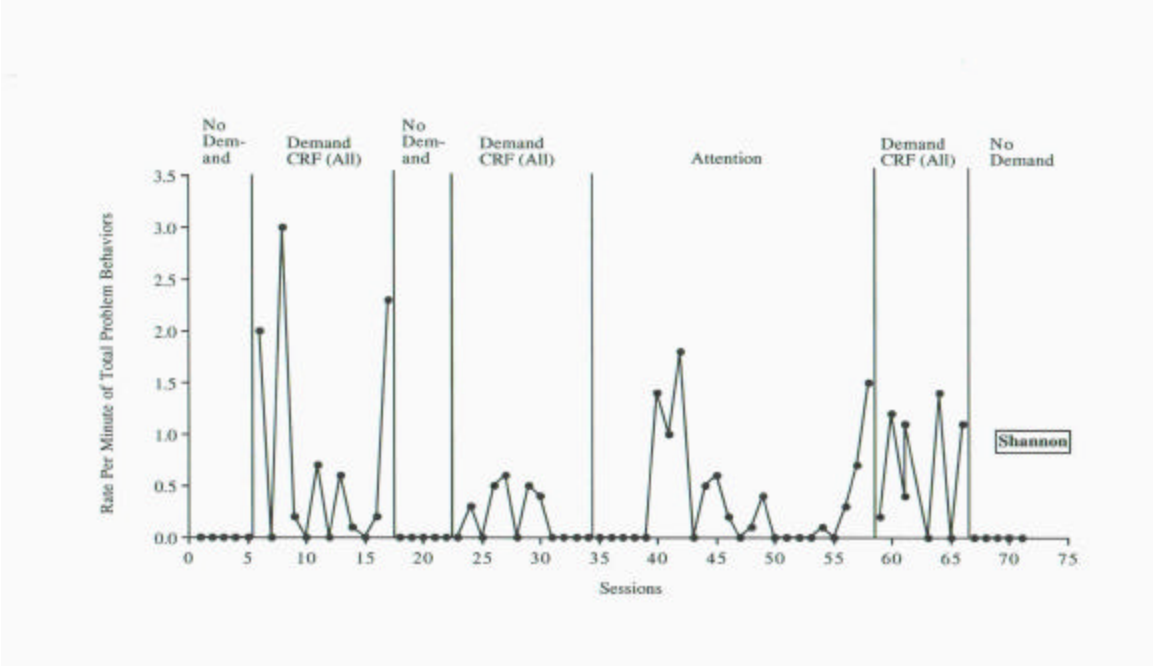

Figure 1. Rate per minute of total problem behaviors for Shannon during Functional Analysis.

To facilitate hypotheses development, conditional probability assessments were conducted. In the Demand condition when all responses were on a CRF (All) schedule, the conditional probability of shake given a whine was 12%, of scream/cry given a shake was 35%, and of hit/grab given a scream/cry was 22%. When hitting herself occurred, the conditional probability of one hit following another at lag 1 was 75%. Data on the sequential relationship between Shannon's and instructor's behaviors showed that the conditional probability of whine given cues/prompts was 9% and of a scream/cry given a break from task was 35%. It is interesting to note that hit/grab or hit herself were more likely to follow Shannon's own less severe responses (like an operant chain) rather than instructor's behavior.

Table 1

Lag 1 Conditional Probability of Different Problem Behaviors during Demand [CRF (All) - Escape]

	Whine	Shake	Scream/Cry	Hit/Grab	Hit Self
Whine	0.04	0.12**	0.08	0.21***	0.00
Shake	0.06	0.12*	0.35***	0.06	0.00
Scream/Cry	0.00	0.11***	0.18	0.22***	0.00
Hit/Grab	0.08	0.00	0.16	0.04	0.00
Hit Self	0.00	0.00	0.00	0.00	0.75***
I-Cue/ Prompt	0.09***	0.01	0.09	0.02	0.00
I-Praise	0.01	0.00	0.00	0.00	0.00
I-Correction	0.02	0.00	0.01	0.02	0.00
I-Give break	0.00	0.07	0.35***	0.03	0.03
I-Physical block	0.00	0.00	0.08	0.00	0.00

*p<.05, **p<.01, ***p<.001

Conditional probabilities for the Attention condition (see Table 2) provided interesting observations. The conditional probability of more severe responses was greater given physical block and reprimand. However, the conditional probability of less severe responses followed by more severe responses (e.g., an operant chain) was higher.

Table 2

Lag 1 Conditional Probability of Different Problem Behaviors during Attention (CRF All)

	Off-task	Whine	Shake	Scream/Cry	Hit/Grab
Off-task	0.22***	0.00	0.00	0.21***	0.00
Whine	0.00	0.00	0.07	0.06	0.07
Shake	0.00	0.00	0.00	0.22***	0.08
Scream/Cry	0.03	0.00	0.29***	0.04	0.06
Hit/Grab	0.00	0.06	0.00	0.00	0.06
I-Cue/ Prompt	0.00	0.09	0.00	0.02	0.07
I-Praise	0.00	0.03	0.00	0.00	0.00
I-Physical Block	0.05	0.05	0.00	0.02	0.18**
I-Reprimand	0.00	0.00	0.00	0.03	0.25*

*p<.05, **p<.01, ***p<.001

Overall, data from the initial functional analysis procedures appeared to support the preliminary hypotheses that problem behaviors were negatively reinforced by escape from task demands and positively reinforced by instructor attention.

Latency Analysis

Following the Functional Analysis, Shannon's problem behaviors were further analyzed in terms of latency (in seconds) for the first occurrence of each topography of problem behavior. The purpose was to determine (a) which condition (Demand, Attention, or both) was associated with the temporally early occurrence of problem behavior, and (b) the ordinal temporal relationship between individual topographies in the response class (Lalli, et al., 1995). Shannon's problem behaviors were differentiated into two categories, that is., more severe (scream/cry, hit/grab, hit self) and less severe (whine, shake) topographies. Data in Figure 2 show (a) which of the two classes of responses (less vs. more severe) occurred earlier, and (b) latency in seconds for each type of response when continuous reinforcement of escape (top panel) or attention (bottom panel) contingencies were instituted during Functional Analysis procedures. Data are presented sequentially *only* for the sessions in which problem behavior occurred. Sessions with no problem

behavior are eliminated for this analysis.

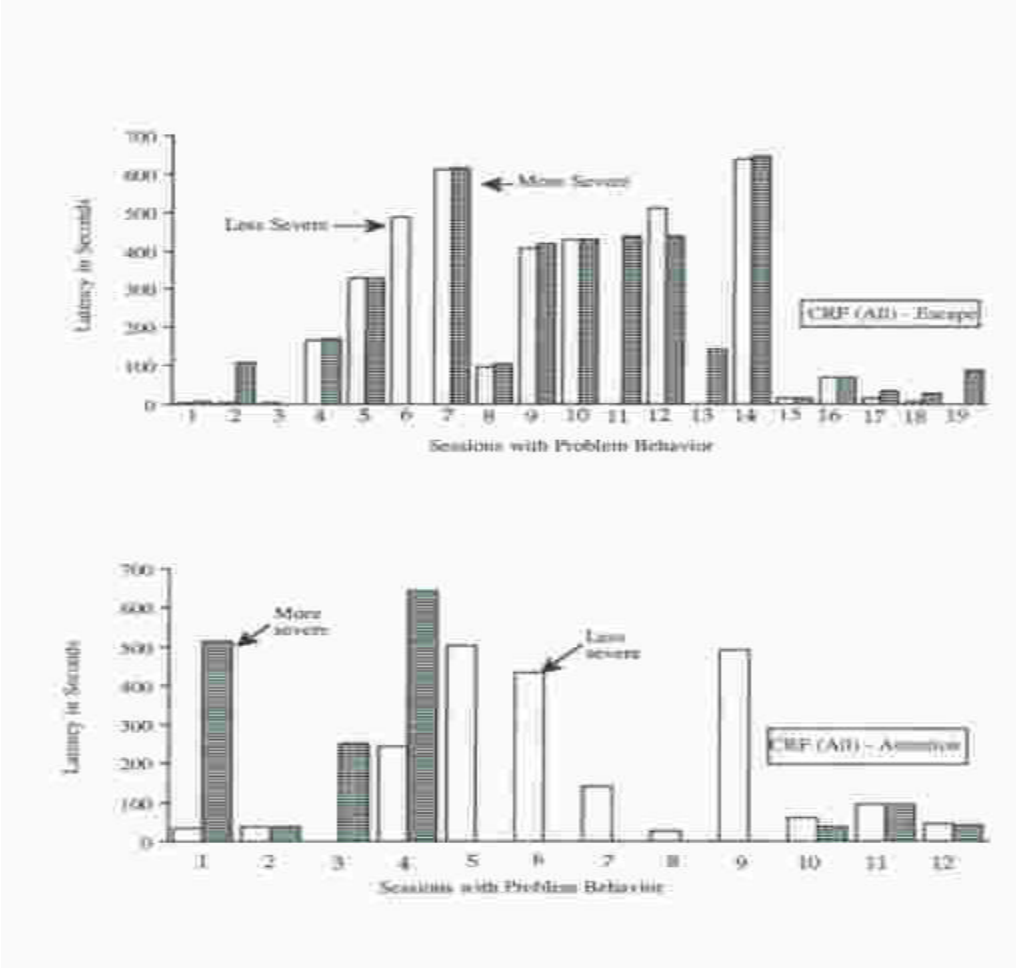

Figure 2. Latencies in seconds for the first occurrence of less and more severe topographies for Shannon when escape vs. attention was provided contingent upon the occurrence of problem behavior.

Data showed that for most of the sessions, the sequence started with less severe followed by more severe problem behavior, especially in the Attention condition. In only 4 of the 19 sessions in the Demand (CRF - All) condition did the sequence start and end with more severe topographies with no occurrences of less severe topographies. In the Attention condition, 5 of the 12 sessions showed no occurrences of more severe topographies. Both classes of problem behaviors occurred in 6 of the sessions, and only 1 session with only more severe topographies.

Data for both conditions show variability in the latency of occurrence for the first response. Often the first topography started as early as 3s and at other times the problem behavior did not occur until 639s into the instructional session. The average latency for the occurrence of the first response in the Demand condition was 231s (range, 3 to 639) and for the Attention condition was 202s (range, 33 to 502). High latencies in the occurrence of the first problem behavior especially in the Demand condition suggest that the instructional sessions may not be as aversive as believed, otherwise problem behavior would have occurred earlier in time (0 to 60s).

Analysis of Extinction

Data for the extinction analysis are presented in Figure 3. Data for the first [CRF (All) - Esc + Att] condition indicated that when all problem behaviors received contingent reinforcement, both less and more severe problem behaviors occurred at low rates (M=0.1 per min). No off-task behavior was observed during this phase; however, a new response (whimpering) emerged. Whimpering was coded as a less severe topography.

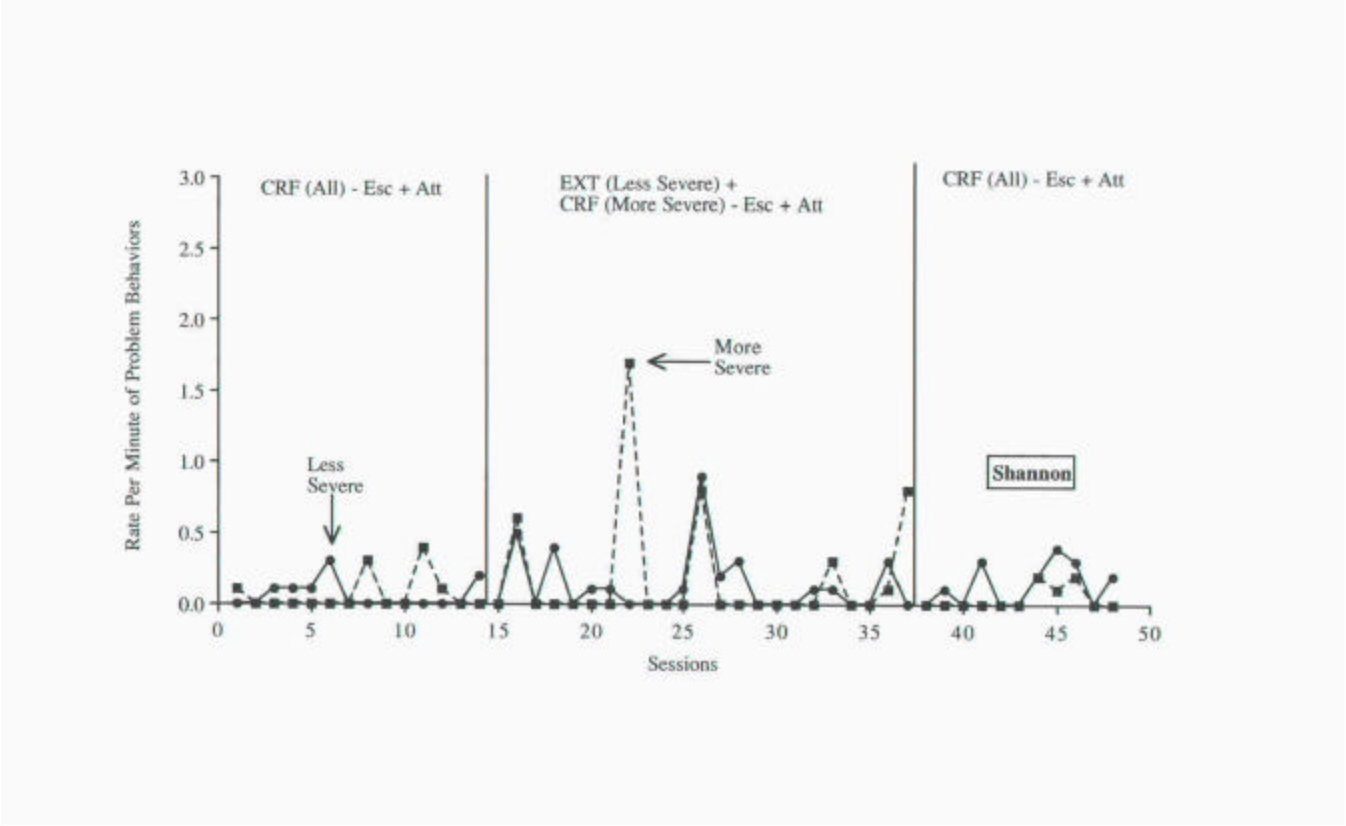

Figure 3. Rate per minute of less and more severe problem behavior for Shannon during Extinction Analysis.

When less severe responses were placed on extinction, more severe responses occurred at a higher rate than was observed during the previous phase, demonstrating the effect of the extinction contingency. Despite the variability in the overall pattern of behavior, the mean rate of more severe responses increased from 0.1 to 0.2 per min. The phase also ended with an increasing trend for more severe responses. Zero rates of problem behaviors were observed for 10 of the 23 sessions in this phase. Of the 13 sessions where problem behavior occurred, 5 sessions showed high rates for more severe responses, including Session 22, which met the criteria for termination. The mean rate for less severe responses was the same as the previous phase (0.1 per min). Another new behavior (throwing object) emerged during this phase and was coded as a less severe response.

A reversal to the CRF (All) - Escape + Attention condition indicated an immediate decrease in the occurrence of more severe responses. Compared to all other previous conditions, this phase showed that less severe responses occurred at a higher rate consistently, demonstrating the effect of the CRF contingency for all responses. The mean rate was 0.1 per min (range, 0.0 to 0.4) for less severe responses and 0.0 per minute (range, 0.0 to 0.2) for more severe responses.

Overall, data across the three phases of Extinction Analysis indicated that more severe members of the response class occurred at higher rates when less severe responses were placed on extinction. Data demonstrated a pattern of covariation within the response class as a function of implementation of extinction. Data also indicated that escape + attention continued to maintain problem behavior.

Analysis of Initial Intervention Procedures

This phase shows the effects of implementation of two interventions, that is, Contingent Assistance, and Functional Communication (FCT) + EXT (less severe), based on the initial hypotheses. Within the Contingent Assistance phase, both less and more severe responses showed dramatic increasing trends and levels beginning with the fourth session (see Figure 4, panel 1). Similar results were noted also for the FCT phase (see Figure 4, panel 2), where problem behaviors were at low levels with some occurrence of prompted communication. However, problem behaviors increased at the beginning of the 7th session of that phase. The mean rate for prompted communication was 0.1 per min (range, 0.0 to 0.3), for less severe responses was 0.4 per min (range, 0.0 to 1.4), and was 0.2 (range, 0.0 to 0.6) for more severe responses. Initially, both these procedures appeared to be effective but were not successful in decreasing the rate of problem behavior.

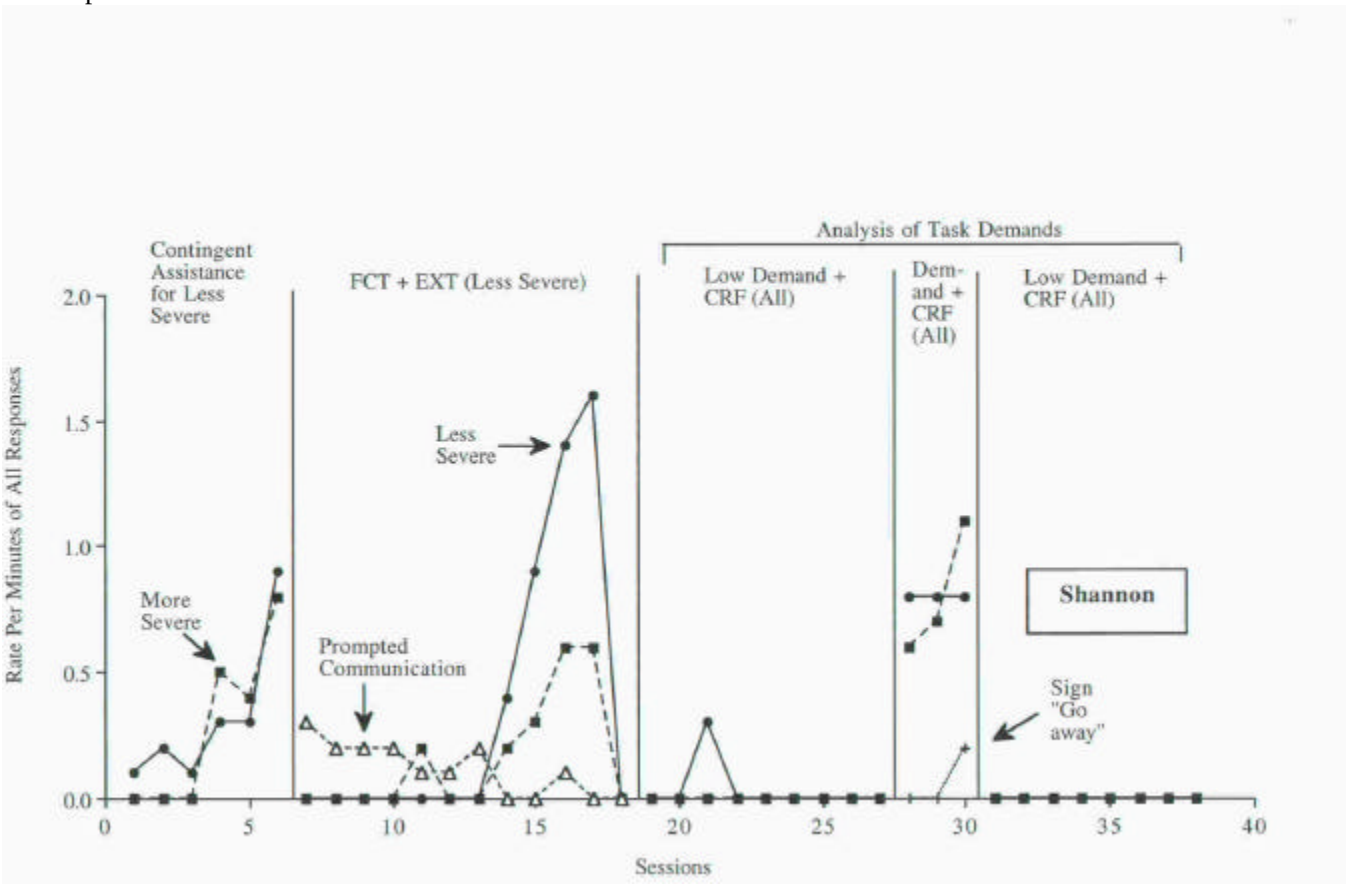

Figure 4. **Rate per minute of less and more severe problem behavior and communication behavior for Shannon**

Assessment of conditional probabilities showed that in the Contingent Assistance + EXT (Less Severe) condition (Table 3), the conditional probability of scream/cry given whine was

100% and of a hit/grab given scream/cry was 27%. However, given instructor cue/prompt, the conditional probability of a whimper was 17% and of a scream/cry was 15%. Given task assistance, the conditional probability of hit/grab was 14%.

Table 3

Lag 1 Conditional Probability of Different Problem Behaviors during Contingent Assistance

	Whimper	Whine	Shake	Scream/Cry	Hit/Grab
Whimper	0.00	0.00	0.00	0.00	0.00
Whine	0.00	0.00	0.00	1.00***	0.00
Shake	0.00	0.00	0.12	0.12	0.00
Scream/Cry	0.09	0.00	0.36***	0.09	0.27***
Hit/Grab	0.00	0.00	0.00	0.00	0.00
I-Cue/ Prompt	0.17**	0.02	0.04	0.15*	0.02
I-Assistance	0.00	0.00	0.00	0.07	0.14*
I- Give Break	0.00	0.00	0.33	0.00	0.00
I- Physical Block	0.07	0.00	0.00	0.00	0.00

*p<.05, **p<.01, ***p<.001

Conditional probability data for the FCT phase (see Table 4) also show that Shannon's more severe problem behaviors were more likely to follow less severe rather than instructor behaviors.

Table 4

Lag 1 Conditional Probability of Different Problem Behaviors during FCT

	Communication	Whimper	Whine	Shake	Scream/Cry	Hit/Grab
Communication	0.00	0.00	0.00	0.00	0.05	0.00
Whimper	0.00	0.18*	0.00	0.00	0.09	0.00
Whine	0.00	0.33*	0.00	0.33	0.00	0.00

Shake	0.00	0.10	0.03	0.52***	0.28***	0.00
Scream/Cry	0.00	0.06	0.00	0.56***	0.00	0.06*
Hit/Grab	0.00	0.00	0.00	0.00	0.00	0.00
I-Task Prompt	0.00	0.04	0.03	0.03	0.06	0.01
I-Cue to Sign	0.19	0.02	0.01	0.01	0.08	0.28
I-Assistance	0.00	0.00	0.00	0.00	0.05	0.00
I- Give Break	0.00	0.00	0.00	0.10	0.10	0.00

*p<.05, **p<.01, ***p<.001

Overall, conditional probability data on the sequential relationship between different variables demonstrated that at lag 1 (a) more severe responses were more likely to follow less severe responses, (b) less severe responses were more likely to follow task related cues/prompts in the Demand condition, and (c) more severe responses were more likely to follow physical blocks, reprimands, giving break from task, saying, "Let me help you,"or "Show me [sign] break if you want." These data provide support for the hypotheses that Shannon's early responses in the sequence acted as a discriminative stimuli for the occurrence of more severe responses, as was providing a break (escape) from task. These data suggested that the focus of intervention should be on the prevention of early responses, and by implication, reduce the number of cues/prompts that were typically followed by less severe responses.

Extended Analysis of Low vs. High Demands

Data in the Low Demand condition showed dramatic effects on Shannon's problem behaviors (Figure 4). Except for Session 21, which showed a rate of 0.3 per min for less severe responses, problem behaviors were not observed during any other session in the phase. It is interesting to note zero rates for more severe responses for all sessions in the phase even though problem behavior produced escape + attention on a CRF schedule. Data demonstrated a very steady pattern in the trend, level, and variability of problem behaviors. Compared to all of the previous experimental conditions for Shannon, this was the only phase that demonstrated a steady behavioral pattern. Overall, data were consistent with the hypothesis that problem behavior would decrease if task demands were presented at low rates and task assistance was provided without the verbal behavior "Let me help you."

Data in the (High) Demand condition demonstrated an immediate effect of increased demands. Problem behavior showed no overlap, a dramatic increase in level and an increasing trend for more severe responses. During this phase, Shannon also used an unprompted manual sign "go away.". A reversal to Low Demand eliminated all problem behaviors.

Discussion

The study with Shannon is an example of the complexity of designing a behavioral intervention in the case where (a) maintaining variables are difficult to isolate, (b) an escalation from less to more severe problem behavior is immediate, and (c) less severe responses are discriminative for the occurrence of more severe problem behavior.

Typically, in clinical settings, behavioral assessments and interventions are designed to address the most severe (problematic) topographies of problem behaviors. However, for clinically significant outcomes, it is extremely important to identify and treat all members of the response class, and design interventions that address the entire response class (Shukla & Albin, 1996; Sprague & Horner, 1992). Eventually all problem behaviors for Shannon decreased because the response class was treated as a single unit, and functional assessment strategies were designed to identify functions for a class of responses.

In addition to the functional analysis, the extinction and intervention procedures could be considered as a test for verifying behavioral functions. Shannon's problem behavior appeared to occur at a higher rate in the Demand context; therefore it was logical to infer that they were escape-maintained. Two strategies, Contingent Assistance and FCT, designed to treat escape behavior had no impact on response rates. The lack of behavior change led to a more detailed analysis of events in the Demand context. Shannon's problem behaviors occurred not to escape from a task itself, but to escape from a high rate of the instructor's verbal prompts (Shukla, Surratt, Horner, & Albin, 1995). In this case, a combination of low rate of demands, attention for the absence of problem behavior (DRO), and task assistance with minimal verbal behavior, appeared to eliminate Shannon's problem behaviors. These findings appear to be validated by Carr (1994), who suggests, "analysis might begin by identification of [generic] functional categories and end with an analysis that focuses on a given sub-category" (p. 395).

It is possible that ineffectiveness of contingent assistance and functional communication training for Shannon was a reflection of a mismatch between the operant function and the intervention (Durand & Carr, 1987; Repp, Felce, & Barton, 1988). It is also equally likely that the maintaining contingency or operant function(s) changed over time (Lerman, Iwata, Smith, Zarcone, & Vollmer, 1994). However, a continued effort to identify relevant maintaining variables, allowed for implementation of a positive support procedure that was focused on changing the instructional context rather than the person with disability (Carr, 1994; Kennedy, 1994).

Another issue related to the assessment of behavioral functions, arises in the case where problem behavior may be maintained by multiple functions (Day, Horner, & O'Neill, 1994; Kennedy et al., 2000). It appeared that Shannon's problem behaviors were negatively reinforced by escape from excessive verbal demands, and positively reinforced by instructor attention in task conditions. However, the complexity of teasing out which reinforcer was more valued at a certain point in time, encourages the use of innovative approaches for assessment of multiple and complex behavioral functions. In some cases, it is likely that assessment of teacher behavior may provide some insight on a student's behavioral functions (Mace & Lalli, 1991; Taylor & Romanczyk, 1994).

The last issue for discussion is related to Shannon's response pattern. She escalated from less to more severe problem behavior immediately. Conditional probability at lag 1 showed that her response pattern resembled an operant chain where her own early behavior was discriminative for the occurrence of later behavior (Baer, 1982; Evans, Meyer, Kurkjian, & Kishi, 1988; Shukla-Mehta & Albin, 2002). Latency data also support this hypothesis (Lalli, et al., 1995). An external event (the instructor's prompt) was discriminative for the first less severe problem behavior (whine/whimper/shake). However, this appeared to be discriminative for other more severe responses. The complex nature of the response pattern was reflected in experimental conditions where each problem behavior was reinforced on a CRF schedule. From a matching law perspective, if less severe responses are reinforced, more severe responses tend to occur at lower

rates. However, in this case, a higher rate of occurrence of high effort behaviors showed that more severe responses were under stimulus control of less severe topographies (Friman & Poling, 1995; Horner, Sprague, O'Brien, & Heathfield, 1990). Thus the focus of intervention procedures was on preventing the occurrence of the first two responses in the sequence. However, further research is warranted involving response patterns that are in the form of operant chains.

In summary, this study emphasized that in supporting individuals with severe problem behavior, behavioral assessment strategies need to focus on (a) identifying all members of the response class, (b) understanding the hierarchical organization of the responses within the class, (c) identifying events that are discriminative for and maintain problem behavior, and (d) designing interventions that address the entire response class, rather than individual topographies of problem behaviors. All problem behaviors for Shannon were eliminated because of both, continuous effort to identify maintaining contingencies and treating the response class as a single unit.

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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 central organizations according to probabilistic three-term contingencies, but at different levels. Peirce shows key similarities with Darwin, and the later Skinner shows key similarities with Darwin and Peirce. In contrast to his early behaviorism supported by positivism, the philosophy that characterized Skinner's later work was a pragmatic selectionism.
Keywords: Darwin, evolution, Peirce, positivism, pragmatism, selectionism, Skinner.

To the extent that behavior analysts support Skinner's later views, in contrast to his earlier views, the following presents the underlying 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 the history of 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. The originator in each series is revealing. Descartes advanced an if-then analysis according to a two-term *stimulus* and *response* reflex. Skinner (1931/1999) saw that by definition the relation between the stimulus and the response was one of "*necessity*" (p. 449); and 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 the pragmatists, and notable similarities exist between Darwin, the American pragmatists—Peirce, James, and Dewey—and the later Skinner. Against the background of early behaviorism, a basic outline of Skinner's subsequent pragmatic selectionism follows.

Modernism and Its Support for Early Behaviorism

The S-R behaviorism of the early Skinner fits in with a cluster of ideas referred to as modernism, a period identified as extending from the mid 17th to the mid 20th century (Toulmin, 1983). The sciences and their philosophy in the early years of this period were commonly characterized as *mechanistic.* Later, the term *positivism* became more current with abstract developments. Early on, in *A Tale of a Tub* and *The Battel of the Books* attached to it, Jonathan Swift's (1704/1958) satire targeted some of the ideas that were identified with the Moderns. Among the ideas he attacked were the *Predestination* (pp. 192-193) of the Dissenters, the self-proclaimed superiority of the Moderns in *Mathematics* (pp. 231-234), their pursuit of a *Universal Language* (p. 237), and their *Positiveness* (p. 240). In *Gulliver's Travels* (1726/1948), Swift returned to the attack on *Mathematics* (part iii, chap. ii) and the Modernist pursuit of a *Universal Language* (chap. v). In time, these ideas took on various transformations or branches of meaning in addition to their earlier senses. *Predestination* became the determinism accepted by almost all philosophers of science. *Positivism* became a focus on the facts or the elements of experience that had the most certainty. *Mathematics* became the favored means for establishing the certain relations of these elements. And logical positivists pursued a *universal* or *unified language* for science.

Scientific modernism often appealed to mechanical metaphors (but typically not to feedback mechanisms in their three-term process of *input*, *output*, and *feedback*) to illustrate if-then connections, e.g., clocks (Boyle, 1686/1996, pp. 12-13) and factories with reference to a self-regulation yet to be understood (Ure, 1861/1969, pp. 13-15). Over time, action by contact (e.g., through the "ether") became less important than a positive affirmation of certainty in empirical elements and their relations.

Among the spokesmen for the new "mathematical and experimental philosophy" of the Seventeenth century, there were some who claimed to rest their scientific conclusions on simple deductions and/or generalizations from the "facts" of observation. This claim, from time to time, has been revived by enthusiastic scientists interested in affirming a unique kind of rationality or objectivity for their results as well as by empiricist philosophers interested in using science to support a positivist theory of knowledge. This positivist view of scientific argument is, however, deceptive: scientists always approach their investigations with specific problems in mind and view the phenomena or processes that they study with the hope of shedding light on those problems. As a result, scientific discoveries are typically arrived at not by generalizing from preexisting *facts* but by providing answers to preexisting *questions*. (Toulmin, 1983, p. 101).

In a later summary 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).

As a positivistic modernism proceeded in various cultural areas, it arguably exhausted its formal possibilities (Calinescu, 1987, p. 277). Speaking of the avant-garde spread of modernism in the arts, Eco (1984) said,

> *"[It] destroys the figure, cancels it, arrives at the abstract, the informal, the white canvas, the slashed canvas, the charred canvas. In architecture and the visual arts, it will be the curtain wall, the building as stele, pure parallelepiped, minimal art; in literature, the destruction of the flow of discourse, the Burroughs-like collage, silence, the white page; in music, the passage from atonality to noise to absolute silence." (p. 530)*

Austere abstraction and streamlining dominated the values of many leaders of Western culture during the early beginnings of behaviorism.

In philosophy, modernist values achieved a high point of sorts in logical positivism, which became the dominant philosophy of science. According to Day (1980), "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). 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, 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 to Russell and the 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* can be by-passed 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 supported in positivistic philosophy (with eventual reservations).

Selectionism and Pragmatism

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 associated early behaviorism with the logical positivism he was rejecting. Skinner (1990/1999) said, "Anticipating logical positivism, [Watson and other early behaviorists] argued that an event seen by only one person had no place in a science" (p. 671). Rejecting his early positivist orientation, Skinner turned to views that were similar to natural selection and pragmatism, which will be presented first in their order of historical development and then in their order of Skinner's adoption.

Natural Selection

In his autobiography, Darwin (1887/1958) indicated he needed three concepts for his theory: *variations*, *selection*, and the differentiating role played by the *conditions of life*. The first concept, *variation*, was brought home to Darwin (1872/195) in his voyage on the Beagle:

> *"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.…[Such 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 (1872/1958) 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, a third concept was missing to complete Darwin's (1872/1958) 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, particularly 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 into account. Darwin prominently referred to this third concept as *The Conditions of Life*. 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*, without expressing it; and he often spoke of *variation* and *selection* without making an explicit connection to *The Conditions of Life.* And of course *Natural Selection* alone came to pack in all three concepts.

Analogies. Darwin's view of natural selection was soon seen in analogy to other processes in the culture at large. One process 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 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, natural selection requires a gap in time between observed variations and selection that 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.).*

This *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 (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 was insisting on a three-term contingency.

Among the representatives of pragmatic ideas, Peirce, James, Dewey, and Quine as well as Mach and Poincaré (who shared some similarities with pragmatism although Mach also shared some similarities with positivism) were cited by Skinner and were most likely to have been read by him. His friend Willard Quine would have 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). In addition to other early American pragmatists, British philosophers with similarities to the American pragmatists included F. C. S. Schiller, Alfred Sidgwick, and Ludwig Wittgenstein. In a book Skinner (1979/1984, p. 92) bought, 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). Peirce (1933-1958) was particularly interested in the meaning of difficult concepts and considered there extended as well as immediate contexts and consequences; *all* the consequences of a concept determined meaning, now and later. Final truth was a long-term affair (5.507, 5.565) that Dewey (1991, p. 343n) accepted. James also seems to have largely accepted Peirce's views here; but James speculated further on *which* consequences to select; for example, in comparing the consequences of different beliefs. Some beliefs could be considered to have more effective consequences than other beliefs, and the belief with the more effective consequences can be selected for acting upon. Just as the meaning of a belief requires a consideration of extended contexts and consequences, a selection between sets of consequences depends upon a similar consideration. However, pragmatism in general and James in particular have been accused as claiming only momentary conveniences may be considered. As a partial result, opponents of

pragmatism have often dismissed it as justifying whatever is convenient for the moment, a philosophy for the shortsighted and unscrupulous. Peirce (1992) considered a truth-by-what-I-fancy view: "If the settlement of opinion is the sole object of inquiry, and if belief is…a habit, why should we not attain the desired end, by taking any answer…we may fancy, and constantly reiterating it?" (p. 115), rejected it, and insisted on truth by a community in the long run. A neglect of future events wasn't for James's (1956) either, "[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).

The differences between Peirce and James over pragmatism were in how far and in what way to use consequences. In *Keywords*, Williams (1983) distinguished Peirce's pragmatism as a method of *understanding* from James's pragmatism as *justification*, which gets at their differences but suppresses their similarities. Williams quotes from Peirce in paragraph 2 of the *Collected Papers of Charles Sanders Peirce*, Vol. 5. However, immediately after the location of that quote in the *Collected Papers*, the editors inserted a definition of pragmatism by William James, which focused on *understanding* and showed no inconsistency with Peirce. In paragraph 3, however, Peirce expressed some hesitancy in going as far as James did elsewhere: "In 1896 William James published his *Will to Believe*, and later his *Philosophical Conceptions and Practical Results*, which pushed this method to such extremes as must tend to give us pause."

Skinner's Pragmatism and Selectionism

The following is one of Skinner's (1968/1969) more complete definitions of his later operant of probabilistic three-term contingencies and is highly 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 is directly opposed to formulations for stimulus-response reflex physiology in virtually every feature, including Skinner's (1938) early operant formulation 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). The following shows pragmatism and selectionism in the order of their 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; Hayes & Brownstein, 1986; Lamal, 1983; Leigland, 1999; Morris, 1988; Schneider, 1997; Zuriff, 1980). In "The Operational

Analysis of Psychological Terms," Skinner (1945) introduced radical behaviorism with its acceptance of private events and advanced consequences in a pragmatic way:

> *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).*

Dewey and Bentley (1947) favorably referred to Skinner's 1945 essay. Later, speaking of the distinction between rule-governed and contingency shaped behavior, Skinner (1966/1969) 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).*

Perhaps Skinner's strongest 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)0*

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 was responding, at least partly, to Raymond Williams's (1983, pp. 240-241) account of the term *pragmatic.* But it is questionable that 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." Statements by Peirce (1923/1998) closer to radical behaviorism and an operant analysis can be found in *Chance, Love and Logic*, 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) said 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. 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. 139-14.).*

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 presents 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 Peirce's account of meaning: 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. Deliberately varying his terms, Peirce often used three-term formulations, but not always with the same terms. Peirce (1985), for example, also addressed the habit of belief in terms of *occasion*, *act*, and *consequence*: "A state of *belief* in a proposition is such a state that the believer would on every pertinent *occasion* [emphasis added] *act* [emphasis added] according to the logical *consequence* [emphasis added] of that proposition" (p. 912). In the second paragraph after his formulation of *stimulus*, *action*, and *result*, Peirce makes an early statement of his pragmatic maxim, a later version of which Williams quoted: "Consider what effects, which might conceivably have practical bearings, we conceive the object of our conception to have. Then, our conception of these effects is the whole of our conception of the object" (p. 132). If Skinner 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. These points were not included in the citations by Williams.

Skinner's Selectionism

After his pragmatic statements in 1945, Skinner (1953, p. 90; 1957, p. 483; 1963/1969, p. 132; 1966/1969, p.174; 1974, p. 205) identified a similarity between operant reinforcement and natural selection and spent more time linking his views with Darwin's than linking his pragmatic views with Peirce or any other pragmatist. In "The Phylogeny and Ontogeny of Behavior," Skinner (1966/1969) discussed how a habit may 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) 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:

> *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, and the evolution of cultures:

> *Human behavior is the joint product of (i) the contingencies of survival responsible for the natural selection of the species and (ii) the contingencies of reinforcement responsible for the repertoires acquired by its members, including (iii) the special contingencies maintained by an evolved social environment.…Each of the three levels of variation and selection has its own discipline—the first, biology; the second, psychology; and the third, anthropology. Only the second, operant conditioning, occurs at a speed at which it can be observed from moment to moment.…Operant conditioning is selection in progress. It resembles a hundred million years of natural selection or a thousand years of the evolution of a culture compressed into a very short period of time.…anthropologists and historians have reconstructed the stages through which moral and ethical codes, art, music, literature, science, technology, and so on, have presumably evolved. A complex operant, however, can actually be "shaped though successive approximation" by arranging a graded series of contingencies of reinforcement.…at all three levels a sudden, possibly extensive, change is explained as due to new variations selected by prevailing contingencies or to new contingencies (p. 502).*

Skinner made a fourth reference that implied feedback mechanisms, and 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 went on to develop further

parallels in "The Evolution of Behavior" (1984/1987), "The Evolution of Verbal Behavior" (1986/1987), and "Genes and Behavior" (1988/1989).

It should be noted that Skinner's selectionism differs from the selectionism in 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). The term pragmatic selectionism distinguishes Skinner's selectionism from Campbell's.

In brief, the underlying philosophy of behavior analysis that follows the later 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. An AB-because-of-C analysis at the appropriate level applies to all our experiences. 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). This includes any statement about anything.

Conclusion

Positivists have primarily focused on what is. Pragmatists have primarily focused on how things come to be. Positivists begin with truth. Pragmatists begin with meaning. Positivists are puzzled as to how meaning can lead to truth. Pragmatists are puzzled by how the truth of any statement can be determined without knowing its meaning. The changes in Skinner's views from a positivist to a pragmatic perspective may be understood in parallel with the changes in Wittgenstein's views. Wittgenstein (1922/1981) wrote the *Tractatus Logico-Philosophicus* which highly influenced logical positivists, but he later abandoned the position he had adopted there and turned to views that were similar to pragmatism. Although he did not consider himself a pragmatist, Wittgenstein had a high regard for William James, saying, "That is what makes [James] a good philosopher; he was a real human being" (cited in Monk, 1990, p. 478); and Wittgenstein (1969) said, "I am trying to say something that sounds like pragmatism" (p. 54e). Day (1969) has discussed similarities between Wittgenstein and Skinner. The changes in Wittgenstein's views, however, are more clearly marked with less overlap than Skinner's changes. 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) with help from others that Skinner (e.g. , 1931) cited and Peirce as a guide to Skinner's later views (Moxley, 2001a, 2001b, 2002) with help from James and Dewey. To the extent that behavior analysis has adopted Skinner's later views, this analysis is consistent with a philosophy of probabilistic three-term contingencies in which the relation between the first two terms is because of the consequences in the third term. Expanding on such a philosophy, Peirce (e.g., 1992, pp. 245-279) speculated that it applied to the entire universe and everything in it, including all its attributed natural laws. Behavior analysts might well consider the appealing consistencyof adopting a similar view.

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Psychological Behaviorism:

A Path to the Grand Reunification of Psychology and Behavior Analysis?

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Arthur Staats has proposed a "psychological behaviorism" portrayed as a more advanced perspective than radical behaviorism and behavior analysis. The explicit goals of psychological behaviorism is to behaviorize psychology as well as to psychologize behaviorism and, thereby, to construct a comprehensive unified theory in psychology. A scrutiny of Staats' recent concerns regarding the psychologizing of behaviorism shows that they are encumbered with at least four major problems: (1) a disregard for the insistence upon reliable analytic units, (2) a return to treating structural properties as causes of behavior, (3) an attempted redefinition of basic concepts in terms of central nervous processes, and (4) extensive misrepresentation of radical behaviorism and behavior analysis.

Keywords: psychological behaviorism, radical behaviorism, units of analysis, basic behavioral repertoire, behavior-behavior relations, emotional response, misrepresentation

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Psychology is a field in which researchers, typically, restrict their observations to the exact behavioral areas that directly interest them (Sidman, 1989). Thus, a standard textbook of psychology may consist of different chapters on development, perception, consciousness, learning, memory, language, thinking, motivation, emotion, personality, intelligence, conflict, anxiety, psychopathology, psychotherapy, and social psychology. Further, each of these areas may be divided into subdivisions. Hence, a chapter on development may consist of sections on social development, cognitive development, emotional development, and so on. Such subdividing of a large field may be necessary. However, to the extent that all of this is to be considered as parts of one science, one is looking in vain for a systematic account of human behavior that is generalizable across specialized subfields (cf. Schlinger, 1995). Instead, the result is a conglomerate of independent minitheories (Horowitz, 1987) or minisciences with no common set of principles that can be applied across the boundaries of each area (Sidman, 1989). Moreover, "psychology as a basic science has failed to supply a conception which recommends itself to specialists in other fields of human behavior" (Skinner, 1969, p. 96).

The lack of a unified approach to a basic science of human behavior has also been a major concern in the writings of Arthur Staats (e.g., 1968; 1975; 1996a; 1996b; 1997; 2003). The basic idea of Staats' "psychological behaviorism" (PB; formerly pragmatic behaviorism) unification program is to behaviorize psychology as well as to psychologize behaviorism.

Staats (1996b) gives three very important reasons why psychology needs to be behaviorized. First, psychology lacks an analysis of phenomena in terms of behavior. Second, lacking an analysis of how behavior is learned, psychology has deprived itself of a way of explaining its phenomena. Third, psychology lacks descriptions of underlying principles common to different phenomena, which are necessary in order to form a unified science:

> *With respect to its products, psychology is a Babel of different theory languages. Its innumerable research works involve inconsistent and unrelated concepts, principles, and findings. Different problem areas of study use different methodologies and eschew those used by others. The studies subtract from each other; the whole is thus less than the sum of its parts* (Staats, 1996b, p. 4).

Based on the premise that "traditional psychology has already begun the isolation of phenomena that, with behavioral analyses, can be valuable to behaviorism as well as to psychology" (1996b, p. 12), Staats argues that, in addition to behaviorizing psychology, the unification program must also include the psychologizing of behaviorism.

Generally, behaviorists can, perhaps by definition, easily sympathize with Staats' contention that psychology could profit from being behaviorized and that a basic science of behavior (whether that science is going to be called psychology or something else), needs to explore independent variables and to formulate general underlying principles of behavior. Yet, there are features of Staats' PB program, regarding presentation form as well as content, which are bluntly unappealing.

Staats' PB contributions

During the spring and summer of 1997, the BEHAV-AN Internet discussion list for behavior analysis (accessible at http://www.geocrawler.com/lists/3/Miscellaneous/1131/0/) was increasingly dominated by contributions and discussions regarding Staats' PB. Through a series of more than 250 postings, Staats vigorously promoted his own PB, indicating its influence on a number of prominent colleagues and on a diversity of important issues in behavior analysis. For instance, he announced to have profoundly influenced the works of Jack Michael, Ted Ayllon, Sid Bijou, Ivar Lovaas, Todd Risley and Betty Hart. According to Staats, his PB contributions include the invention of the token reinforcer system in 1958, early works on reading (Staats, Staats, Schutz, & Wolf, 1962), the first full behavior analysis of toilet skills and toilet training (Staats, 1963), more than ten years before Azrin and Foxx (1974), the first detailed behavioral analysis of child development and how the parents are involved in such development (Staats, 1963), behavioral explanations of abnormal behavior in a schizophrenic patient (Staats, 1957) and of "mentally retarded and autistic children as victims of poor training conditions" (Staats, 1963). Moreover, Staats has contributed by analyzing intelligence and personality as behavioral repertoires, devised methods for experimental-longitudinal research (Staats, 1997), and contributed fundamental elements to methods for studying single human subjects.

Designating the works of Skinner, Tolman and Hull as second-generation behaviorisms, Staats (1996b) has proposed his own third-generation behaviorism. Staats has emphasized that his PB, as compared with Skinner's radical behaviorism (RB), has many new and distinguishing features and developments. Indeed, Staats claims to have introduced the term behavior analysis, to anticipate Skinner's interest in rule-governed behavior (in Staats, 1963) and to set forth a behavioral approach to psychotherapy 16 years before a radical behaviorism attempt. Staats has contributed to behavior analysis for more than 45 years. He is the author of seven major books in the field, and has published more than sixty-five papers on important applied and theoretical issues.

Recurring complaints in Staats publications (e.g., 1996a; 1996b) as well as in his contributions to the BEHAV-AN list have been threefold: First, because many important contributions to behavior analysis have not originated inside of radical behaviorism, the contributions have been accepted only after years of delay. Second, when ideas have, eventually, been accepted, those ideas have not been appreciated as genuine PB contributions. Third, current behavior analysts are largely ignorant of the

many new developments in PB. From this point of view, it seems fair of Staats to make substantive efforts to call upon the behavior analytic community to pay close attention to his latest book: *Behavior and Personality: Psychological Behaviorism* (Staats, 1996b). A theme that, unfortunately, permeates most of Staats' later writings is the issue of who said and did what first. On the new PB web page (Staats, 2003), under the heading, *Psychological Behaviorism: Contributions of Staats' PB*, Staats claims to have been "the first" on approximately 20 different core developments within behavior analysis. Considering the explicit aim to foster unification, this strategy akin to self-aggrandizement does not seem particularly well considered. However, there are more substantial problems with Staats' PB positions as well, particularly with his program of psychologizing behaviorism.

Isolating Phenomena for Scientific Study

Traditionally, psychological researchers have entertained a very direct strategy to whatever they find interesting, by accepting pre-established psychological concepts as their starting point. Staats' PB program of psychologizing behaviorism rests upon the standard psychology tradition of accepting that traditional psychological terms somehow designate unitary phenomena worthy of scientific investigation. Thus, according to Staats, "traditional psychology has begun the isolation of phenomena that, with behavioral analyses, can be valuable to behaviorism as well as to psychology" (1996b, p. 12). As examples of phenomena thus isolated for investigation, Staats (1996b) lists "word meaning," "attitudes," "interests," "values," "intelligence," "communication," "self-concept," and "defense mechanisms." In treating "such things," says Staats, PB becomes a "psychological behaviorism." At the same time, PB ". . . requires that concepts and principles be capable of clear statement, and capable of clear empirical definition" (p. 28).

Behavior analysts have typically leveled two different types of criticisms against the use of traditional psychological concepts as a basis for scientific treatments. First, there is the problem that such terms are almost automatically accepted as explanatory of the phenomena that the terms designate. Staats (1996b) has clearly been aware of this problem, as when stating that "cognitive psychology simply gives license to psychologists to infer cognitive processes in whatever behavioral phenomena that are studied" (p. 10) and that "calling something modeling does not constitute an explanation" (p. 115).

Second, but less often recognized, there is the problem that any traditional psychological term may not designate a unitary phenomenon. As Skinner (1938) pointed out:

> *The existence of a popular term does create some presumption in favor of the existence of a corresponding experimentally real concept, but this does not free us from the necessity of defining the class and demonstrating the reality if the term is to be used for scientific purposes*. (p. 42)

The road from laboratory work concerned with the identification of basic behavioral processes to an understanding of tremendously more interesting and complex phenomena in the world at large certainly appears long and winding. Yet, a basic requirement in the science of behavior based upon radical behaviorism is the identification of behavioral units on the basis of *orderly covariation as a function of environmental variables* (e.g., Harzem, 1986; Skinner, 1945).

To remedy the immanent lack of reliable correspondence between psychological terms and orderly units of observed phenomena, psychological researchers rely on *operational definitions*. Any possible gain from such restriction of the "meaning" of a term is obviously lost, however, as

soon as empirical findings are summarized in the original psychological terms that are not generally restricted according to the specific operational definition. For instance, even if a relatively consistent relation is found between "anxiety" and "level of performance" using specific operational definitions of each of these terms, that does not guarantee that other studies, using other operational definitions of those terms, will yield the same consistent results. Hence, the use of traditional psychological terms, however well they are operationally defined, may typically serve as a smuggling-in vehicle of lawful relations for which there is little or no empirical support (Harzem, 1986). The task of empirically verifying reliable analytic units is ignored in Staats' (1996b) program of strengthening psychology by " . . . the PB methodology of retaining the traditional name whenever a phenomenon has been first studied in psychology - as in the PB analyses of attitudes, intelligence, reading, personality, and the like." (p. 15). In short, these are not technical terms that have been demonstrated to refer to unitary empirically identifiable events and, thus, do not refer to phenomena amenable to sound empirical investigation. Thus, to the extent that traditional psychology has not been able to achieve such identification of unitary phenomena, the idea of psychologizing behavior analysis implies giving up on this basic requirement. Behaviorizing psychology, on the other hand, would require the identification of reliable behavioral units of analysis, that is, *nothing less than a radical behavioral analysis.*

The basic behavioral repertoire

The concept of the basic behavioral repertoire, BBR, occupies a central role in Staats' theorizing on behavior, intelligence, and personality. The following sample from Staats' (1996b) writings on the BBR personality concept illustrates the degree of deviation from his own requirement " . . . that concepts and principles be capable of clear statement, and capable of clear empirical definition" (p. 28).

According to Staats, his PB concept of personality is not an intervening variable. Rather, "personality is considered as something real and substantive" (p. 193). It is "composed of specified and specifiable BBRs" (p. 193), and "PB makes, and calls for, empirical definition of the contents of the BBRs" (p. 367). Moreover, these repertoires "are actual stimulus-response constellations that have to be stipulated" (p. 193). They are "composed of behavior" (p. 192), and they are "composed of the same types of events as behavior" (p. 190). Although the BBRs "can be considered as the universe of behaviors that the individual has learned" (p. 188), they are "different from displayed behavior itself" (p. 190), "in constituting a potential for action"(p.189). A language-cognitive BBR, for instance, "is a capacity or potentiality, a personality (cognitive) characteristic which cannot be known from observing the individual behavior" (p. 189). However, intelligence test items are "direct measures of the BBRs" (p. 211), and "the BBR is an independent variable - a cause - as well as a dependent variable." Furthermore, the BBRs are "fitting traditional expectations, they are carried within" (p. 190), stored by means of brain changes resulting from learning experiences (p. 245), and they "fulfill the role of such cognitive concepts as 'memory' and 'personality' in traditional theory construction" (p. 187). Staats refers to them as the "proximal cause" of behavior (p. 192, 302).

Whether or not BBRs are intervening variables, the fact remains, that Staats' use of the concept involves category mistakes as described by Ryle (1949). The classical category mistake consists of treating a class of phenomena as a real event in addition to and, thus, belonging to the same logical category as the phenomena that constitute the class. Let us just briefly consider a few practical examples from Staats' (1996b) text on behavior and personality:

> *The BBR can be a direct cause of behavior in various ways. For example, let us take the case of the child*
> *who has learned to attend to what an adult says when requested to do so. This is a part of the verbal-motor*
> *repertoire . . . The child without that aspect of the verbal-motor repertoire will not attend, will not experience*
> *the stimuli, and will not learn.* (p. 192)

Is the observational basis for saying that a child has the verbal-motor repertoire of attending to what an adult says when requested to do so different from the observational basis for saying that the child attends to an adult person when requested to do so? The circularity is unavoidable when the same terms are even used in describing both the BBR and the performances supposed to be caused by that BBR.

> General imitation skills . . . are . . . properly to be designated as constituents of a basic behavioral repertoire, because they provide a basis for additional learning through imitation (p. 114).

Could we say that someone has "imitation skills" but that the person still is incapable of "additional learning through imitation"? What is referred to as general imitation skills must incorporate the duplication of novel movements or response products and, thus, what may also be referred to as "additional learning through imitation." Although behavior-analytic textbooks typically define imitation as "doing what another organism is observed to do," and move on to talk about *general (or generalized) imitation* when the performance spreads to novel cases, the qualifier "generalized" should be recognized as redundant here. The relevance of a correspondence with what another organism is observed to do can only be inferred to the extent that novel cases yield the same pattern (Holth, in press).

> The present theory is that it is not the specific content of the items that enables them to predict success in learning. It is because the items on an intelligence test, at the same time that they measure specific content, are also measuring general BBRs that apply to various learning tasks (p. 211).

What, then, constitutes the observational basis for the proposal that intelligence test items measure general BBRs that apply to various learning tasks? Is it not precisely to the extent that test performances successfully predict achievement in other situations that they can be said to "measure general BBRs that apply to various learning tasks"? If it is, the proposition **B** that test items predict success in learning because they are measuring general BBRs that apply to various learning tasks **B** does not add to our understanding. On the contrary, we have the illusion of causes and effects when only the effects are described in different ways.

> A child without the verbal-motor repertoire will fail on the test right at the beginning. Unable to respond appropriately to the examiner's instructions, the child's attending and participating behaviors will not be directed to the relevant stimuli and the child will not endeavor to make the required response. Such a child only has a random chance of succeeding on the items (p. 211).

How do we determine whether a child lacks a particular verbal-motor repertoire? It is difficult to imagine that the observational basis for saying that the child lacks a "verbal-motor repertoire" is different from the basis for saying that the child does not respond appropriately to the examiner-s instructions and that his "attending and participating behaviors will not be directed to the relevant stimuli and the child will not endeavor to make the required response." Thus,

again, we seem to have one category of phenomena described in two different ways, but end up with the misconception of two different categories and that one is the cause of the other.

Let me add that originality and creativity frequently depend upon the individual "putting" elements together in new ways (p. 218). Is it logically possible that an individual is very good at "putting elements together in new ways" but, unfortunately, lacks "originality and creativity"? I suggest that it would make just as much or, rather, just as little, sense to say that putting elements together in new ways depends on originality and creativity. Again, creating two descriptions of one set of phenomena does not constitute a sound basis from which to infer both a cause and an effect.

Ordinarily, the child with the richer repertoire will be able to respond successfully to and learn from a greater number of situations (p. 217). Are there mutually independent bases for saying that a child has a "richer repertoire" and for saying that the child is "able to respond successfully to and learn from a greater number of situations"? It certainly would appear to be a bizarre finding if an empirical study showed that children with richer repertoires turned out *not* to be able to respond successfully to or to learn from a greater number of situations. Although this kind of proposition seems to lend itself to empirical investigation, a straightforward conceptual analysis will suffice (see Smedslund, 1991, 1994, for similar arguments from the perspective of 'psychologic').

As with cognitive processes in general (Skinner, 1977), the speed with which BBRs are invented to explain behavior should arouse suspicion. For instance, when a child is diagnosed with autism, says Staats, the "anti-learning BBR" has been learned (1996b, p. 344). At worst, Staats' BBR causations are completely circular. At best, they boil down to behavior-behavior relations (Hayes & Brownstein, 1986). Hayes and Brownstein explained why *control* (and not just prediction) is important to a science of behavior. A common misunderstanding (e.g., Wessels, 1981, p. 161) is elaborated in the assumption that the emphasize on control has been dictated by "the pragmatic desire to change behavior for the better." Although the considerations regarding practical, technological applications alone might constitute a sufficient reason for the emphasis on control, some more basic considerations are involved.

The first is related to the ideal of accounting for all behavior. Without the criterion of control or experimental manipulation, there are no clear restrictions upon the units of analysis. The end result is the infinite number of arbitrary "units" of traditional psychology. In the case of behavior-behavior relations, we would like to know both 1) the independent variables of which each of the two behaviors is a function and 2) any independent variables responsible for the behavior-behavior correlation.

A second line of reasoning relates to the radical behavioral approach to a pragmatic criterion of "truth," in which descriptions and explanations are considered true to the extent that they lead to effective practice. Radical behaviorism is a radical contextualism, in need of criteria for what can properly constitute "initial" causes. The problem that result from a lack of such criteria can be seen in the following excerpt from Mahoney (1977): "For Skinner . . . A causal analysis is incomplete if it stops at a mental 'way station' and does not seek prior environmental causes. But stopping at an environmental way station is just as arbitrary and problematic" (p. 676). Thus, without control as a criterion, the environment will be just as arbitrary as an "end station". Hence, the Hayes and Brownstein (1986) conclusion: "It is the successful operation of contextualism that pragmatically requires that control be emphasized . . ." (p. 178).

Under the headings “Prediction in terms of traits” and “Traits are not causes,” Skinner (1953, pp. 199-203) treated the issue of predicting behavior from other behavior, and made the points that: (1) Prediction of behavior from other behavior is sometimes useful, (2) such prediction is not from cause to effect but, rather, from one effect to another **B** which becomes obvious if the test is extended without limit so that test items coincide with the behavior to be predicted, and (3) when the resulting “trait” name does not refer to a reliable unit of behavior, it is unsuitable for a functional analysis. Questions regarding behavior-behavior relations can be regarded, instead, as questions concerning behavioral structure.

As pointed out by Catania (1973), although behavior analysts have primarily been concerned with questions relevant to the functional aspect of behavior, there are fully legitimate and important questions regarding structure for a science of behavior to tackle. In this context, a version of the concept of basic behavioral repertoires (BBRs) may still be important. In establishing complex skills, a teacher would like to know how best to arrange sequences of tasks. What constitutes the most effective sequence of tasks in a programmed instruction? Similar considerations have been presented by Catania (1998), by Rosales-Ruiz and Baer (1996), by Skinner (e.g., 1968) and the whole movement of programmed teaching, to mention a few. Serious problems arise, however, when answers to structural questions are presented as answers to questions regarding function or causes.

In sum, although BBRs as extracted from test scores or as stipulated in other ways may appear to have the status of independent variables, the important issue here remains that they cannot be manipulated as such (see also Skinner, 1969).

Positive versus negative emotional responses.

Arthur Staats has redefined positive and negative reinforcers in terms of positive and negative emotions. The major question of what, then, defines positive versus negative emotional responses was not answered in Staats’ (1996b) book, except by reference to a previous work by Staats and Eifert (1990) which simply asserts that emotions are central nervous responses, and that these central responses have to some extent been localized in the limbic system. According to Staats, “ . . . there are only two kinds of emotional response **B** positive and negative” (1996b, p. 231). However, the closest he seems to get to differentiating positive and negative emotional responses are short passages like the following: “In short, the PB position is that the same brain structures are involved for the various negative emotional conditions” (p. 240). But how do we identify those central responses as emotional in the first place, and how do we decide whether they are positive or negative? Obviously, we never look at a person=s brain to determine whether a positive or negative emotional response occurs. Although we have learned to report different emotions in others, and ourselves, few have ever seen an emotional brain response. Moreover, even if we could observe relevant brain processes, how would we know that those processes were positive versus negative emotions? (See Catania, 1998, p. 2, for a corresponding argument with respect to brain changes and the definition of learning.) Whether this is just another position in need of experimental support, or whether experimental evidence exists is irrelevant here because, in the very identification of those active brain structures, some specific criteria must have existed for identifying them as related to a specific kind of emotional response (positive vs. negative). Staats has failed to even attempt to specify those criteria. Regarding central responses as defining criteria of positive versus negative reinforcers, the primary point here is not that little is gained from knowing how the brain operates when one is working with a practical problem of behavior. The question of defining a behavioral phenomenon, such as reinforcement, in terms of central processes is a problem of how to know when to look for a relevant central event in the first place.

With no further comment on the issue, Staats (1996b) prepares the reader for his own definition of positive and negative reinforcers by simply stating that the traditional concept of reinforcement has been criticized for circularity. The question of circularity of 'reinforcement' has been handled quite satisfactorily by Skinner (1953, pp 72-73) and by Catania (1998, pp 70-71). The main point is that the term 'reinforcement' is considered descriptive rather than explanatory. Problems are noticeable as soon as the word "because" is used. My conclusion is that the most effective way out this is through the standard behavior-analytic definitions in terms of classifying events on the basis of procedural effects on probability of response.

Staats on Skinner and radical behaviorism

A most important strategy employed by Staats (1996b) is to characterize Skinner's works, radical behaviorism, and the experimental analysis of behavior in such unfavorable terms that his own PB emerges as the only reasonable "behavioristic" alternative. I will briefly comment on some of the misrepresentations. (a) According to Staats, Skinner typically avoided the standard psychology names and, thus, treated reading simply as "texting," naming as "tacting," and used "abstraction" instead of concept formation. (Staats, 1996b, p. 15, 88, 368). However, this is simply not true. Skinner explicitly and repeatedly stated the obvious fact that much more is involved in what we call reading than what is implied by the term "textual" (e.g., Skinner, 1957, p. 65). Also, he specifically distinguished between tact and name because the traditional terms typically refer to additional processes (e.g., Skinner, 1957, p. 82). As later indicated by Catania (1998), although tacting and naming may superficially seem alike, ". . tacting differs from naming in somewhat the same way that textual behavior differs from reading" (p. 248). Moreover, Skinner did not "use abstraction instead of concept formation". Rather, he drew a distinction between the two: "When a class is defined by more than one property, the referent is usually called a concept rather than an abstract entity" (Skinner, 1974, p. 94).

In accordance with his view that Skinner simply invented new terms to replace traditional ones, Arthur Staats (1996b) misrepresents Skinner's interpretation of *verbal behavior* as a theory of *language* (p. 320). This leads him to point to the lack of analyses of "listening behavior," which was not the primary focus of Skinner's book.

(b) Staats (1996b) repeatedly (e.g., p. 32, 132, 194) stated that Skinner was not concerned with learning. A constructed ambiguity helps create the impression that he may be right, even if for the wrong reason, for instance in the following assertion: "But Skinner never considered himself a learning theorist" (p. 32). Is that a "learning *theorist*" or a "*learning* theorist"? Not being concerned with *theories* of learning, or not using the term 'learning' are both very different from not being concerned with *the field of learning*. Skinner's point was that he found no technical justification for the term 'learning' (cf. Skinner, 1979, p. 311). That, of course, is not to disregard the importance of phenomena traditionally classified under that summary label (cf. Donahoe & Palmer, 1994, p. 152, for a similar argument with respect to the term 'attention').

(c) According to Staats (1996b, p. 40, 51, 84), Skinner held that only motor behavior counted, and that "emotional responses were really irrelevant; they were only collateral events, epiphenomena, which 'have no explanatory force' with respect to behavior and operant conditioning." Again, a muddle of correct elements and obscuring corollaries seems to give license to Staats' argument.

First, in confusing collateral products and epiphenomena, Staats misinterprets Skinner's (1975, p. 71) statement that "In short, the bodily conditions we feel are collateral products of our genetic and environmental histories. They have no explanatory force; they are simply additional

facts to be taken into account." There should be no reason to argue over the obvious fact that any events in this world can affect other events. For one thing, events affect other events when we "observe" or "describe" them (cf. Zuriff, 1979, for number of other cases). To serve as causes in the sense of independent variables in a natural science of behavior, however, the analysis must to "the point at which effective action can be taken" (Skinner, 1974, p. 210).

Second, neither Skinner nor any other radical behaviorist gives special priority to motor behavior in this respect. Motor behavior is no more considered as the Acause@ of other behavior than is a glandular squirt. The question is what can count as "initiating causes" in a science of behavior, as discussed by Hayes and Brownstein (1986).

(d) Staats (1996b, p. 88) maintains that Skinner=s operant analysis was not concerned with how speech is learned. Although Skinner=s (1957) *Verbal Behavior* was primarily an interpretation of complex verbal phenomena as they occur in skilled speakers, he certainly did consider "how speech is learned". For instance, he discussed how shaping is involved (pp. 29-31), and how the contingencies that establish an echoic repertoire are relevant to the establishment of more complex skills (p. 55ff; 164).

Staats contends that "Skinner's operant analysis cannot deal with speech acquisition, because speech acquisition involves the classical /operant conditioning interaction, which his theory does not treat" (p. 88). Moreover, according to Staats, Skinner ". . . did not consider various ways by which classical conditioning can occur, including that which occurs through language." (p. 111). However, Skinner (1957) did consider classical conditioning as a procedure involved in the establishing of conditioned reinforcers (p. 53), in "Special reinforcement from the listener's emotional behavior" (p. 154 ff.), and in "Conditioning the behavior of the listener" (p. 357f.) which even includes an interpretation specifically of how respondent conditioning "occurs through language". However, much of this is particularly relevant to listening behavior. Skinner's (1957) book was, as the title says, on '*verbal behavior*'.

(e) Like some other Skinner critics (e.g., Bandura, 1977), Staats (1996b) has taken a particular quotation **B** "a person does not act upon the world, the world acts upon him" (Skinner, 1971, p. 206) **B** out of context and, seemingly, ignored everything else the author has written on the issue. Thus, Staats (1996b, p. 197) support the conclusion of "non-behavioral psychologists [who] have considered that behaviorisms, in general, thus make humans passive responders to the environment." Is it not clear that the basic point of the term 'operant' is that such behavior 'operates' upon the environment? No quotations should be necessary to correct this misunderstanding but here is one for the critics to consider:

> *We often overlook the fact that human behavior is also a form of control. That an organism should act to control the world around it is as characteristic of life as breathing or reproduction. A person acts upon the environment, and what he achieves is essential to his survival and the survival of the species. Science and technology are merely manifestations of this essential feature of human behavior*. (Skinner, 1974, p. 189)

(f) Staats (1996b) professes that radical behaviorism rejects consideration of experiences of freedom and dignity (p. 197), and that it rejects "consideration of human cognitive characteristics that are determinants of behavior" (p. 117). Thereby, Staats has constructed another set of misrepresented quotations. Skinner has answered this kind of objection repeatedly, along the following lines:

> *It is often said that an analysis of behavior in terms of ontogenic contingencies "leaves something out of account," and this is true. It leaves out of account habits, ideas, cognitive processes, needs, drives, traits, and so on. But it does not neglect the facts upon which these concepts are based. It seeks a more effective formulation of the very contingencies to which those who use such concepts must eventually turn to explain their explanations.* (Skinner, 1969, p. 183).

(g) Throughout his book, Staats (1996b) treats 'behaviorism' as if synonymous with a science of behavior. According to Skinner, however, "Behaviorism is not the science of human behavior; it is the philosophy of that science" (1974, p. 3) and ". . . when asked what I mean by [radical behaviorism], I have always said, 'the philosophy of a science of behavior treated as a subject matter in its own right apart from internal explanations, mental or physiological'." (Skinner, 1989, p. 122). As such, the science of behavior based upon radical behaviorism is obviously prepared to take into account any piece of research as long as it is *concerned with reliable units of behavior.*

Are these misrepresentations significant, or is this just a quibble? Since all of them actually play central roles in Arthur Staats' attempts to show that his own third generation analyses are much more advanced then Skinner's second generation "behaviorism," I contend that the question of correct representation of what is criticized is a very significant one.

Conclusion

Psychological behaviorism (PB) is not a unitary thing to be selected or rejected. It is not a specific position on a specific issue. Rather, it includes a large number of positions on a diversity of issues. Some of these are standard behavioristic positions, some are summaries of empirical findings, and some are propositions requiring empirical support. Although Staats proclaims a grand unification program in which psychology is to be behaviorized, several features of his presentation form as well as content are bound to work against such unification. What I find most problematic about the content of Staats' PB, are (1) the lack of requirements with respect to units of analysis, (2) a confusion of structural properties and causes, (3) the attempted redefinition of empirically defined basic terms, and (4) the extensive misrepresentation of radical behaviorism and the behavior analysis associated with it in general, and of Skinner's works in particular. In sum, it is difficult to accept Arthur Staats' psychological behaviorism as a third generation advancement over second-generation radical behaviorism and behavior analysis, rather than a retreat to the traditional conception of psychology against which those perspectives are basically a revolt.

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Problem Solving Consultation in Schools: Past, Present, and Future Directions

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School-based consultation is a method of psychological service delivery in which a school psychologist works together with a teacher and/or parent to identify and analyze a particular problem with a student and then create an intervention plan that the teacher or parent can implement with varying degrees of support or independently. The members of the consultation team are typically referred to as the consultant (e.g., school psychologist), the consultee (e.g., teacher or parent), and the client (e.g., student). In this paper we provide a brief overview of school-based behavioral or problem solving consultation, including (a) an introduction to consultation methods and applications, (b) relevant background information, (c) a description of current variations of behavioral consultation, (d) a discussion of best practices in consultation, (e) an overview of current research in behavioral consultation, and (f) comments on future directions in the field.
Keywords: problem solving, behavioral consultation, behavior change in schools, best and evidence based practices.

Consulting with mediators (e.g., parents, teachers) has been a primary role of psychologists and other mental health and educational professionals for many years (Bergan & Kratochwill, 1990). In the past 15 years, however, several important pieces of legislation and developments in best practice standards have increased the need for behavior support in general education settings. In 1973 title five of the Rehabilitation Act included the provision of a "free and appropriate education" (FAPE) as a right for all students. This provision required that public schools admit students with disabilities who previously would have been denied access to the general education system. The IDEA (1997) is a second piece of legislation that has led to an increased need for consultative services in schools. The IDEA requires (1) that schools serve students with disabilities in the least restrictive environment (often, the mainstream classroom); (2) that schools develop Individual Education Plans (IEPs) for any student identified as in need of special services, and that the IEP contains plans for intervention strategies and supports specifically designed to address each student's particular needs; and (3) that IEP teams conduct a functional behavioral assessment, develop a positive behavior support plan, and identify goals for outcome evaluation.

In addition to the Rehabilitation Act and IDEA, recent federal mandates, such as *No Child Left Behind*, require schools to serve all students and also place responsibility on teachers to find ways to teach effectively a diverse group of learners. Finally, high levels of school violence and disciplinary problems and high rates of individual student's social, emotional, and behavioral difficulties have left many educators in need of additional support and guidance from psycho-educational service staff. Moreover, currently there is growing support in the professional literature for the use of ecologically based techniques, such as functional behavioral assessment, curriculum based assessment, or positive behavior support, for serving students with behavior problems (Crone & Horner, 2003; Watson & Steege, 2003).

Schools adopting these techniques find that they are often more time consuming and demanding of resources than traditional test and place methods of serving students with behavior or academic difficulties. This issue, on top of a staggeringly low ratio of school psychologists to students in need of psychological services, has led to a heightened need for the streamlining of

effective psycho-educational services. School-based consultation has, therefore, also gained increasing popularity as a means of responding to that need. It should be emphasized, however, that consultation services are but one of several important options for the provision of educational and psychological services in schools. School-based problem-solving teams and three-tiered prevention systems are but two examples of the various options that can be adopted in schools (e.g., Rones & Hoagwood, 2000).

The consultation process typically begins with a teacher (hereafter referred to as the consultee) referring a problematic student to a school psychologist or other professional in the school or clinic setting (hereafter referred to as the consultant). Following the referral, the consultee and the consultant meet on several occasions to discuss the student and the problem, try to discover what may be contributing to the problem, and identify an appropriate, evidence-based intervention (EBI) to implement in the classroom. The consultant then guides the consultee through the intervention techniques, making certain that the consultee clearly understands how to implement the intervention on his or her own. Once the consultee has learned how to administer the intervention, he or she administers the intervention and the consultant observes the consultee and the student in the classroom. The consultation team continues to meet throughout the intervention implementation stage to fine tune the intervention as needed and to discuss the student's progress. If the student's problem is successfully resolved, the consultation process may terminate. If the problem is not resolved, the consultation team may return to any of the previous stages in the process, either to reanalyze the problem or to select a different intervention.

Behavioral consultation (or more generically called "problem solving consultation"-see Kratochwill, Elliott, & Stoiber, 2002) can operate in many settings including schools, mental health clinics, and private practice (Bergan & Kratochwill, 1990). Behavioral consultation has been a successful method of treatment for a variety of problems including academic underachievement, addictions, and a host of emotional and behavioral problems (Sheridan, Kratochwill, & Bergan, 1996). Different people, depending on the type of problem the client presents and the situation in which the problem occurs, play the roles of consultant and consultee. For example, a teacher might serve as a consultant for parents who want to help their child with homework, but the same teacher might play the part of a consultee when working with a school psychologist to help resolve a behavioral problem in the classroom. Likewise, a mental health professional trained in substance abuse and addictions may serve as a consultant for a school psychologist trying to help a student with an alcohol dependency. Other consultation arrangements are also available such as child-based consultation, peer-mediated consultation, technology training, teacher and/or parent training, and organizational consultation (see Kratochwill & Pittman, 2002).

Conceptual Advantages of School-Based Problem-Solving Consultation

One of the main advantages of school-based behavioral consultation is that it has the potential to enable psychologists to provide services to a greater number of clients than can be reached by traditional models of service delivery. If teachers are able to apply skills learned through consultation to other students in their classrooms, then psychologists could reach those students indirectly through the teachers rather than taking the time to work with each student individually.

A second related potential advantage of consultation is its capacity to be preventive. Theoretically, some of the students reached by consultative services would be students merely at-risk for future development of problems, as opposed to students who are already struggling academically, emotionally, or behaviorally. Much research has shown that universal, or primary,

services can have a greater impact than selected or indicated interventions (Rones & Hoagwood, 2000). Given the disproportionate number of students in need of school psychological services compared to the number of professionals trained to provide these services, consultation offers a way to provide more effective service delivery to a greater number of students.

A third advantage of school-based consultation is that it enables general education teachers to implement interventions targeting academic, social, emotional, and behavioral problems. Without the support of the consultant, many of these interventions would require that the student be removed from the classroom. Given recent developments in legislation, such as the Individuals with Disabilities Education Act (IDEA, 1997), that require the inclusion of students with disabilities in the mainstream classroom, it is important that teachers be supported to serve diverse populations.

A fourth advantage of consultation is that it promotes teamwork and cooperative problem solving among school personnel. Each member of a consultation team brings unique ideas, experiences, and perspectives to the problem solving process. It is hoped that most teachers understand their students' strengths and weaknesses, and most school psychologists and other specialists are well versed in EBIs designed to address a variety of problems common to students (Kratochwill & Stoiber, 2002). Presumably, a teacher and a school psychologist working together are able to use their combined knowledge to serve students more effectively than either individual would be capable of independently.

Conceptual Underpinnings and Models of Practice

Behavioral consultation technology draws on theories and practices from several different areas of psychology. Some consultants use principles of traditional behavior analysis, or behavior therapy, and guide teachers through the process of reinforcing appropriate student behavior while systematically ignoring, punishing, or otherwise decreasing the likelihood of inappropriate behavior (Kratochwill & Bergan, 1990). Within an applied behavioral analysis conceptual framework consultants and consultees observe the client in natural settings (e.g., the classroom) and generate functional assessment hypotheses about why the student may be demonstrating specific inappropriate behaviors (Crone & Horner, 2003). The consultant and consultee then try to develop interventions that target the precursors, or underlying causes, of the student's behavioral problems.

There are two primary models of behavioral consultation that currently operate in schools although other approaches are possible (Kratochwill & Pittman, 2002). The first is a traditional model of consultation, briefly described above, in which the consultation team consists of three members: a consultant, teacher, and student, or a consultant, parent, and child. The second model, referred to as Conjoint Consultation, adds a fourth person to the consultation team and incorporates both the parent and the teacher along with the consultant and student.

Regardless of the makeup of the team, best practices in problem solving consultation suggest adherence to a five-stage model (Kratochwill et al., 2002). The first stage is *Relationship Building*, during which the consultant and consultee establish rapport, build trust, and share their unique perspectives and opinions. The second stage is *Problem Identification*, during which the team works together to pin down specific problem(s) to address through consultation. The responsibility for this stage rests largely with the consultant, as it is his or her responsibility to help the consultee make order out of what may be a variety of challenges and problems with a

student. The third stage of consultation is *Problem Analysis.* During this stage the consultant and consultee work together to try to understand the causes, triggers, and reinforcers of the identified problem. This process may involve conducting a functional behavioral assessment, observing the student in the classroom, or administering student-, parent-, or teacher-interviews. The goal of the fourth stage of the consultation process – *Intervention Implementation* – is to identify and implement an appropriate, EBI to target the identified problem. During this stage, it is the responsibility of the consultant to find an intervention that is supported by research literature and seems likely to be effective in the classroom (Kratochwill & Stoiber, 2000; 2002). It is also the job of the consultant to train the consultee in the administration of the intervention so that the consultee can implement the intervention independently in the classroom with confidence. The final stage of the consultation process is the *Program Evaluation* stage. During this stage the consultant observes the consultee and the student in the natural setting of the classroom to determine if the intervention has been successful. If the intervention has not been successful, the consultation team can then determine if the lack of success was due to a treatment integrity problem or if the intervention itself did not work for the particular student. Depending on the perceived reason for failure to obtain successful outcomes, the consultation team can then cycle back through any of the previous steps, to reanalyze the student's problem, select a different intervention, or review how to administer the intervention with integrity.

Developments in consultation technology involve several best practices for the use of problem solving strategies once a specific problem has been identified. An important first step to the problem solving process is to establish a baseline rate of problem behavior. Then, the consultation team should set operational goals and define specific ways to measure a student's progress towards reaching those goals. Once the intervention program begins it is crucial for members of the consultation team to observe, monitor, and analyze the student's progress. It is during this stage that a great deal of problem solving might occur, as it is quite possible that teams will need to implement several different interventions before finding one that is effective. In the last phase of the problem solving sequence the team evaluates the outcome of a specific intervention and plans for the next steps. Even when an effective intervention is identified and helps to resolve the student's problem, it is important to plan for an eventual transition away from consultee-managed intervention techniques to enable the student to manage his or her own behavior independently.

Kratochwill et al., (2002) emphasized the importance of several other components of problem solving consultation that have been shown to improve student outcomes. First, as mentioned above, it is essential that consultants take the time to build a collaborative and supportive relationship among members of the team. Hostility or a lack of trust among team members can significantly diminish the potential for beneficial outcomes to result from the consultation process. A second feature of consultation that can improve outcomes is that the roles and responsibilities of each team member are clearly defined and discussed from the beginning. Confusion regarding which team member is responsible for which components of the consultation process can result in a breakdown of trust and cooperative attitudes. A third important aspect of consultation is that the team members engage in regular contact with each other. This contact is important for several reasons, including that it (1) helps promote high treatment integrity, (2) fosters a feeling of support and joint effort between all team members, and (3) enables changes to be made to the program in a timely fashion, rather than waiting several days or weeks before discovering that an adjustment of some kind needs to be made. A fourth characteristic of effective consultation is that the consultant does not engage in heavily jargon-loaded dialogue with the consultee. Research has shown that consultants who use complicated or technical terminology often damage the collaborative, cooperative nature of the consultant-consultee relationship (Bergan & Kratochwill, 1990).

Current Research in Problem Solving Consultation

Due to the increasing role of consultation in schools, many researchers have set about trying to improve the current technology and learn how to achieve the potential benefits that consultative services may be able to offer. Research has aimed to answer a number of different questions, which fall into the following four main topical categories: Outcomes, Process, Practitioner, and Training.

Outcomes Research:

(1) *How successful is consultation as a treatment process for remediating academic and behavior problems of children in schools?*

Bergan and Kratochwill (1990) and Sheridan et al. (1996), among many others, have found that school-based consultation is an effective treatment process for several types of problems, particularly behavioral and academic. In a clinical evaluation of 35 consultation studies, Reddy et al. (2000) found that behavioral or mental health consultation generally produced moderate to large effect sizes in clients, and was most effective when implemented to address externalizing behaviors, social skills problems, and academic problems. Reddy et al. (2000) also found that the effect sizes produced through consultation were greater for older children (12-18 years) than for younger children (5-12 years).

(2) *What techniques work best to improve the consultant-consultee relationship and support the most effective outcomes of that relationship?*

A great deal of research has shown that the benefits of consultation depend largely on the relationship that is established between the consultant and the consultee (e.g., Gutkin & Curtis, 1999; Martin, 1978). Consultants who don't make use of strategies to foster a supportive, encouraging climate in consultation meetings may render less than optimal outcomes when consultees are expected to implement the intervention program independently. Findings from this area of research have led to a set of tasks that help to form a good relationship between the consultant and the consultee (Allen & Graden, 2002). These tasks include (1) establish and maintain a sense of rapport, trust, and respect; (2) clarify expectations, roles, and responsibilities from the outset; (3) discuss relevant legal and ethical guidelines early on; (4) establish a preferred means of communication; (5) make certain that all members understand the problem-solving process and are supportive of it; (6) use language that is familiar to everyone involved, don't use a lot of technical jargon; (7) share valuable information between team members; (8) and incorporate team members' perspectives and opinions (Colton & Sheridan, 1998; Sheridan & Kratochwill, 1992).

(3) *How much treatment integrity do most teachers (or parents) show following the selection of an intervention in consultation meetings? And, how can treatment integrity be improved?*

The benefits of consultation depend largely on the consultee's ability to implement the selected intervention with integrity (Galloway & Sheridan, 1994). Also, the ability to determine overall treatment effectiveness depends largely on whether the consultee shows high treatment integrity. If an intervention is not implemented as intended, it is difficult to determine the cause of any resulting outcomes (Gresham, 1989; Gresham, Gansle, Noell, Cohen, & Rosenblum, 1993; Sterling-Turner et al., 2002). Bergan and Kratochwill (1990) and Sheridan et al. (1996) found that consultation can produce high treatment integrity among consultees, and several

researchers have tried to identify the specific techniques that promote high treatment integrity. The following suggestions have resulted from that line of study: (1) Make use of treatment scripts (Erhardt et al., 1996); (2) implement consultee goal-setting and feedback procedures (Martens et al, 1997); (3) incorporate performance feedback interviews (Noell, Witt et al., 1997); (4) directly train teachers on treatment integrity for each intervention (Sterling-Turner, Watson, & Moore, 2002); (5) make use of interventions that have high treatment acceptability for the teachers (Finn & Sladeczek, 2001; Rones & Hoagwood, 2000).

Process Research:

(4) *What methods are effective at improving teacher acceptability of interventions in consultation, and at improving teacher acceptability of consultation in general as a problem-solving technique?*

Several researchers have tried to determine how to make the interventions proposed in consultation more acceptable to teachers (for a review see Cowan & Sheridan, 2003; Eckert & Hintze, 2000; Elliott, 1988; Reimers, Wacker & Koeppl, 1987). Some of the preliminary findings suggest that interventions will be more likely to be accepted by teachers if they are (1) positive rather than negative (Elliott, Witt, Galvin, & Peterson, 1984; Kazdin, 1980; Witt, Elliott, & Martens, 1984; Witt & Robbins, 1985), (2) simple rather than complex (Elliott, 1988; Reimers et al., 1987), (3) in response to severe, rather than mild, child behavior (Elliott et al., 1984; Witt, Moe, Gutkin, & Andrews, 1984), (4) implemented with high integrity (Witt & Elliott, 1985); and (5) effective (Witt & Elliott, 1985).

As for improving the acceptability of school-based consultation itself, few studies have examined this topic empirically. Fuchs and Fuchs (1996) suggested that developers of consultation technology should consider the wide variation in the setting in which teachers work, and relatedly, should consider tailoring the details of the consultation process to meet the needs of each individual teacher. In a recent review, Finn and Sladeczek (2001) emphasized the importance of selecting interventions that are socially significant and appropriate and which produce meaningful change in the client. These authors also pointed a previous study by Dunson et al. (1994) that examined the correlation between various teacher characteristics, such as self-efficacy or years of experience with the consultation process, treatment acceptability. One interesting finding from this study was that teachers with high self-efficacy showed a slightly greater probability of evaluating a consultant less positively than did teachers with lower self-efficacy. Another study by Freer and Watson (1999) found that both parents and teachers reported conjoint consultation to be more acceptable than parent-only or teacher-only consultation. One question that researchers are currently trying to answer is how to measure treatment acceptability most accurately. Finn and Sladeczek (2001) advised researchers to use a variety of measures to assess treatment acceptability, including traditional quantitative indices such as the Intervention Rating Profile-20 (IRP-20), the Intervention Rating Profile-15 (IRP-15), and the Behavior Intervention Rating Scale (BIRS); qualitative measures such as open-ended interviews, observations, case reviews, feedback meetings, and surveys.

(5) *What aspect of the consultation process is the best predictor of plan implementation and problem solution?*

Some research in this area has pointed to the consultant's ability to help the consultee express a clear description of a particular problem to address through consultation as the most important indicator of later outcomes (Bergan & Tombari, 1975, 1976). Other researchers (Rones & Hoagwood, 2000) suggested that good predictors of treatment implementation include

the involvement of parents in school-based consultation, the school climate and support for consultation practices, the use of feedback within the consultation process, and the development of plans to overcome foreseeable obstacles to plan implementation. They also highlighted the importance of a clear delineation of responsibilities and expectations for both the consultee and the consultant.

(6) *To what degree do teachers generalize what they learn through consultation to other referred and nonreferred students? How can this generalization be programmed to occur more readily?*

Many teachers may not generalize the skills they learn in consultation to other students in the classroom. However, if teachers do not generalize consultation-related skills, then the preventive value of consultation is sharply diminished. A small number of studies have tried to examine this topic (Carrington-Rotto & Kratochwill, 1994;; Cowen & Hightower, 1990; D. Fuchs, L.S. Fuchs, & Bahr, 1990; Robbins and Gutkin, 1994) but the results of those studies have been mixed. Results from studies examining potential techniques for programming generalization have also been mixed, but current best practice points to several methods, including the following suggestions from Stokes and Baer (1977) and Stokes and Osnes (1989): (1) train in the natural setting, (2) make use of natural contingencies, (3) when no natural contingencies are present, use indiscriminable contingencies, (4) train to generalize, (5) make use of antecedents, (6) set exemplars, (7) use general case programming, (8) train loosely, and (9) mediate generalization. Riley-Tillman and Eckert (Tillman, 2000; Riley-Tillman & Eckert, 2001) tested one of these techniques, train to generalize, and have met with some degree of success. Further research is still needed in this area.

Practitioner Research:

(7) *How popular is school-based consultation among school psychologists, teachers, and administrators?*

Research in this area suggests that many school psychologists enjoy consultation and prefer it to other forms of
service delivery (Gutkin & Curtis, 1981; Meacham & Peckham, 1978). Some teachers and administrators have been
found to view consultation as an important function of school psychologists (Curtis & Zins, 1981), whereas others
have expressed resistance to it (Fuchs & Fuchs, 1996). According to a study published in 1999 (Curtis, Walker,
Hunley, & Baker) most school psychologists report that they do serve as consultants within their schools, but many
also feel that there is a limit to how much time they have to dedicate to this role, as it can be time consuming
Gresham & Kendell, 1987).

(8) *What causes teacher resistance to consultation as a method of service delivery?*

Fuchs and Fuchs (1996) suggest that the main cause for teacher resistance to consultation stems from a clash
between consultation and current trends in school reform. Specifically, they suggest that (1) some teachers believe

that the students with special needs should be taught in the special education classroom, and therefore they don't want to spend their time engaged in consultation with a school psychologist to learn how to work with these "problematic" students, (2) some teachers don't want to have to listen to an outsider tell them what to do, and many teachers regard consultation as exactly that, (3) teachers may feel that consultation is demeaning to their expertise at working effectively with their own students, (4) teachers may feel that the process of consultation leads to interventions that work too slowly, and (5) it is frustrating to some teachers to have to rely on student outcomes data, rather than individual perception, to determine the effectiveness of a given intervention. In response to these potential sources of conflict, Fuchs and Fuchs (1996) posit that developers of consultation technology should take the various perspectives of teachers into account when designing methods of service delivery; and also that education reformers should try to open their minds to the possibility of new and effective means of treating students with difficulties in school.

Training Research:

(9) *To what degree do current graduate programs provide quality training opportunities in consultation skills? And, what have been the outcomes of those programs?*

Many graduate programs in school psychology and special education now include training in consultation as part of their core curricula, and some research has shown that consultants who have received training in consultation have been able to implement consultation procedures with a greater degree of integrity (Kratochwill, Sheridan, Rotto, & Salmon, 1991). The best methods of consultation training have been shown to be direct training formats (McDougall, Reschly, & Corkery, 1988), which include modeling, role playing and performance feedback. Sheridan (1992) found that direct training in consultation promoted better generalization of the consultation problem-solving method across applied settings (Sterling-Turner, Watson, Moore, 2002).

(10) *To what degree are behavioral consultants making use of and applying the current literature and EBIs?*

This question has remained largely unanswered at this point, although it is clear that the gap between research and practice persists as a fundamental problem in applied educational settings (Kratochwill & Shernoff, in press). As noted above, one important factor leading to treatment acceptability on the part of consultees is that the treatment is effective (Witt & Elliott, 1985). Nevertheless, it is somewhat mysterious that the use of ineffective treatments continues at an alarming rate. Clearly, future research is needed in this area.

Final Perspectives

We foresee behavioral or problem solving consultation as having an extremely important role in the future of psycho-educational services. It is likely that federal and state governments will continue to ask public schools to improve the quality of services to students with disabilities and students with academic, social, and emotional difficulties. At the same time, however, it is also likely that funding will not increase for special programs and staff specifically trained to serve students with challenging problems. Therefore, we believe that the role of consultation as a support to teachers who must serve a diverse group of students will become increasingly crucial. We hope that as consultative services become more common, the technology used in those services will improve through careful research, and training in the best consultation techniques will become increasingly common in graduate and professional training programs. We also hope that the growing trend to utilize interventions supported by empirical evidence will be incorporated into the practice of consultation so that consultants can serve as the bridge between research implemented in the professional arena and practice in the schools. We view the consultant as central to the shift away from the application of interventions that "feel like they should work" to interventions that, in fact, have been shown to work; and furthermore we believe that consultation is a perfect means by which to help foster that shift.

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The authors provide an extensive overview of consultation, including a thorough description of each step involved in the consultation process. They also describe the best practices relevant to each step and offer suggestions to guide practitioners and researchers through the problem-solving model. Included in the article are worksheets, checklists, models, and rating scales, which can be used in conjunction with the consultation methods that the authors describe. Following the article is a thorough reference section with an annotated bibliography.

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Psychological Skills Training: Issues and Controversies

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Keywords: Skills training, Behavior Therapy

Implicit in the notion of skills training is the concept that a particular skill, or skillful behavior, may be instructed, acquired, and displayed in important situations. This emphasis on the delineation and acquisition of overt, effective (skillful) behaviors, clearly puts psychoeducational skills training within the behavioral model of therapy. This compatibility of behavior therapy and skills training can be easily understood when the theoretical bases of behavior therapy are made explicit. Masters, Burish, Hollon, and Rimm (1987) present the following eight primary postulates, or assumptions, of behavior therapy:

1. As compared to traditional psychotherapy, the focus of behavior therapy is on behavior itself rather than a presumed underlying cause of that behavior.

2. Any behavior may be learned, and as such, both adaptive and maladaptive behaviors are acquired through learning. Behavior therapy specifies that the mechanisms of this behavior acquisition are the established principles of leaning theory, such as classical conditioning, operant conditioning, and modeling.

3. Psychological principles can be extremely effective in modifying maladaptive behaviors.

4. Behavior therapy sets specific, overt, well-defined treatment goals. Instead of targeting a global problem such as general unhappiness, a behavioral therapist works with the patient/client to target the specific problems that are interfering with the client's functioning.

5. Behavior therapy rejects classical trait theory, which posits that a person possesses specific traits that predispose him or her to behave similarly in any situation. Rather, behavior therapy focuses on behavior-behavior relations and the mutability of a behavior relative to its antecedents and consequences.

6. Behavior therapists adapt their treatment in response to the client's specific problems, creating and modifying treatment plans in response to their effectiveness, always guided by the principles of learning.

7. Behavior therapy concentrates on the present, focusing on a client's current circumstances and problems more than on "formative" experiences from childhood.

8. Behavior therapists look to empirical support to judge the effectiveness of treatment. Treatment success is

measured by actual, significant improvement in the client's presenting problems and maladaptive behaviors. Skills training is certainly compatible with each of these assumptions. Skills training interventions are concerned with directly altering maladaptive behavior, without attempting to discern any underlying cause of such behavior. For instance, while a client experiencing trouble asserting him- or herself at work might be encouraged to discuss

the thoughts that interfere with effective action, it would be in the service of altering such maladaptive thoughts rather than exploring early experiences responsible for these thoughts. Skills training rests on the fundamental assumption that a new, more effective behavior, or skill, can be learned, and typically utilizes methods such as modeling, rehearsal, and operant conditioning to instruct skillful behavior. Assessment of skill deficits is a necessary precursor to remediation of skills, and behavior therapists often utilize tools such as functional assessment and chain analysis to determine the specific problems a client is encountering.

The Skills Training Rationale

O'Donohue & Krasner (1995) have suggested that the skills training approach is based on the notion that individuals in pursuing their lives are confronted with a wide variety of problems and tasks (e.g., communicating with others, resolving conflict, problem solving, relaxing). They need responses in their repertoires to effectively and efficiently achieve their goals in these situations. In general the skills training approach to psychotherapy is based on the following propositions:

1. Situations and problems arise regularly, in order to achieve some end (e.g., solve the problem, realize some personal goal) an individual must be able to respond in a competent, skilled manner.

2. Situations and problems create diverse demands (e.g., need to communicate, need to solve some problem, need to relax, need to interact successfully with others).

3. These diverse demands require diverse skills and capacities (e.g., communication skills, social skills, relaxation skills, problem-solving skills) for their resolution. Life has its "hidden curriculum" (Chan & Rueda, 1979).

4. Individuals vary in their abilities to execute various skills. All individuals have a range of potential abilities, although, as a result of certain conditions (e.g., genetic, physiological, or environmental/learning problems), individuals can have restricted potentials or restricted levels of achievement within a given potentiality.

5. Some individuals, at certain times and in certain situations, are deficient in skills necessary to meet some demand or achieve some end. The qualifiers in the previous sentence are there to indicate the situational specificity of performance deficits.

6. When situational demands arise that exceed the individual's skills, states of affairs may arise that may be variously described as lack of success, frustration, or even depression, psychophysiological illness, and the like. The manner in which these consequences are described has important implications concerning what appears to be a reasonable way to improve these states of affairs.

7. These individuals can often profit from an educational (psychoeducational) experience in which skill and performance deficits are directly addressed and remediated. Moreover, as McFall (1982) has stated,

> *Incompetence can be seen as the product of a mismatch between a person's performance abilities and the task demands imposed on the person. This discrepancy can be described, alternatively, as being due either to a deficit in*

> *skills, or to excessive performance demands. Psychological problems grow out of this imbalance between abilities and demands in the person-environment system; therefore, the reduction of psychological problems, which involves establishing a balance in the system, can be achieved either through increasing the person's abilities or through decreasing the environmental task demands imposed on the person. (p. 22)*

Psychological skills training also can be clarified in part by a more precise definition of a "skill." *The Oxford English Dictionary* (1982) provides a relevant definition of skill: "to have discrimination or knowledge, esp. in a specified manner" (p. 2847). Competent performance in some skill may require declarative knowledge and/or procedural knowledge. Declarative knowledge concerns knowing that certain relevant proportions are true – for example, "Occasional eye contact with the speaker will increase the probability that the speaker will know that I am listening." Procedural knowledge is knowing *how* to do something – knowing how to relax striated muscles is one such example. Egan and Cowan (1979, p. 8) define skills in a more molar and functional manner: "the competencies that are necessary for effective living." McFall (1982) defines "skills" as "the specific abilities required to perform competently at a task (pp. 12-13).

Goldstein (1982) has provided a succinct definition of psychological skills training:

> *The planned, systematic teaching of the specific behaviors needed and consciously desired by the individual in order to function in an effective and satisfying manner, over an extended period of time, in a broad array of positive, negative and neutral interpersonal contexts. The specific teaching methods which constitute social skills training directly and jointly reflect psychology's modern social learning theory and education's contemporary pedagogic principles and procedures. (p. 3)*

O'DONOHUE AND KRASNER (1995) HAVE POINTED OUT A NUMBER OF POTENTIAL ADVANTAGES TO A SKILLS TRAINING ORIENTATION.

1. Psychological skills training relies on the mechanism of "learning" that is relatively well researched, clear, and understood instead of on less well researched, clear, and understood mechanisms such as cathartic insight or authentic living.

2. Psychological skills training relies on the notion of continua of skill abilities and competencies, as well as of situational demands determining what abilities are necessary to produce what ends.

3. Psychological skills training potentially decreases power differentials (and thereby potential abuses) between trainer and client in several ways.

4. Psychological skills training directly implies a course of remediation, unlike problems encountered when conceptualizing problems along the lines of the diagnoses found in the *Diagnostic and Statistical Manual of Mental Disorders – IV* (American Psychiatric Association, 1994), which have notorious problems in predicting what treatment will be recommended.

5. A psychological skills training model provides clear, testable hypotheses concerning the origin of psychological problems (e.g., deficiencies in exposure to skilled models at certain developmental periods).

6. Skill training may be an important method for the prevention of problems.

7. Problems are seen as arising from a discrepancy between an individual's capabilities and environmental demands.

8. Psychological skills training avoids what may be called the "irrationalist's inconsistency" of certain models in which therapists are rational scientist-practitioners who weigh evidence in coming to their conclusions, but whose conclusions are that human behavior is controlled by irrational (e.g., unconscious sex and aggressive) forces.

9. Psychological skills training in providing clearly specified and focused topics and training goals is more amenable to scientific evaluation than more artful forms of psychotherapy that rely on less replicable and more idiosyncratic modes of therapeutic interaction.

10. Though consistent with a deficit model of intervention, psychological skills training also is consistent with a personal growth model in which individuals who are performing relatively competently strive for further improvement in various skill areas.

11. Goldstein, Gershaw, and Sprafkin (1985) have argued that traditional psychotherapy, with its emphasis on verbal abilities, insight, and middle-class values, is often inappropriate with lower SES clients, and that psychological skills training has advantages (e.g. it is shorter term, more concrete, and more directive) that are particularly useful for this population.

12. To the extent that similar component skills are necessary for topographically dissimilar tasks (e.g. pain management is necessary for both maintaining an exercise regimen and coping with chronic headaches), an independent measure of this component still should allow more accurate prediction of behavior across similar (e.g. different episodes of headache coping) as well as dissimilar tasks (e.g., headache coping, maintaining a jogging regimen).

13. Psychological skills training, to the extent that it teaches general skills such as problem solving, may enable the client to be in a better position to solve diverse problems and not only the problem that may have precipitated professional contact.

14. Larson (1984) has suggested that "the replicability, accessibility, portability, brevity, and efficiency of skills training approaches make them ideal vehicles for extending training in helping skills beyond the circumscribed traditional population of mental health workers" (p. 9).

How to Develop a Skills Curriculum

Social skills programs have proliferated within the last several decades, many of which are based on commonsense notions of what behavior ought to be relevant in a particular social

context. For example, based on commonsense, a program developed for school-aged children might involve protocols for sharing, turn taking, and dealing with conflict.

These targets seem reasonable as these behaviors would undoubtedly occur at least several times each day, for most children. However, if one were to ask children or their teachers or parents directly, what behaviors are most relevant in a given social exchange, a different set of targets might emerge. The above protocols may be deemed irrelevant. This is especially the case when, say, comparing inner city schools with private schools, Christian with secular, and so on. With nonempirically derived programs, therefore, the behavior necessary for successful social performance may or may not be targeted for intervention. One would never know for certain without testing these hypotheses. By contrast, empirically derived programs attempt to target the behavior deemed appropriate by those interested parties who are most affected by discrepancies in performance. For example, in developing an appropriate skill set for on-the-job behavior, naturally the program designer would turn to the individual's employer or fellow employees for their input.

Some of the most comprehensive empirically derived social skills programs are those developed by McFall and colleagues (e.g., Freedman et al., 1978; Gaffney & McFall, 1981; Goldsmith & McFall, 1975). The development of these typically involved four distinct phases: Identifying patient-relevant problem situations; analyzing effective responses for those situations; deriving principles governing effective responses, and developing explicit scoring criteria for such behavior (as a means of evaluating performance).

1) Identify patient-relevant problem situations

This phase would entail meeting with the targeted population and asking members via structured interviews to describe common interpersonal problems. These transcripts would then be given to a similar group and their task would be to rate these items, regarding the extent to which these identified problems are relevant to their own lives, cause marked distress, and the like. In many cases, the program designer would employ the use of a Likert scale in rating these items. A Likert scale might range from "not important" at all or "not relevant," to "extremely important" to "highly relevant," respectively. At the discretion of the treatment developer(s), for sake of parsimony, certain items could then be discarded if there is significant overlap or they are otherwise deemed trivial.

2) Analyze effective responses for the situations

These items would then be given to a cross-section of competent performers (Gaffney & McFall, 1981). Specifically, there would be equal representation along the continuum ranging from upper, middle, and lower performers. As a case in point, the target might involve "fitting in". In sampling effective versus ineffective repertoires, the program developer would first talk to children and their teachers asking them to identify the most popular individuals, the least popular, and those who fall somewhere in between both extremes. Once identified, this sample, comprised of individuals who differ in popularity, would then be given the transcripts of the situations identified in phase one and asked to generate responses with respect to what they would do in those situations.

Responses would then be given to individuals in a position to rate the relative merits of these (e.g., which responses were effective, ineffective, or neither). Ideally, judges would entail those individuals in a position to observe numerous interactions between children as they interact.

Accordingly, judges might include teachers, the principal, and teachers' aides, as these individuals have ample opportunities to observe peer interactions.

3) Derive principles governing effective responses

As judges rate responses, they are also asked to provide rationales behind their ratings (Goldsmith & McFall, 1975). Namely, why was one response rated as effective and another ineffective? Guiding principles would then be extracted from these rationales. One guiding principle might read as follows: Children who respond aggressively when their needs are not met tend to be avoided by other children. Specifically, such individuals tend to be excluded from group activities taking place on the playground.

4) Develop explicit scoring criteria for target behavior

Scoring criteria for target behavior is derived statistically. For example, in Gaffney and McFall's (1981) study, judges' ratings were analyzed using coefficient alphas. Those coefficient alphas below a certain level were discarded (in their study .70). The remaining ratings were used in a rater's manual. Thus, for each scenario (identified in the first phase of development), a 5-point answer suggested the best response in the situation; 1-point answer suggested the worst response. Cohen's (1960) kappa coefficients, among other rater reliability indices can also be employed (interested readers should consult the following reviews: Cordes (1994) and Kelly (1977).

How to Best Effectively Teach, Especially to Solve Generalization Problems

Once skills are acquired in the therapeutic setting, the question of generalization becomes relevant. A client learning new skills such that he or she can act more skillfully during session, in the presence of the therapist, is certainly important, but for skills training to be truly effective, these skills must extend to all aspects of the client's life. The process by which this occurs is generalization, and altering skills training so that the client can use newly acquired skills in multiple conditions is known as programmed generalization.

Behaviorists speaking of generalization are most often referring to stimulus generalization, which is defined as an "increase in responding to a novel stimulus as a result of training with a different stimulus" (Michael, 1993, p. 83). For example, stimulus generalization is required for a client who has learned relaxation skills in the presence of the therapist (training with an initial stimulus) to then perform these skills at a stressful office meeting (learned response performed under a novel stimulus). To achieve generalization, the therapist must actively work with the client to promote such change, always guided by principles of behavior therapy. For a response to generate to a novel situation, the therapist must first ensure that the skill has been acquired at strength, as a skill that is newly acquired is less likely to generalize to novel stimuli as will a response that has been acquired, practiced, and become part of the client's skill repertoire. The behavior therapist must then actively program for generalization to the new stimulus by using techniques such as modeling and rehearsal, guiding the client through role playing or visualization to encourage new repertoires to be utilized in different situations. Finally, the therapist must reinforce attempts by the client to use newly acquired skills in other environments, and conduct functional assessments of these attempts to determine both the effectiveness of the skill implementation and ways the client may become even more successful in their use.

While stimulus generalization is certainly the most common, and arguably most important type of generalization, it is still important for the behavior therapist to bear in mind two other types of generalization when implementing skills training – response generalization and temporal generalization. Where stimulus generalization is the generalization of a skill to a novel stimulus, response generalization is generalization of a response to another response, often acquired concurrently. An example is a client who is directly instructed in the skill of muscle relaxation, and incidentally learns the skill of deep breathing at the same time. Of final importance is temporal generalization, which can also be viewed as the maintenance of a skill over time. Ideally, when a client successfully uses new skills in his or her life, the effect will be to produce positive changes that will in themselves reinforce the use of that skill, allowing the environment to maintain the skill and promote temporal generalization. However, the therapist must be aware of the actual effects of skill implementation in the client's life for this to be ensured, and treatment to be considered successful.

Rule vs. Contingency Analysis

Social skills training assumes that the components of a given skill set can be described as a series of graduated steps. As such, many social behaviors lend themselves well to instructional design. We can easily teach a person what fork to use with salad, what to say after a person sneezes, and how to politely queue up behind someone standing in line. However, other types of social behavior are elusive, if not inexplicable. Take dating as a case in point. While there are generalities to successful dating, mostly in the form of admonitions (e.g., do not flirt with your food server in front of your date), other more subtle behavior are not as easily taught or perhaps cannot be directly trained. For example, how can an individual be taught how to discern when his or her date is truly interested or simply trying not to hurt his or her feelings? Under what circumstances is sustained eye contact welcomed and when does it become "creepy"? How many unreturned phone calls does it take before a person stops calling? The long and short of answering these is that it depends on the individual and given situation, with respect to both parties.

The skill set concerning this highly complex discriminative repertoire is by and large contingency-shaped versus rule-governed. That is, there are no hard and fast rules that can be invoked when say, it comes to knowing whether or not the person's date is interested or just being nice. Rather, the individual has to contact the naturally occurring contingencies and hopefully, the environment will select effective behavior. While these contingencies cannot be produced in the therapist's office, the therapist can increase the likelihood that this discriminative repertoire will be selected by natural conditions by teaching the client to become more sensitive to social cues, particularly in response to body posture, facial expressions, proximity, and the like. For example, the therapist and client might role-play, whereby the client identifies the emotion conveyed nonverbally, and the therapist provides corrective feedback.

From a theoretical standpoint[1], contingency-shaped behavior differs fundamentally from what is called rule-governed behavior, in that the former entails behavior shaped by way of direct contact with contingencies and the latter is shaped in accordance with verbal stimuli (Skinner, 1989). Verbal stimuli in the form of rules serve a discriminative stimulus function, that is, they

[1] In actuality, contingency-shaped and rule-governed behavior are not easily discernible, as verbally-abled individuals are capable of generating self-rules every moment they contact the contingencies in the natural world.

affect the differential probability of a given response. Simply, rule-following behavior that often eventuates in positive reinforcement and avoids aversive consequences is likely to be evoked by those verbal antecedents that participate in the contingency. In particular verbal antecedents or rules are said to specify contingencies of reinforcement (Baum, 1994; Pierce & Epling, 1995). Accurate rules, for example, specify what behavior is necessary for effective action, when the response(s) should be emitted or withheld, and when to anticipate the consequence (as many consequences are deferred).

Because certain types of social skills cannot be directly taught, therapists teach clients how to extract rules for themselves from the situation, so-called "metarules" (Poppen, 1989, p. 335). Similar to teaching clients how to discriminate among nonverbal cues, clients also be taught to generate rules of their own. Again, the therapist might role-play with the client; after which, the client specifies the prevailing contingencies and, in so doing, the therapist provides corrective feedback.

Controversies in Skills Training

We will briefly mention five issues that are unsettled regarding skills training. These are:

1) What are the relative strengths of two different skills training strategies: a) the compensatory strategy of teaching the client how to generalize skill sets in which they already display significant strengths to domains in which they demonstrate deficiencies; b) the corrective strategy, i.e., directly teaching skills in these deficit areas.

2) Can it be important, at least in some situations, to understand why the client has failed to learn skills that tend to be learned by others? For example, might a child's poor social skills be secondary to their problematic attention span found in ADHD?
3) To what extent is it important to better understand the process by which skills are learned, maintained, and displayed in order to better improve therapeutic effectiveness, as well as better understand the contingencies related to treatment failures? Currently, we have very few models of these phenomena, although McFall's (1990s) information processing model is an exception to this rule.

4) What are the contextual factors that influence skills acquisition, retention, and display (such as motivation, decreased anxiety, self-efficacy, decreased ambivalence, among other possible candidates) that need to be better identified and understood, particularly intervention strategies to optimize these.

5) How does one design an optimal skills training curriculum for a particular client? Subproblems include: a) How does one prioritize and order when there are multiple skills deficits? b) How do we identify the particular skills needed to remedy the problems that the client is experiencing? At times do our constructs appear more informative than they actually are? Phrases such as social skills and "assertion skills" actually cover a lot of possible ground. c) How do we know that the distress associated with our client will be actually remedied by skill acquisition? d) What are the best skill acquisition methods – how much didactic information vs. how many models, vs. how much actual supervised practice? When are skills best taught in group vs. individual therapy? e) How does one best program generalization? f) How does one structure homework? g) How does one handle therapy interfering behaviors that may arise during the curriculum? h) To what extent are booster session relevant? i) to what extent does one design the curriculum with

a prior knowledge of the contingencies that will maintain the class of behaviors in the client's natural environment?

Conclusion

Skills training is both an intervention strategy that seems reasonable in principle (i.e., it seems to be consonant with our experience in life – we learned to ride a bike), and one in which there is an impressive body of literature that attests to its general effectiveness (O'Donohue & Krasner, 1995). However, the actual practice of skills training is not as simple and straightforward as it might appear. In this paper we have outlined some of the unresolved research questions as well as some of the choice points that clinicians face.

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MODE DEACTIVATION THERAPY: A THEORETICAL CASE ANALYSIS (PART I)

Apsche, J.A. & Ward Bailey, S.

This is the first part of a case study presenting a single case analysis of an 18 year-old African -American male. It also presents a theoretical analysis of the case implementing Mode Deactivation Therapy (MDT) (Apsche, Ward, & Evile, 2002). MDT is a form of CBT that combines the balance of DBT with a methodology to address the adolescents' belief system. MDT has been shown to be effective in a descriptive study with CBT (Apsche & Ward, 2002). The analysis of MDT while reviewing this case presents an opportunity to understand the development of mdt, while reviewing it's effectiveness with this case. The individual in this case, John, was a troubled youngster. He had been the recipient of severe and pervasive physical abuse by his mother and father. He and his sister were neglected and abandoned as children at the age of 5 years old. John developed a complex system of personality disorder beliefs to cope with his world. These beliefs had led John to commit numerous violent acts as a sexual offense. This theoretical case study represents the beginning of mode deactivation therapy from theory to clinical practice. He was treatment savvy and was able to define basic cognitive therapy techniques but would engage in dialectical debates about distortions and would negatively engage his therapist who suggested that he distorted information.

INTRODUCTION

The development of Mode Deactivation Therapy (MDT) as an applied CBT methodology has been a challenge. The difficulty begins in the attempt to treat adolescents with complicated history and multi-axial diagnoses. Many of the adolescents that we treat are victims of sexual, physical, and/ or emotional abuse. These individuals have developed survival coping strategies. Many of these survival mechanisms translate into personality traits and/or disorders. These personality traits and/or disorders are not cluster bound. Meaning that they are translated into beliefs and schemas that are inclusive of beliefs from all three clusters. Often it has been thought that individuals stay true to their cluster, this is not so, with the adolescent typology that we treat.

The concepts of mode deactivation therapy (MDT) are derived from many aspects of functional analytic behavioral therapy (FAP), dialectical behavior therapy (DBT), and cognitive behavior therapy (CBT). The focus of MDT is largely based on Beck's recent area of research and application, the system of modes (Beck, 1996, Alford and Beck, 1997).

Functional analytic psychotherapy (FAP) (Kohlenberg & Tsai, 1993) theory states people act based on reinforcement contingencies. Although FAP takes into consideration that cognitions are involved, the focus is on the deeper unconscious motivations that were formed as a result of past contingencies. Perception is based on past contingencies, therefore, reality and the concept of reality reflects what has been experienced in the past. Considering reinforcement history in the context of a person provides a more complete assessment of a person and specific behaviors.

By restructuring beliefs, MDT addresses underlying perceptions that may be applicable to setting in motion the mode related charge of aberrant schemes, that enable the behavior integration of DBT principles, (Linehan, 1993) of treating of sex offending or aggressive behaviors. Many of Linehan's teachings describe radical acceptance and examining the "truth" in each client's perceptions. This methodology of finding the grain of truth in the perception of the adolescent is at the crux of MDT. We also "borrow" radical acceptance in the form of helping the youth accept who he is based on his beliefs. The other major similarity between DBT and MDT is the use of balancing the dichotomous or dialectical thinking of the client.

Often CBT as viewed by "arguing" the concepts of cognitive distortions fails with these youngsters. They do not respond to being in a one-down position, no matter how aligned they are

with their therapist. Cognitive therapy as normally practiced will trigger a negative reaction by these youngsters. They perceive the therapist as another person attempting to change them from a system of defenses that has been developed to protect them. CBT as normally practiced will often fail with this typology of youngster.

The early development of MDT was conceived from the need to apply the principles of CBT with complex adolescent aberrant typologies. These individual have long histories of sexual, physical, and/or emotional abuse. Often thy respond in ways that are translated into personality disorders and/or conduct disorders. These are youngsters that may respond by committing sexual offenses, aggressive acts, and/or other aberrant behaviors. Often these youngsters are viewed as "criminals" and are the underclass within our society and active within the criminal justice system. The term typology refers to this specific complex adolescent with these types of histories. CBT attempts to identify dysfunctional schemas and modify them. It is believed that aberrant behavior is related to dysfunctional schema. MDT is a methodology that addresses dysfunctional schemas through systematically assessing and restructuring underlying dysfunctional compound core beliefs. MDT is applicable to adolescents who engage in aggressive and/or delinquent behaviors, as well as sexual offenders.

Beck (1996) suggested that the model of individual schemas (linear schematic processing) does not adequately address a number of psychological problems; therefore the model must be modified to address such problems. Working with adolescents who present with complex typologies of aberrant behaviors, such as anxiety→fear reactions and personality beliefs and/or disorders, it was necessary to address this typology of youngsters from a more "global" methodology. The concept of modes provided the framework to develop such a methodology. MDT incorporates the model of individual schemas with Beck's notion of modes as integrated suborganizations of personality. Modes assist individuals to adapt to solve problems, such as, the adaptation of adolescents to strategies of protection and mistrust when they have been abused. They consist of schemas (beliefs) that are activated by the fear↔avoids paradigm. To address the schema processing based on thoughts and beliefs without understanding the modes is insufficient and does not explain the specific adolescent typology referred to in Mode Deactivation Therapy.

Mode Deactivation Therapy includes imagery and relaxation to facilitate cognitive thinking and then balance training, which teaches the youngster to balance his perception and interpretation of information and internal stimuli. The imagery is implemented to reduce the external of the emotional dysregulation. The emotional dysregulation is the basis for the underlying typologies of these youngsters. Many of their underlying behaviors include aggression (physical and verbal) as well as addictive and self-harm.

Mode Deactivation Therapy is designed to assess and treat this conglomerate of personality disorders, as well as remediate aggression and sexual offending. It is important to note that Mode Deactivation Therapy is an empirically based and driven treatment methodology. Carefully following the MDT case conceptualization and methodology ensures empirically based and driven treatment (Apsche & Ward, 2002, unpublished).

The theoretical underpinnings of Mode Deactivation Therapy are based on Beck's (1996) Mode Model. Specifically, suggesting that people learn from unconscious experiential components and cognitive structural processing components. Therefore, to change behavior of individuals there must be a restructuring of the experiential components, and a corresponding cognitive restructuring of the structural components. The dysfunctional experiential and structural learning, (conscious and unconscious), develop dysfunctional schemas that generate high levels of anxiety, fear, and general irrational thoughts and feelings, as well as aberrant

behaviors. This system is self-reinforcing and protected by the development of the conglomerate of the developing personality disorders. This conglomerate is comprised of multiple clustered compound core beliefs. These conglomerates of personality disorders are the most pronounced impediment to treatment, and are systematically treated throughout Mode Deactivation Therapy, beginning with the Case Conceptualization.

Mode Deactivation Therapy is built on the mastery system for youngsters. They move through a specifically designed MDT workbook at the rate of learning that accommodates their individual learning style. The system is designed to allow the youngster to experience success, prior to undertaking more difficult materials. Through the Case Conceptualization and workbook, the system allows the youngster to systematically address the underlying conglomerate of personality disorders as well as, the specific didactics necessary, the sexual offending and/or anger/aggression.

Mode Deactivation Therapy: Functionally Based Treatment

Beck (1996) describes the notion modes as a network of cognitive, affective, motivational, and behavioral components. He further described modes as consisting of integrated sections or suborganizations of personality, that are designed to deal with specific demands. Beck continues to describe "primal modes" as including the derivatives of ancient organizations that evolved in prehistoric circumstances and are manifested in survival reactions and in psychiatric disorders. Beck also explains that the concept of charges (or cathexes) being related to the fluctuations in the intensity gradients of cognitive structures.

Beck, Freeman and Associates (1990) suggested that cognitive, affective and motivational processes are determined by the idiosyncratic structures or schema that constitute the basic elements of personality. This is a more cognitive approach suggesting that the schema is the determinant to the mood, thought, and behavior.

Alford and Beck (1997) explain that the schema typical of personality disorder is theorized to operate on a more continuous basis, the personality disorders are more sensitive to a variety of stimuli than other clinical syndromes. Since these youngsters are often personality activated, it seems that they are in continuous operation. This is one of the difficulties, they are always ready to defend and/or attack.

Further study of cognitive therapy emphasizes the characteristic patterns of a person's development, differentiation, and adaptation to social and biological environments (Alford & Beck, 1997). Cognitive theory considers personality to be grounded in the coordinated operations of complex systems that have been selected or adapted to insure biological survival. Genetically and environmentally determined processes control these consistent coordinated acts or structures termed as "schema." Schema are essential both conscious and unconscious meaning structures. They serve as survival functions by protecting the individual from the trauma or experience. An alternative and more encompassing construct is that of modes and suggest that the cognitive schematic processing is one of many schemas that are sensitive to change or orienting event.

Modes are important to understanding these typed adolescents in that they are particularly sensitive to danger and fear, serving to charge the modes, that as multi victims of various abuse these youngsters are sensitive to danger and fear. These fears signal danger and are activated by

conscious and unconscious learned experiential fears. The unconscious refers to the cognitive unconscious as defined by Alford and Beck (1997). Abused children develop systems to adapt to their hostile environment. These systems are often manifested by personality traits/ disorders (Johnson, Cohen, Brown, Smailes, & Bernstein, 1999). Longitudinal studies demonstrate that abused children frequently develop personality disorders in adolescence. From the perspective of modes, these disorders are adaptations to a dangerous environment. MDT suggests that the danger produces a fear reaction that is often reactive to danger and fear. This reactivity and sensitivity do not respond to traditional CBT. The adaptation of a theory that was proposed by Beck (1996) on modes into the dialectical methodology of DBT, Linehan (1993), created the blueprint for MDT. The understanding of conscious and unconscious fears being charged and activation the mode system explains the level of emotional dysregulation and impulse control of the typology of youngsters that we treat.

Modes provide the content of the mind, which is reflected in how the person conducts their perspectives. The modes consist of the schemas (beliefs) that contain the specific memories, the system on solving specific problems, and the experiences that produce memories, images and language that form perspectives. As Beck (1996) states disorders of personality are conceptualized simply as "hypervalent" maladaptive system operations, coordinated as modes that are specific primitive strategies.

Although the operation of dysfunctional modes in the present state is maladaptive, it is important to note that they were developed over time for survival and adaptation. These systems prove to become maladaptive as problematic behavior result in destruction.

Mode Activation

Beck (1996) introduced the concept of modes to expand his concept of schematic processing. He suggests that his model of individual schemas (linear schematic processing) does not adequately address a number of psychological problems; therefore, he suggests the system of modes. Beck described modes as a network of cognitive, affective, motivational and behavioral components. He suggests that modes are consisting of integrated sectors of sub-organizations of personality that are designed to deal with specific demands to problems. They are the sub-organization that helps individuals adopt to solve problems such as, the adaptation of adolescents to strategies of protection and mistrust when they have been abused.

Beck also suggests that these modes are charged, thereby explaining the fluctuations in the intensity gradients of cognitive structures. They are charged by fears and dangers that set off a system of modes to protect the fear. Modes are activated by charges that are related to the danger in the fear→avoids paradigm. The orienting schema signals danger activates or charges all systems of the mode. The affective system signals the onset and increasing level(s) of anxiety. The beliefs are activated simultaneously reacting to the danger, fear→avoids and physiological system. The motivational system signals the impulse to the attack and avoids (flight, fight) system. They physiological system produces the heart rate or increases or lowers the blood pressure, the tightening of muscles, etc.

Linehan (1993) sees individuals with borderline personality disorder analogous with burn victims where the slightest movement is automatic and causes extreme pain. "Because the individuals cannot control the onset and offset of internal or external events that influence emotional response," she suggests that the experience is itself a "nightmare of intense emotional pain" and a struggle to regulate their own responses.

According to Dodge, Lochman, Harnish, Bates, and Petti (1997), there are two sub-groups of aggressive conduct type youngsters; Proactive, the sub type that receives benefit and rewards from aggression and Reactive, the sub type that is emotionally reactive or dysregulates. Forty percent of reactive adolescents have multiple personality disorder according to Dodge, et al. (1997). It appears that Reactive Conduct Disorder adolescents emotionally dysregulate and many of their aberrant responses are results of their emotional dysregulation. John was originally perceived as proactive, until a careful analysis of his case conceptualization was considered. This reactive type of conduct disorder youth responds to their environment similarly to individuals with Borderline Personality Disorder. They are reactives and engage in dialectical thinking that seems contradictory and often attention seeking. In reality, these youngsters often endorse dichotomous beliefs and engage in dichotomous behaviors. Often what appears to be impulsive behavior may be their acting upon these dialectical beliefs or being reactive (Dodge, et. al., 1997).

Koenigsberg, Harvey, Mitropoulou, Antonia, Goodman, Silverman, Serby, Schopick and Siever (2001) found that many types of aggression, as well as, suicidal threats and gestures were associated with emotional dysregulation. The Case Conceptualization methodology provides the framework to assess and treat these complicated typologies of adolescents and integrates them into a functionally based treatment. The goal is to deactivate the Fear→ Avoids→ Compound Core Beliefs mode and teach emotional regulations through the balancing or beliefs.

Apsche, Ward, & Evile (2002) have suggested that the systematic approach of MDT has had some positive results in reducing aberrant behaviors and beliefs of adolescents. Apsche & Ward (2002) have also reported positive descriptive results of MDT as compared to cognitive therapy in a descriptive, empirical but not comparison study. They found that MDT reduced personality disorder/trait beliefs significantly and fought the individual to self-monitor and balance their personality disorder beliefs.

This case analysis represents theory integrated into practice of a youngster who was in numerous (7) correctional and treatment facilities previous to this treatment. He has been removed from all facilities for aggression and he attacked staff and residents alike.

This case analysis is a step-by-step case study, with a corresponding theoretical analysis based in MDT. The methodology known as MDT suggests potential for effective treatment of youngsters with similar backgrounds as John. It is hoped that MDT will be studied in rigorous empirically based studies.

Case Analysis

Consider a case of a youngster (please see the example of the mode activation from his Case Conceptualization following this case analysis). John is an adolescent who is reactive and has a conglomerate of personality disorders. He endorsed multiple Borderline Personality Disorder beliefs in various belief assessments. John was severely physically abused and perceives threats in many situations. He feels threatened by authority figures and perceives danger in many situations therefore reacts to prevent re-victimization.

If John perceives that he could be in a situation where he may be confronted or reprimanded, his anxiety would increase. For example, he can be involved in normal activities with a friend or peer, but if he notices the time getting closer to a group or meeting with

"authority figures" he feels his anxiety increasing. Even if he was not increasingly thinking about the meeting, group, etc., some kind of preconscious processing of the anticipated event is occurring and producing anxiety. The discernment that he will be involved in a situation that he perceives as confrontational has already set in motion the cognitive, affective, behavioral, and physiological processes.

Although John may not be consciously thinking about confrontation (and may be focused on the discussion or activity with a friend), an attempt to elicit his thought at this point, would generate the same information as if he were actively thinking about the anticipated event. He would express anger about the upcoming perceived "slight" or correction and he would be able to discuss that he has a dichotomous belief in operation, such as "whenever I am angry my emotions are extreme and out of control." He would be able to identify the fear that was endorsed related to his anger and that he perceived physical danger from the perceived upcoming situation.

As the time of the perceived confrontation nears (feared group or meeting) he would have a conscious fear or threat of being a victim and was also fearful that he would become verbally and/or physically aggressive to protect himself. The situation appeared threatening (real or perceived) based on his life's experiences. He was fearful of his own actions in this situation and worried that he would later feel humiliated by the outcome of the situation.

At a later time when John is no longer confronted with the dangers of the situation, he is not experiencing the fears of the perceived situation. The distance from the dangerous situation represents the Woody & Rachman, (1994) concept of a "safety signal." When the parameters of the same situation recur the pattern of fears $\leftrightarrow$ avoids beliefs is repeated.

Reviewing the fear reaction pattern in John, using Beck's (1996) analysis of modes, the activating circumstances are directly related to the anticipated event and the perception of the re-victimization of the meeting. These circumstances are processed through the orienting component of the "primal mode relevant to danger;" the imagined risk of being victimized, beaten and letting someone else control him. As this related fear is activated, the various systems of the mode are also activated and energized. During the physiological manifestation of the activation of the mode, John becomes tense, grinds his teeth, has involuntary muscle movements, increasingly intense head aches, tightened facial muscles, his hands and legs shake, move around, anxiety increases, and his fists may tighten.

The actual progression of the mode activates as John nears the time of the group or meeting, i.e., his orienting schemas signal danger ahead. This system is based on the perception of danger of victimization and is sufficient to activate all the systems of the mode. The affective system generates rapidly increasing levels of anxiety; the motivational system signals the impulse and the flight/fight signal, increasing the attack or avoid and the physiological system, which produces the following: grinding of his teeth, involuntary muscle movements, heart races, etc.

John becomes aware of his distressing feelings at this point and he is often unable to activate his own cognitive controls, or "voluntary controls" to override this "primal" reaction to be able to mediate the conflict. Once he is able to mediate the fears and avoidance, he would be able to participate in a supportive meeting and the anxiety would begin to deescalate.

Please note that John's interpretation of his physiological sensations magnifies his fears of the anticipated physical and psychological re-victimization. Throughout the process of the

feedback that he received from his bodily sensations, the flush anxious feelings, the powerful fear of loss of control, and the sequel of physiological responses develops the fear of yelling and screaming and potential aggression and a disastrous situation. This fear is compounded by the events that led to another fear, which is the fear of feeling humiliated by the perceived threat of victimization and loss of control in the presence of other people.

Client Summary

Brief Treatment History Prior to Current Placement

This is the first admission to this facility and second residential placement for this sixteen year old boy who sexually sodomized at least one younger male friend of the family and attempted to recruit two younger cousins to perform fellatio upon him. He was treated at a residential facility from May 1998 to May 1999, but was discharged because of chronic behavioral problems, including verbal and physical aggression and extreme oppositional and defiant behavior, in spite of numerous attempts to intervene. Since then, John was placed at a youth detention center until his current placement.

While at his previous residential placement, John was started on Prozac. He perceives no change in his mood on that medication. The discharge summary from his placement indicates that he was frequently non-compliant with treatment. At the youth detention center, he was also placed on Wellbutrin SR 150 mg, which he took every morning in combination with the Prozac. There was no bedtime dose of Wellbutrin given, according to John and available records. John reports that he perceives no effect from the Wellbutrin either. He chose to discontinue the medication.

John has a longstanding history of sleep disturbance with mid-state wakening as well as some diurnal mood variation. He reports that he frequently has excessive energy and periodic hyposomnia, but not excessively. Rather, it is difficult for him to assess this because he was frequently awakened while in the youth detention center. He does, however, report recurrent dreams in which he is killed either by drowning or by being shot. He associates the dreams to early physical trauma by his mother and father.

John's behavioral problems were first noted in early childhood. He has historically been an extremely aggressive child who, from age four or five, was noted to be emotionally disturbed and a serious behavioral problem. Throughout his school career, he has repeatedly been suspended because of his poor anger control. He was in several foster homes and his father, on prior occasions, refused to continue to care for him and his siblings because of the resident's behavior.

John has no prior history of alcohol or other substance abuse, and does not smoke cigarettes.

Family History

John's mother was a physically abusive woman who ultimately was incarcerated for child abuse. His family was reported to social services as early as when John was three years old. A year later, John reportedly grabbed a teacher's leg and attempted to fondle her genitalia, stating his mother did it to him. At that time, investigation determined an unknown perpetrator exploited John (at three and a half). A year later, after kicking his principal, he told his social worker that he was beaten with an electric cord and baseball bat. He and his sister were reported to be forced by his mother to sit in bleach because she perceived they were "too dark skinned." Five years after that, John and his siblings (sister and two brothers) were taken to live with their father when the mother was arrested. Subsequently, John and his sister and brothers were given over to their maternal aunt, where they lived with the aunt and her boyfriend, and her own children, a total of two adults and eight children, in a two bedroom apartment.

In January 1993, a Child Protective Services therapist insisted that John's aunt could not satisfactorily care for John and his father refused to take him back. At this time, he was placed in foster care because of his behavioral and emotional problems.

Subsequently, John went to live with his father and younger sister, Sadie, and his two brothers. In 1996, his father's longstanding girlfriend left the family because she could not tolerate John's behavior. The family moved because of financial constraints and ultimately John went back to live with his aunt.

In November 1997, John was accused of sexually assaulting three children in his aunt's home, as noted above. He pleaded guilty to one count of first-degree sexual assault and continued to deny the others, with the exception of the attempted grooming, as noted above. He was subsequently placed at a local locked residential program until his unsuccessful discharge because of his chronic behavioral problems.

There is no known or reported family history of substance abuse, serious psychiatric disturbance, or associated hospitalizations. However, John witnessed considerable physical abuse in his home, including on one occasion seeing his mother cut his father with a knife. It is known that she physically abused him with a two-by-four and extension cords, baseball bats, and belts.

Results from the Fear Assessment suggest that John is an individual who has anxiety and fear that relates to external areas or things outside of himself over which he has little or no control. His mean score of 2.51 in external related fears suggest that the focus of his Post Traumatic Stress Disorder may be his fears of external stimuli activity upon him. This appears to validate his history of perverse and severe physical abuse.

Another score that suggests concern and requires treatment is his core of 2.25 on the Environmental Sub-score of the Fear Assessment. This score suggests that the resident has anxieties and fears of certain environmental stimuli, such as closed rooms, being locked in rooms, etc. This score is also congruent of an individual who has the resident's history of neglect and abuse.

John's initial score on the Beliefs of Aggression was 78, which suggests an individual who engages in aggression frequently to resolve problems. His score on the Beliefs about Victims suggests that he understands the impact of aggression and sexual offending on others. It also suggests that he may have the capacity for empathy for his victims.

The Beliefs of Personality Disorders suggests that John has a Personality Disorder NOS – mixed features of Borderline, Dependent, Avoidant, Antisocial, and Histrionic.

John endorsed numerous beliefs of the Borderline Personality. Many of these beliefs appear to have gone untreated by the previous therapists. Previously, it was suggested that John used his aggression as an intimidation. Examining his beliefs indicates that it may be that his aggression is related to the emotional dysregulation and his dichotomous borderline beliefs.

Compound Core Beliefs

John endorsed the following compound core beliefs as occurring always:

Everyone betrays my trust

If I trust someone today, they will betray me later

Whenever I hope, I will become disappointed

When I am angry, my emotions are extreme and out of control

When I hurt emotionally, I do whatever it takes to feel better

Life at times feels like an endless series of disappointment followed by pain

I try to control and not show my feelings of grieving, loss, and sadness, but eventually, it comes out in a
rush of emotions

In relationships, if the other person is not with me, they are against me

Diagnosis

Axis I: Posttraumatic Stress Disorder
Sexual Abuse of a Child (victim and offender issues)
Physical Abuse of a Child (victim issues)
Mood Disorder, NOS
Obsessive Compulsive Disorder

Axis II: Personality Disorder (NOS) Mixed Features of Borderline, Antisocial, Dependent, and Avoidant
Axis III: Exercise Induced Asthma
Axis IV: History of child abuse and child abandoned by mother age 5, legal and educational issues.
Axis V: Current GAF: 35 Admission GAF: 43

Recommendations:

1. Cognitive Psychotherapy to address his underlying schema related to the borderline beliefs that he endorses (see Case Conceptualization).

2. Address the specific aggression that relates to his emotional dysregulation (see Case Conceptualization).

3. Continue Cognitive Group therapy, including conclusion of sexual offending specific therapy.

4. Address independent living skills to prepare resident for community placement.

John's Case Conceptualization

Underlying the MDT methodology is the Problem Solving Case Conceptualization. Problem solving case conceptualization is a combination of Judith Beck (1995) case conceptualization and Nezu, Nezu, Friedman, Haynes (1998) problem-solving model, with several new assessments and methodologies recently developed to address the specific issues of adolescents. The goal is to provide a blueprint to treatment within the case conceptualization.

The Case Conceptualization helps the clinician examine underlying fears of the resident. These fears serve the function of developing avoidance behaviors in the youngster. These behaviors usually appear as a variety of problem behaviors in the milieu. Developing personality disorders often surrounds underlying posttraumatic stress disorder (PTSD) issues. The Case Conceptualization method has an assessment for the underlying compound core beliefs that are generated by the developing personality disorders. Thus far, preliminary results suggest that our typology of youngsters have a conglomerate of personality disorder compound core beliefs. This conglomerate of beliefs, is the crux of why youngsters fail in treatment. One cannot treat specific disorders, such as sex offending and aggression, without gathering these conglomerate beliefs. It is also apparent that these beliefs are not cluster specific. That is to say that the Conglomerate of Beliefs and Behaviors contains beliefs from each cluster that integrate with each other. Because of this complex integration of beliefs, it makes treatment for this typology of youngster more complicated. The conglomerate of compound core beliefs represents protection for the individual from their abuse issues, which may present as treatment interfering behaviors. The attempt to use the usual didactic approaches to treatment, without addressing these beliefs amounts to treatment interfering behavior on the part of the Psychologist, or treating professional, is not an empirically supported and counter-initiated.

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Considering Political Behavior in Organizations

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Political behavior in organizations is examined using an operant perspective. Operant principles help explain why political behavior tends to occur in competitive environments in which there are unclear rules for the distribution of outcomes and resources and why the true motivations behind political activities tend to be hidden. In addition political tactics are thought to occur when individuals are reinforced directly for these behaviors, when the tactics result in desired changes to consequences for performance, and when they increase power. Reasons why power holders are susceptible targets of political influence are also considered. Keywords: Political behavior, operant principles, power holders, political influence.

Over the years, Organizational Behavior Management (OBM) has enjoyed a great deal of success in terms of generating performance improvements in organizations, developing from the use of basic operant principles to the application of complex contingencies in a variety of fields (Johnson, Redmon, & Mawhinney, 2001). However, the effectiveness of these interventions may have predisposed behavior analysts to view their role in organizations as being fairly limited to using certain tools to achieve certain behaviors (e.g., Komaki, 1986). As Hantula (1992) discussed, this narrow focus has only reinforced the suggestion by other organizational researchers (e.g., Locke, 1977) that behavior analysis does not explain more general behavior in organizations.

Fortunately, recent contributions have expanded the behavior analysis of organizational behavior. Behavior analysis has been used to explain leadership (for a review, see Komaki, 1998), escalation in organizational decisions (for a review, see Goltz, 2000), organizational culture (for a review, see Redmon & Mason, 2001), social power (Goltz, 2003), and resistance to organizational change (Goltz & Hietapelto, in press). Additional behaviors in organizations also could be examined using behavior analysis. For example, Homans (1961, 1987) suggested that a aspects of groups such as norms, competition, and justice could be understood using behavioral psychology, and Goltz (2003) suggested that the operant model of power could be used to understand related processes such as politics and conflict. Thus, the purpose of the present paper is to continue to address more complex organizational dynamics by examining political behavior in organizations from an operant perspective.

Analyzing additional organizational processes using behavioral principles can require thinking outside the typical operant chamber, so to speak. In terms of examining political behavior in organizations, behavior analysts will need to avoid thinking of reinforcement schedules as being "applied" since this terminology suggests that subjects have little impact on the reinforcement schedules they receive. The implication for organizational settings is that, as long as employees respond with the targeted behaviors, they will receive the reinforcement according to previously determined amounts and schedules. Delivery of reinforcement as planned may be the case at times, but even our own experiences in organizations indicate that individuals often actively try to influence how and when the outcomes that they desire are delivered. For instance, individuals will sometimes attempt to increase the magnitude and frequency of their reinforcement, obtain desired outcomes not contingent on their performance, obtain reinforcement for behaviors that aren't part of their jobs, or decrease the negative consequences they receive for poor performance.

Attempts by employees to influence their own outcomes are, in fact, the focus of the increasing literature on individual political behavior in organizations. Individual political behavior has been defined as involving actions that further one's own self-interests without regard for fairness or the well-being of others or the organization (Kacmar & Baron, 1999). Closer inspection of the literature indicates that the term "self-interest" has been used to describe individuals' attempts to increase desired outcomes for themselves and avoid negative outcomes (e.g., Arkin, 1981). The literature also clearly indicates that political behaviors do not include specified target behaviors such as tasks related to the individual's job. Instead, political behaviors are outside the scope of normal job requirements. Mayes and Allen (1977) suggested that political behavior is focused on gaining organizationally sanctioned ends through non-sanctioned means or obtaining ends not sanctioned by the organization.

Political behaviors often are more successful in acquiring reinforcement than are job-related behaviors. For example, political behavior has been found to affect not only promotions, but also personnel decisions and actions such as performance appraisals (e.g., Ferris & Judge, 1991; Longenecker, 1989; Luthans, Hodgetts, & Rosenkrantz, 1988). In a study of real managers, only ten percent of managers with high-performing units were also successful in terms of earning promotions relatively quickly (Luthans et al., 1988). The managers who earned promotions quickly spent more time engaging in politicking in social networks.

Thus, what is called individual political behavior in the organizational literature can be translated into behavioral terms and be subjected to behavior analysis. Essentially, political behavior consists of responses that have not been identified as being related to job performance and that an individual engages in to increase individual desired outcomes and avoid undesired ones. In the present discussion, the literature on politics in organizations will be reviewed first. Next, an operant interpretation of the current literature will be offered and additional implications for understanding political behavior in organizations will be explored.

Politics in Organizations

As Kacmar and Baron (1999) noted in their review, in addition to the self-serving nature of most political activities and the fact that they are not sanctioned by the organization, political activities have two aspects in common: (1) the real motivations behind the behaviors are often hidden from the target of the action and (2) political behaviors tend to occur when there is competition over limited resources as well as unclear rules on allocating the resources. However, organizational political activities tend to vary greatly in terms of the specific tactics employed and the specific targets they are directed toward. Different researchers have come up with different lists of political tactics used in organizations, probably due to varying methodologies, settings, and populations. For instance, one study of managers found that the eight political tactics most frequently mentioned were attacking or blaming others, selectively using information, managing impressions, generating support for ideas, praising others, building coalitions, associating with influential others, and creating obligations (Allen, Madison, Porter, Renwick, & Mayes, 1979). Another study of subordinates, in contrast, revealed several political behaviors involving upward influence, such as ingratiation and upward appeals (Kipnis, Schmidt, & Wilkinson, 1980). A third study of business school alumni yielded not only hierarchical political tactics, but also ones dealing with lateral social influence, such as networking, providing resources, using expertise, and persuading (Zanzi, Arthur, & Shamir, 1991).

The definition of political behavior often has been associated with discussions of power because power holders sometimes use their control over resources and information to increase or maintain power (Pfeffer, 1981). For instance, power holders will seek to strengthen their power

by interpreting events in a biased manner, such as by minimizing mistakes and exaggerating successes. In addition, threats to power may be denied resources and opportunities to demonstrate their expertise. Although these negative political tactics are not unusual, research indicates that executives in effective organizations retain power through very different political means. Effective managers create relationships of reciprocal exchanges in which they not only influence workers, but also use workers' expertise and ideas to continually improve the organization (Bachman, Smith, & Slesinger, 1966; Smith & Tannenbaum, 1963).

Perhaps because political tactics vary so widely, there have been several efforts to classify them. One important distinction that has been made is that political behavior can be engaged in either to proactively promote self-interest or to defensively protect self-interest (e.g., Arkin, 1981). Proactive behaviors include responses such as assertiveness, ingratiation, coalitions, upward appeals, and exchanges of benefits (e.g., Kipnis, Schmidt, & Wilkinson, 1980; Schrieshim & Hinkin, 1990). Defensive behaviors include avoiding action, such as by playing dumb or passing the buck, avoiding blame, such as by justifying or scapegoating, and avoiding change, such as by protecting turf (Ashforth & Lee, 1990).

A second distinction that has been noted is that political behavior can be functional or dysfunctional. Functional political behavior enhances the achievement of organizational goals and does not harm the organization (George & Jones, 2002). An example of this is forming coalitions with managers who have similar interests to lobby for an organization to pursue new strategies (March, 1962; Vrendenburgh & Maurer, 1984). Other functional political activities include obtaining tasks and responsibilities that provide greater control over resources (e.g., being assigned to the budgeting group) or seeking indirect control over resources through engaging in networking to build alliances, the focus of the strategic contingencies model of power (Hickson, Hinings, Lee, Schneck, & Pennings, 1971; Pfeffer, 1992). Alternatively, individuals seeking to acquire power may engage in activities that protect their own interests but do not help the organization or activities that are destructive to the organization. In fact, political behavior is often associated with the exploitation of legitimate systems of influence for individual rather than organizational ends (Mintzberg, 1983). Some examples are withholding or filtering organizational information from others who need it to perform their jobs and building empires for the sake of empire building rather than to increase organizational effectiveness (e.g., Mintzberg, 1983).

As discussed previously, political behavior by an individual can generate outcomes such as more favorable evaluations and job promotions (Ferris & Judge, 1991; Longenecker, 1989; Luthans, Hodgetts, & Rosenkrantz, 1988). But because political behaviors generally promote an individual's self-interest at the expense of other employees' interests and the organization's goals, effects of political behaviors are quite different for the politician as compared with effects for other individuals in the organization. Political behavior in organizations also has been consistently negatively associated with individual and company performance and positively associated with employee stress, job dissatisfaction and turnover (e.g., Bozeman, Perrewe, Hochwarter, Kacmar, & Brymer, 1996; Cropanzano, Howes, Grandey, & Toth, 1997; Ferris, Brand, Brand, Rowland, Gilmore, Kacmar, & Burton, 1993; Harrell-Cook, Ferris, & Dulebohn, 1999; Witt, Andrews, & Kacmar, 2000; Zahra, 1987). Models of organizational justice have been used to explain some of these negative effects (e.g., Ferris & Kacmar, 1992; Ferris, Frink, Galang, Zhou, Kacmar, & Howard, 1996; Folger, Konovsky, & Cropanzano, 1992; Kacmar & Ferris, 1991). When political behavior in organizations is rewarded, other employees perceive that the organization is not fair or just. For instance, employees usually expect that promotions, awards, and pay raises will be based on merit, rather than political considerations, and become dissatisfied when this expectation is violated (Cropanzano, Howes, Grandy, & Toth, 1997).

AN OPERANT INTERPRETATION

Following, an operant interpretation of the literature on political activities is offered along with some additional expectations that arise from an operant analysis. First, the common elements that distinguish activities as being political in nature will be discussed. Next, categories of political activities based on a behavior analysis will be suggested. Finally, targets of political activities will be considered.

THE COMMON ELEMENTS OF POLITICAL ACTIVITIES

Recall that political activities have the following four elements in common: (1) they are activities not considered part of an individual's job that are not sanctioned by the organization; (2) they are self-serving, leading to desired outcomes for the individual, perhaps at the expense of others and the organization; (3) the real motivations behind the behaviors are often hidden from others; and (4) political behaviors tend to occur in competitive environments with unclear rules about how resources and outcomes are allocated (Kacmar & Baron, 1999). Each of these aspects can be examined from an operant viewpoint.

First, the political behavior literature indicates that individuals engage in self-serving activities that are not part of their job description and that are sometimes harmful to the organization. This is not surprising given findings in experimental psychology that organisms respond at higher rates to alternatives when they provide relatively higher rates of reinforcement (Baum, 1973; Herrnstein, 1970). These operant effects suggest that individuals are likely to engage in activities that increase their ability to obtain positive reinforcement and avoid punishment, whether or not the activities are sanctioned by, or functional for, the organization. This is especially the case given that political activities in most organizations don't tend to be punished or extinguished.

Imagine, for example, a mid-level manager who is faced with budget cuts for his department in a time of economic uncertainty for the organization. The manager discovers that ingratiating a particular upper-level manager often results in better outcomes for him and his department. This behavior may be at the expense of other departments as well as the entire organization, but is very rewarding for the mid-level manager. The other department heads grumble about the situation, but are reluctant to discuss this injustice with the upper-level manager. Eventually they do; however, the upper-level manager believes the inequity is justifiable based on the performance of the department, even though there is relative lack of objective information about the department's performance. Therefore the political behavior is rewarded rather than punished or extinguished.

The literature also indicates that the motives underlying political behavior in organizations tend to be intentionally hidden by the person engaging in those behaviors. An operant analysis suggests that individuals will try to avoid any potential negative consequences for their political behaviors. If it is widely known in an organization that an individual is engaging in non-targeted, non-sanctioned work behavior that can increase his or her own outcomes at the expense of other people or the organization, two undesired consequences are likely to occur for the individual. First, the desired outcomes the politician is trying to obtain may be more difficult to achieve once others discover what the underlying intention is, particularly if the target of the political tactics believes he or she should be equitable in the distribution of resources and performance-contingent in the distribution of positive outcomes. Second, the individual may be punished for the political behavior should the underlying

motivation be revealed. This punishment could come from management, but is probably more likely to come from other workers who want seek retribution once they discover they did not receive their fair share of outcomes due to the politician's undermining behaviors.

Finally, political activity appears to be most likely in environments where there is competition for resources, particularly when rules for resource distribution are unclear. In an operant analysis, these two conditions can be viewed as establishing operations for political activity. An establishing operation affects behavior by changing the value of a specific consequence (Michael, 1993; Olson, Laraway, & Austin, 2001). Satiation and deprivation often act as establishing operations, decreasing and increasing the value of reinforcers. An environment in which workers have to compete for rewards and resources due to their relative scarcity could be expected to frequently result in deprivation. In a situation of relative deprivation, employees may be especially likely to engage in non-job related activities such as impression management to try to increase the rate of reinforcement they obtain. Similarly, if reinforcement contingencies have remained unspecified or have been specified but never consistently implemented, individuals may have experienced few rewards when they performed their jobs. They are not only likely to conclude that specified and sanctioned performance generally does not result in contingent reinforcement, but also likely to value desired outcomes more because of the relative deprivation they experienced.

Types of Political Tactics

Recall that political tactics vary widely and various bases for classifications have been offered (Kacmar & Baron, 1999). An operant analysis can provide additional ways to consider political tactics. For instance, political tactics could be classified according to whether reinforcement for political behavior is being accessed or modified and whether consequences for performance are being modified and whether this access or modification is direct or indirect. In some cases, political tactics are used to directly obtain reinforcement that is contingent on political responses, and in other cases, they are used to build power in the organization, which then provides increased access to reinforcement. In other situations, political tactics are used to try to modify consequences for performance-related behaviors. Individuals may try to enrich the positive consequences they receive by using political tactics to increase the positive outcomes provided without increasing the rate of responding required, for instance. They may also try to modify the reinforcement and punishment received by other workers who compete for the same outcomes. Each of these types of political behaviors will be examined in turn.

Directly Accessing: Obtaining Reinforcement Contingent on Politics Rather Than Performance

In simple terms, the Law of Effect (e.g., Baum, 1973; Herrnstein, 1970) would suggest that political behaviors are repeated because they are reinforced in some way. In some situations in organizations, political behaviors are frequently and immediately reinforced while job performance is largely ignored. Research on choice behavior indicates that individuals match their relative response rates to the relative rate of positive outcomes received from each alternative (for reviews, see Davison & McCarthy, 1988; Williams, 1988). Based on matching, one would expect that, after repeated exposure to reinforcement schedules that consistently reward political responses and infrequently reward performance, political behaviors would increase in frequency and job-related behaviors would decrease in frequency.

Political tactics in which individuals try to obtain positive outcomes for themselves that are not contingent on their performance are not uncommon. For instance, job candidates use

impression management behaviors and employees use networking with influential individuals to obtain job offers and promotions. Workers will also try to claim responsibility for their co-workers' or subordinates' performance or ideas. Individuals in positions of power sometimes use their power to obtain personal outcomes that are not organizationally sanctioned, such as by having others do favors like picking up their laundry or washing their cars.

The combination of reinforcement for political behavior and non-reinforcement for job performance characteristic of certain organizations is likely to result in a high degree of political behavior in these organizations. In addition, certain individuals might have had this particular combination of schedules during critical periods in their development, resulting in their increased use of political methods to obtain desired outcomes. For instance, Biberman (1985) found a positive correlation between Machiavellian attitudes and organizational politics. It is possible that individuals with these attitudes and behaviors discovered early in life that they were more successful in obtaining desired outcomes through political means than through sanctioned behaviors.

Recall that political behavior in organizations has consistently been negatively associated with individual and company performance and positively associated with employee stress, job dissatisfaction and turnover (e.g., Bozeman, Perrewe, Hochwarter, Kacmar, & Brymer, 1996; Cropanzano, Howes, Grandey, & Toth, 1997; Ferris, Brand, Brand, Rowland, Gilmore, Kacmar, & Burton, 1993; Harrell-Cook, Ferris, & Dulebohn, 1999; Witt, Andrews, & Kacmar, 2000; Zahra, 1987). Poorer individual and company performance is to be expected based on an operant perspective. When organizational reward systems promote political activities such as impression management, ingratiation, and sabotage more than they reinforce performance such as service, production, sales, and other valued organizational outcomes, it is no surprise that job performance, and as a result, organizational performance, suffer.

Indirectly Accessing: Obtaining Increased Power

Recall that political activities are often used to increase or maintain power (Pfeffer, 1981). Political activities designed to increase power represent an indirect means of achieving increased reinforcement. Increased power is likely to result in increased reinforcement for several reasons. First, acquiring power through informal relationships in the organization (Hickson, Hinings, Lee, Schneck, & Pennings, 1971) can serve to increase access to various valued resources (e.g., Brass, 1992; Ibarra & Andrews, 1993), and this increased access can be reinforcing in itself. Second, an individual's power, or relative ability to control a number of reinforcing and aversive stimuli, allows him or her to be able to provide contingent outcomes at a higher rate, evoking relatively higher rates of responding from others in the organization with less delay (Goltz, 2003). Prompt and appropriate responses from subordinates and others in the organization are reinforcing in that they enhance the power holder's individual performance as well as his or her unit's performance, which then often leads to additional organizational and social reinforcers. Third, power holders may find that they are more able than non-power holders to avoid consequences for their poor performance or to increase the consequences they receive for good performance. Networking relationships, for instance, often consist of continuing mutual exchanges perpetuated through the notion of reciprocity—the idea that one good turn deserves another (Cohen & Bradford, 1990). Social exchanges in informal organizational networks could be valuable not only for obtain needed resources and information, but also for obtaining increased one's positive consequences for effective performance and avoiding punishment for poor performance. Exchanges might be created in which department heads "cover" for each other when mistakes are made, for example.

Directly Modifying: Influencing Consequences Contingent on Performance

The discussions in the political activities literature suggesting that political behavior can be either proactive or defensive (e.g., Arkin, 1981) indicate that proactive behaviors, such as assertiveness, ingratiation, upward appeals, and exchanges of benefits, generally focus on increasing one's positive outcomes. In contrast, defensive behaviors, such as playing dumb, passing the buck, and scapegoating (e.g., Arkin, 1981), appear to have as their primary objective the avoidance of negative consequences. This suggests that individuals often use political behaviors to try to modify consequences contingent on performance. Despite whether an employee is trying to gain additional positive outcomes or avoid negatives ones, many of these political behaviors have in common the fact that they try to confuse or mislead the person who administering the consequences into believing that behavior or the reasons for the behavior are different than what is actually the case.

A number of types and combinations of consequences and contingencies for desired and undesired behaviors exist in organizations, providing a myriad of possible ways individuals might try to use political behaviors to modify their consequences. At the most basic level, one would expect that individuals would seek to gain additional performance-based reinforcement using political behaviors. They may wish to enrich a schedule of reinforcement that is already occurring or want to obtain reinforcement for a particular type of job performance that has not be reinforced in the past. For example, an individual may attempt to increase visibility in the organization to try to receive even greater recognition for contributions to a project, may lobby management for extra pay for additional duties that were taken on, or exaggerate accomplishments to try to obtain additional rewards. In addition, individuals could be expected to use political behaviors to avoid doing a job that they find punishing (e.g., tedious or distasteful) and seek reinforcement for other tasks they prefer to perform. For instance, a professor who has tired of teaching the same courses may lobby her department to allow her to teach one or two courses for another department by appealing to the interdisciplinary nature of this activity and emphasizing that interdisciplinary activity has been encouraged by the university. Individuals could also use political behaviors to try to modify the negative outcomes they are likely to receive for job performance or the negative outcomes they are likely to receive for their activities that are not job-related, such as by offering excuses or passing the blame.

Indirectly Modifying: Changing Others' Consequences

Although many political tactics focus primarily on the politician's own outcomes, some political tactics attempt to modify the outcomes that others receive. In a few instances, politicians use their methods to seek increased positive outcomes for others as well as themselves, such as by mentoring new workers in the ways of the organization. However, a number of political tactics, such as backstabbing and sabotage, are designed to elevate the politician's status in the organization indirectly by decreasing the positive outcomes (e.g., recognition) and increasing the negative outcomes that other employees receive. Recall that political behavior tends to occur in environments in which there is competition for resources. The focus on one's own interests that is characteristic of political behavior may sometimes stimulate politicians to keep competitors from receiving scarce rewards or to blame competitors for the politician's behaviors that are likely to result in punishment. Of course, one can expect that the more political behaviors that seek to protect self-interest at the expense of others in the organization are rewarded, the more dissatisfaction there will be on the part of other employees regarding the political nature of the organization.

Targets of Political Tactics

Targets of political tactics are likely to be those individuals who control the reinforcing stimuli an individual desires. In other words, targets are likely to be power holders in the organization. According to a recently proposed behavior-analytic account of power (Goltz, 2003), the degree of power an individual has is in part a function of the number of reinforcing and aversive stimuli the power holder has access to as well as the important dimensions of these consequences (e.g., magnitude, delay, frequency, and schedule) the power holder controls. Individuals at higher ranks in the organization tend to have power because they have formally been given authorized control of consequences whereas informal power consists of networks of alliances in which resources and favors are exchanged horizontally and diagonally across the hierarchy. Power holders who have access to more stimuli that can be used as consequences are able to provide positive outcomes at a higher rate and therefore evoke relatively higher rates of responding from others in the organization.

The degree of power an individual holds is thought to be not only a function of his or her access to stimuli that can be used as consequences, but also a function of his or her expertise in delivering the stimuli in ways that will have the most impact on desired behavior (Goltz, 2003).

Desired behavior includes job performance and other responses that contribute to organizational effectiveness, in other words, organizationally sanctioned behaviors. Stakeholders such as owners and customers expect organizational power holders to reinforce behaviors that contribute to the organization's effectiveness rather than to reinforce behaviors that primarily serve individual interests. However, even if a power holder is committed to organizational effectiveness, understanding how to deliver consequences to stimulate effective performance is not always a simple matter because the effects of reinforcement and other contingencies used to increase desired behavior and decrease undesired behavior are subject to a variety of factors such as the schedule and delay of delivery of the reinforcer (for a review, see Kazdin, 1975). Regardless, power holders do have control over the delivery of reinforcers and punishers, and this control makes them targets of political activities, which are generally designed to influence contingencies so that the politician receives an increased rate of positive stimuli and avoids punishing stimuli.

In many cases, power holders may reinforce political behaviors because they are not skilled in using the consequences under their control to reinforce performance that leads to organizational effectiveness. This lack of skill could occur for different reasons. First, a power holder may have difficulty distinguishing between behaviors that lead to organizational effectiveness and those that do not. For instance, an employee may manage impressions to the extent that the targeted power holder believes that the employee truly has the organization's interests in mind rather than his or her own individual interests. Second, a power holder may not be skilled at using reinforcement contingently. In this case, behaviors that lead to effective performance may be inconsistently reinforced, and behaviors that are not sanctioned by the organization may be inadvertently reinforced.

In addition, power holders are susceptible to political activities because, like all individuals, they generally wish to increase the rate of reinforcement they are receiving. Thus, they are likely to reinforce the political activities of employees when doing so protects their own supply of reinforcement or avoids negative consequences. For instance, a group of employees desiring that a certain employment benefit be instituted may form a coalition. Although the manager may believe that the policy will not contribute to organizational effectiveness and is in fact likely to decrease organizational effectiveness, he or she may comply with the request of the coalition to avoid negative consequences such as retribution from the coalition's members.

Conclusion

In conclusion, the purpose of this paper was to suggest that political behavior in organizations, defined as actions furthering self-interests without regard for others or the organization (Kacmar & Baron, 1999), can and should be analyzed using an operant framework, just as has been done with other behaviors in organizations, such as power and culture. The current discussion offers an initial analysis that can help lend insights into the current literature on political behavior. For instance, operant principles can help explain why political behavior tends to occur in competitive environments in which there are unclear rules for the distribution of outcomes and resources and why the true motivations behind political activities tend to be hidden. A behavior analysis also suggests political tactics can be classified according to whether they are being used to obtain reinforcement contingent on these behaviors or whether they attempt to modify consequences contingent on performance, as well as whether the tactics are direct or indirect. Finally, a behavior analyses suggests reasons why power holders are susceptible targets of the political activities of employees.

The current discussion is intended to stimulate additional analysis and research by behavior analysts on political behavior in organizations. A greater understanding of political behavior in organizations is needed so that its negative effects on individuals and organizations can be decreased. In addition, political activities arise from and contribute to a number of other organizational processes, so an increased understanding of political behavior can provide insights into other behaviors in organizations. Clearly, as evident in the literature and present discussion, power is inextricably linked to political behavior. The literature also suggests, however, that political behavior can lead to conflict, feelings of inequitable treatment, decreases in motivation, high turnover and absenteeism, and decreased organizational effectiveness. Behavior analysis has in the past offered more parsimonious, predictive, and complete accounts of behaviors in organizations than have other conceptual frameworks (e.g., Hantula, 1992). In addition, the meta-contingency approach to analyzing organizational processes that has been applied by behavior analysts recently (e.g., Mawhinney, 1992; Redmon & Agnew, 1991; Redmon & Wilk, 1991;) suggests that behavior analysts have the tools needed to integrate the study of political behavior with the study of other organizational processes. Researchers interested in political behavior in organizations could benefit from the parsimony and comprehensiveness that behavior analysis offers.

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Video Modeling: A Window into the World of Autism

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Video modeling is a well-validated behavioral intervention documented in the behavioral sciences. The methodology appears particularly beneficial for children with autism. The underlying theoretical explanations are posited and discussed. A single case study is presented using video modeling to improve the perception of emotion in a child with autism and mild mental retardation. The subject was shown a series of video tapes of typically developing children engaged in a variety of play and social scenarios showing four basic emotions: happy, sad, angry and afraid. The preliminary results, based on behavioral and neuropsychological data, demonstrated video modeling to be an efficacious intervention for the attainment and generalization of emotion perception. The acquisition of skills using video modeling is often very rapid compared to other methods of intervention and requires limited time and personal resources to implement. The skill is then maintained with careful behavioral programming, which includes stable attainment of mastery and built-in generalization conditions (e.g., multiple exemplars). Further, video modeling appears to be particularly useful in eliciting generalized responses across behaviors and stimuli that is corroborated by improvement on neuropsychological instruments. Implications for current and future research are discussed.
Keywords: autism, video modeling, behavioral treatment

Autism is a severe neurodevelopmental disorder characterized by qualitative impairment before the age of three in verbal and nonverbal communication, reciprocal social interaction, and a markedly restricted repertoire of activities and interests (American Psychiatric Association, 1994). There is substantial evidence that children with autism show benefit from early-intervention behavioral techniques (e.g., Birnbrauer & Leach, 1993; Harris et al., 1991; Lovaas, 1987). Various programs have been formulated to instruct care providers on the application of behavioral methodology for children with autism, such as an intensive applied behavior analysis (ABA) program (Lovaas, 1981; Maurice, 1996). The disadvantage of an intensive ABA program is the extraordinary time commitment and financial burden to implement the program.

Observational Learning: Much of human learning occurs vicariously by simply watching others. Bandura's social learning theory (1977) emphasizes the role of observational learning and incorporates the concept of behavioral modeling. Observational learning refers to the cognitive and behavioral change that occurs as a result of observing others engaged in similar actions (Bandura, 1986). Modeling is defined as the process by which an individual or model demonstrates behavior that can be imitated. The modeled behavior can be presented in vivo (live), recorded (e.g. filmed, videotaped), or imagined.

In observational learning there are four factors that mediate the process: attentional, retentional, production and motivational (Bandura, 1986). The *attentional processes* refer to the initial act of attending to and accurately perceiving an event. The *retentional process* requires the capacity of the learner to symbolically process the modeled behavior in memory via verbal encoding and visual imagery. The retention of material is enhanced through concurrent visual monitoring, cognitive rehearsal, and behavioral reproduction (Carroll & Bandura, 1986). The *Production processes* occur when the learner accurately reproduces and rehearses the modeled behavior. In other words, the capacity to perform the rudimentary elements of the task must be within the child's repertoire. Lastly, the *motivational process* refers to learning that occurs in the presence of reinforcement. Early studies with children with autism show that they often do not

naturally learn through observation and thus must be taught to imitate and learn this basic skill (Baer et al., 1967; Varni et al., 1979).

Video Modeling: Video modeling is a technique that has been developed to facilitate observational learning. It generally involves the subject observing a videotape of a model showing a behavior that is subsequently practiced and imitated. The child is typically seated in front of a television monitor and asked to sit quietly and pay attention to the video. The child is praised for attending and staying on task. Following the presentation of a scene showing a target behavior, the child is asked to engage in or imitate the behavior that was observed. This procedure is then repeated across examples and trials. Thelen and colleagues (1979) describe several advantages of video modeling, which include: 1) the ability to present a variety of examples and settings to facilitate maintenance and generalization of the learned behavior, 2) greater control over the modeling procedure, 3) the repetition of the same model(s), and 4) the reuse of videotapes for individuals. Video modeling has been used successfully to train skills as diverse as parent training for conduct disordered children (Webster-Stratton, 1990; Webster-Stratton et al., 1989), social skills in children with social deficits (Dorwick & Jesdale, 1991), and instruction for speech therapists (Irwin, 1981).
Important considerations of a video modeling procedure include the design of the video presentation, the setting or
context, behavioral rehearsal, and viewing conditions. Dorwick and Jesdale (1991) emphasized the importance of
each modeling sequence displaying clear and detailed behaviors in order to maintain focus on the relevant
information to be observed and imitated. Furthermore, it is important to show a variety of sequences with repeated
displays presented to the point of overlearning. Observational learning paradigms are considered most effective when
combined with guided participation and role-playing.

While the literature on video modeling with children is not extensive, a number of practical principles have already emerged. For example, when using video modeling techniques with children, the potency of the videotapes and the receptivity of the observer can be enhanced by employing models (peers) that are similar to the child (Kazdin, 1974). Several studies have successfully employed peers in observational learning paradigms, including reducing echolalia (Coleman & Stedman, 1974); increasing vocalizations of affection (Charlop & Walsh, 1986); making language discriminations (Egel et al., 1981); and improving social initiations (Nelson et al., 1973). Peer modeling has been shown to be an effective strategy for teaching social skills to children with autism (Belchic & Harris, 1994; Haring & Breen, 1992; Haring & Lovinger, 1989; Odom et al., 1985, Odom & Strain, 1986, Lord & Hopkins, 1986; Sasso & Rude, 1987; Zanolli et al., 1996). Other beneficial strategies in video modeling include the use of multiple models (Charlop & Milstein, 1989), and having the target behavior rewarded (Strayhorn, 1988).

Video modeling in autism: Video modeling has been used successfully to teach a variety of skills to children and adults with autism. Interestingly, under some circumstances, it has yielded better results for skill acquisition, maintenance, and generalization in individuals with autism than live participant modeling (Charlop-Christy et al., 2000; Haring et al., 1987). An early application showed the effectiveness of using video modeling procedures for the acquisition and generalization of conversational skills in three children with autism (Charlop & Milstein, 1989.) The study employed a multiple baseline design using scripted conversations on the topic of toys. The results indicated that the children acquired basic conversational speech following exposure to the video modeling procedure. In another study, Charlop and Walsh (1986) used a time delay

procedure to teach four children with autism to make affectionate statements to a familiar person. The time delay procedure resulted in the children producing spontaneous verbalizations of affection (e.g., "I like (love) you" in response to a hug). Video modeling techniques have also been used effectively to promote generalization of shopping skills in young adults with autism and other moderate to severe disabilities (Haring et al., 1995; Haring et al., 1987).

In a series of single case studies we have demonstrated the benefit of video modeling to enhance receptive and expressive language skills, improve adaptive functioning, facilitate social responsiveness, and increase the duration and quality of play behavior in children with autism (Corbett & Larsson, 2001; Corbett et al., submitted; Schwandt & Larsson, 1999; Schwandt et al., 1998, Schwandt et al., 2001). In these cases, the video modeling treatment consisted of the participant observing brief videotaped scenes showing the target behavior performed by familiar models. We utilized either a multiple-baseline-across-behaviors or multiple-probe-across-behaviors design. In all cases the use of video modeling resulted in the acquisition, maintenance and generalization of the target behavior. The main findings from these studies are: 1) video modeling appears to be an efficacious treatment for teaching a variety of skills to children with autism even those considered to be very low functioning, 2) the acquisition of skills using video modeling is often rapid, and 3) the learned behavior is maintained with careful behavioral programming, which includes stable attainment of mastery, systematic fading of exposure to the videotapes, and built-in generalization conditions (e.g., multiple exemplars).

Emotion, social behavior and autism: The perception and expression of emotion is a critical component for normal socioemotional development (Bandura, 1993; Ekman, 1982; Heilman & Valenstein, 1993). There are three primary forms of socioemotional communication: facial expression, speech prosody and gestures (Etcoff, l984). Human infants appear to have an innate predisposition to attend to, imitate and discriminate facial expressions (Field et al., 1982; Meltzoff & Moore, 1977). We and others have found that the misperception of emotional stimuli is a contributing factor in a variety of neurobehavioral disorders, including attention deficit hyperactivity disorder (Corbett & Glidden, 2000) and autism (e.g. Grossman et al., 2000). Individuals with autism show an atypical pattern of processing socially relevant stimuli, including impairment in identification of facial expression, face recognition, discrimination of faces, and memory for faces (Hobson et al., 1988, Macdonald et al., 1989; Yirmiya et al., 1989; Adrien et al., 1991; Green et al., 1995; Celani, et al., 1999). The current study presents a single case study using video modeling to target the perception of emotion in a child diagnosed with autism.

M E T H O D

Subject: The subject was recruited from the University of California, Davis M.I.N.D. Institute (Medical Investigation of Neurodevelopmental Disorders). Written parental consent and subject assent was obtained prior to enrollment. The subject, D.W., was 8-years, 3-months old at the onset of the study. The diagnosis of autism was based on DSM-IV criteria (American Psychiatric Association, 1994) and confirmed by the Autism Diagnostic Observation Schedule-Generic (ADOS; Lord, Rutter, DiLavore, & Risi, 1999). In addition, D.W. was administered cognitive, adaptive and neuropsychological measures (described below).

Table 1. Baseline Psychological Data

Measure	Standard Score

Stanford Binet Intelligence Scale-IV[1]	60
Vineland Adaptive Behavior Scale[2]	
Communication	61
Daily Living	38
Social Skills	20
Adaptive Composite	37

[1] Thorndike et al., (1986)

[2] Sparrow et al. (1984)D.W. was enrolled in a full-inclusion classroom in the 3rd grade and had previously received three years of extensive in-home behavioral services prior to entering the 1st grade. Despite the previous implementation of various behavioral techniques, the subject continued to demonstrate a variety of social deficits including limited ability to detect the emotions of others. D.W. was administered the following neuropsychological instruments before and after treatment.

PICTURES OF FACIAL AFFECT

Selected slides from the Pictures of Facial Affect (Ekman & Friesen, 1976), utilized in previous investigations (Corbett & Glidden, 2000), were administered to determine the subject's ability to identify emotion portrayed via facial expressions. The measure consisted of 12 stimuli of actors displaying three examples of four different emotions including: happy, sad, angry and afraid. The images were presented using a laptop computer. The raw scores were converted to percentage correct.

Recognition of Emotion in Speech (Corbett unpublished) was used to evaluate the ability to judge tape-recorded sentences of emotional tone in speech. The raw scores were converted to percentage correct.

Pantomime Recognition Test (Duffy et al., 1975) was used to evaluate the ability to understand nonverbal pantomimed actions. The test requires the subject to select the object that matches the pantomimed gestures performed by an actor shown in a series of videotaped pantomimes.

Basic Procedure:

The video modeling treatment consisted of the participant observing brief (3 to 15 seconds) videotaped scenes showing the target behavior of happy, sad, angry or afraid performed by typically developing peer models. The videotape consisted of five examples of each emotion for a total of twenty different social or play situation scenes. Each scene was shown only once per day resulting in a total intervention time of 10 to 15 minutes per day. The videotape was shown five days per week in the participant's home generally at the same time and in the same location. The participant's mother who was familiar with basic behavioral principles, was trained and supervised weekly on the procedure by the author. The child observed the tapes in a structured, supportive environment that was devoid of extraneous visual and auditory stimuli during video watching and rehearsal periods.

Baseline:

The baseline condition consisted of the child being seated in front of the television monitor. The therapist instructed the child to "Pay attention." The first scene was played for the child. The therapist asked, "What is he/she feeling?" The therapist presented the child with a laminated sheet of four primary emotions with cartoons and words representing the four emotion categories. The child could provide a verbal response or point to the word or picture on the sheet. The therapist documented a "1" for correct responding or a "0" for incorrect responding for each scene across the four emotion categories. In order to establish a stable trend, a minimum of two days of baseline data was obtained.

The treatment condition consisted of the child being seated in front of the television. Again, the therapist said, "Pay attention." After the first scene, the participant was asked: "What is he/she feeling?" referring to the primary emotion conveyed in the scene. If the child answered correctly, social reinforcement was given. If the child answered incorrectly, then corrective feedback was provided and the therapist said, "The child is feeling (Emotion)." Next, the therapist enthusiastically responded, "Let's do what we saw on the tape. Let's do the same!" The therapist then initiated the interaction observed on the tape. The therapist interacted with the child in a role-play using imaginary materials to simulate the social and play situations. This interaction was intended to be enjoyable and was not rated or scored. The child was encouraged to imitate and display the feeling that he observed. The emotion response was scored 1 or 0 and the next scene was introduced.

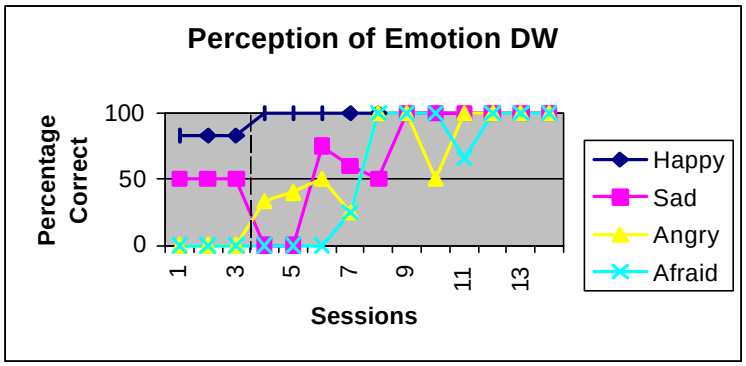
Design:

The study used a multiple-probe-across-behaviors design. The treatment involved providing the subject with the fewest probes and modifications needed followed by more supportive intervention, as required. Daily data was collected throughout the study on the acquisition of target behavior and maintenance of skills. Generalization of behaviors across situations, people, and stimuli were documented. The participant also completed neuropsychological testing before and after treatment. The duration of intervention, including post-testing, was two months.

Mastery, Maintenance and Generalization:

Mastery was defined as the successful imitation of the viewed scene on five successive trials. The collection of behavioral data continued throughout the duration of the study to ensure maintenance. The subject was videotaped following mastery as he observed family members engaging in social and play situations. Several examples of emotion identification of each emotion were presented in vivo. A generative response was defined as the production of an appropriate and spontaneous response of the newly learned behavior across a minimum of two respondents.

Figure 1. Daily Percentage of Emotion Perception

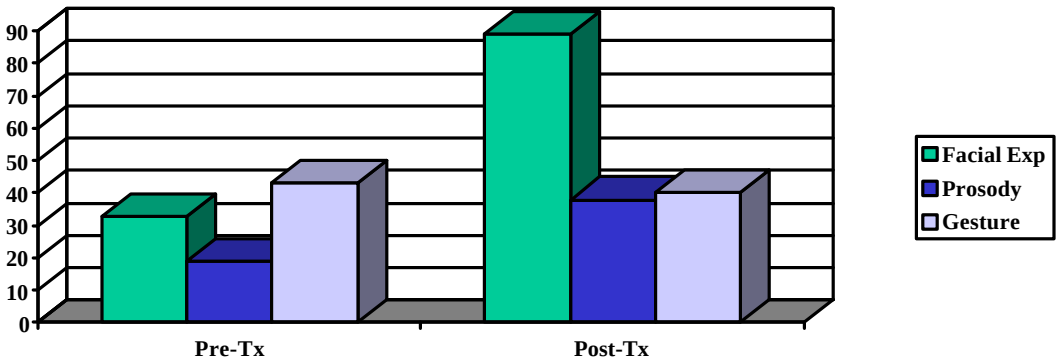


R E S U L T S :

Video modeling resulted in the rapid acquisition of the perception of the four basic emotions. As can be observed in Figure 1, D.W. quickly mastered the identification of happy, which was already somewhat established in his repertoire. Subsequently, D.W. showed gradual improvement across the remaining emotion categories. D.W. showed rapid, stable acquisition and maintenance of all the emotion categories.

Furthermore, as demonstrated in Figure 2, the behavioral gains were corroborated by significant improvement on Pictures of Facial Affect with a 51 percentage-point gain in facial expression identification. Interestingly, D.W. also showed a modest generalized improvement in the perception of Emotional Tone in Speech from 18% to 38%. There was no improvement on the perception of gestures. In addition, during unscored social probes, D.W. generalized the perception of emotion across people (e.g., family members) and stimuli (e.g., play scenarios).

Figure 2. Pre- and Post-Treatment Performance on Emotion Perception Measures



DISCUSSION

The aforementioned case study demonstrates the efficacy of video modeling for the attainment and generalization of the perception of emotion in a child with autism. The acquisition of skills was very rapid especially when compared to other methods of intervention that were not successful in teaching this important skill. The skill was maintained with careful behavioral programming, which included stable attainment of mastery and built-in generalization (e.g., multiple exemplars). Further, video modeling appears to be particularly useful in eliciting generalized responses across behaviors and stimuli that were corroborated by neuropsychological measures of emotion perception.

One potential problem with video modeling with autistic children is that the children could learn and provide rote responses that lack spontaneity and flexibility in complex social situations. We believe that this problem can be circumvented by using videotapes that portray socio-emotional skills in multiple play and social situations. Thus, the video modeling tapes are designed to present multiple social experiences to the children under treatment. Our own preliminary experience with video modeling leads us to predict that it can result in the improvement of emotion perception in children with autism. We find that the video modeling procedures that we are employing 1) captivate the autistic child by selectively focusing his or her attention on relevant stimuli, 2) help the child retain the information through precise repetition of modeled behavior, 3) allow the production of the observed behavior through practice and 4) are inherently motivating and naturally reinforcing. Furthermore, we speculate that features of autism, such as selective attention, preference for visual stimuli, repetitive behavior and avoidance of face-to-face attention, may actually be capitalized on while using video modeling. Compared to some behavioral methods, video modeling requires limited time and personal resources to implement. Currently, we are initiating a pilot project enrolling 20 children with autism in a crossover design in an attempt to replicate and extend the current findings. It is predicted that many children with autism will significantly improve their perception of emotion following video modeling behavioral treatment by training the participant to be a better observational learner. As was observed in the presented case, we expect that children with autism will demonstrate some generalized improvement in social behavior due to better attention, retention, procedural and motivational factors.

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