

## BAT 3.4

Behavior Analyst Today  
Volume 3 Issue 4

## THE BEHAVIOR ANALYST TODAY

## A Context for Science with a Commitment to Behavior Change

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**THE BEHAVIOR ANALYST TODAY:****PUBLISHER'S STATEMENT****VOLUME 3, ISSUE 4****Published January 30, 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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**MESSAGE FROM THE BEHAVIOR ANALYST CERTIFICATION BOARD:**

Recently the Behavior Analyst Certification Board formed a workgroup to examine the experience requirement for certification. The workgroup is soliciting your feedback and input on this important aspect of certification, as we look to improvement and refinement. Please send your comments or suggestions, either from the point of view of serving as a supervisor, or as someone who has received or is receiving supervision, to Raymond G. Romanczyk, Ph.D., BCBA at [romanc@binghamton.edu](mailto:romanc@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](mailto:ibrosie@aol.com) and Joe Cautilli at [jcautill@astro.temple.edu](mailto: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.

**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 within the field to those who can benefit from those developments. Founded as a newsletter 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 between 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.

## AN EXPLICIT TECHNOLOGY OF GENERALIZATION

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The publication of the now classic article on generalization, “An Implicit Technology of Generalization” (Stokes & Baer, 1977), spurred interest in generalization as an active process rather than a passive process consisting primarily of a failure to discriminate between training and nontraining settings. Following their description of nine areas in which the extant behavioral research addressed generalization issues, a new interest in generalization of behavior change was borne. More than a decade later, their description of categories of techniques that purportedly could be used to produce generalization was refined in “An Operant Pursuit of Generalization” (Stokes & Osnes, 1989). Stokes and Osnes described 12 generalization-promoting strategies that were classified within three broader areas. Their description assisted the field in continuing to focus interest on the fundamental need for the results of behavioral interventions to generalize effectively and to be durable and for behavioral research to actively address generalization. Now, more than a decade following the publication of “An Operant Pursuit of Generalization” and a quarter century after “An Implicit Technology of Generalization” was published, the time has arrived to address the status of generalization-promotion by behavior analysts, both in their conceptual and empirical investigations.

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The publication of “An Implicit Technology of Generalization” (Stokes & Baer, 1977) resulted in a groundswell of interest in generalization as an active process that is important for behavior analysts to pursue directly to validate the effectiveness of behavioral programming. This classic article embedded in behavior analysis the realization that our work is functional not only when it produces immediate effects in the immediate environment that is targeted for change, but more importantly, when the effects are more widespread. Baer, Wolf, and Risley (1968) included generality of behavior change as one of the seven dimensions of applied behavior analysis, and concluded that, “in general, generalization should be programmed, rather than expected or lamented” (p 97). Their description of generality is consistent with the description provided by Stokes and Baer: “A therapeutic behavioral change, to be effective, often (not always) must occur over time, persons, and settings, and the effects of the change sometimes should spread to a variety of related behaviors” (p. 350). While acknowledging that their conceptualization of generalization was not consistent necessarily with the traditional understanding and descriptions of the phenomenon, they proceeded to provide a description of generalization as “...the occurrence of relevant behavior under different, non-training conditions (i.e., across subjects, settings, people, behaviors, and/or time) without the scheduling of the same events in those conditions as had been scheduled in the

training conditions” (Stokes & Baer, p. 350). This description appeared to resonate positively within the behavior analytic community, as evidenced by the embracing of the nine categories of generalization outlined in the article: train and hope; sequential modification; introduce to natural maintaining contingencies; train sufficient exemplars; train loosely; use indiscriminable contingencies; program common stimuli; mediate generalization; train “to generalize”. Importantly, not only did the article provide a rubric by which behavior analysts could organize their efforts to achieve broad and durable behavior change, it provided the first exhaustive review of the behavioral literature in regards to the process of generalization.

Although it was a critically-acclaimed seminal effort to organize behavior analysis around a conceptualization of generalization, the interest that was piqued following the publication of the article focused primarily on researchers beginning to note whether or not the effects of their work occurred in generalized circumstances. Absent from the new recording of the presence or absence of generalization effects was an accounting of the functional variables that were responsible when generalization was noted and the variables that were responsible when no generalization occurred. It is this recording that is critical in the advancement of the science of behavior. A functional approach is linked with scientific endeavors, and the analytic pursuit of the principles of effective generalization has been

deemed an important activity for scientists in behavior analysis (e.g., Stokes, 1992).

In response to these problems, Stokes and Osnes (1989) provided “An Operant Pursuit of Generalization.” Noting a need for researchers to “describe the dimensions of their analyses and the scope of their generalization assessment”, they posed two critical questions: “Did the behavior occur in generalized circumstances, and what are the functional variables which account for that generalization?” (p. 339). Despite the recommendation of Baer et al. (1968, p. 97) that “in general, generalization should be programmed, rather than expected or lamented”, Stokes and Baer (1977) noted that almost half of the applied literature on generalization focused on the “Train and Hope” category. Twelve years later and 21 years following Baer et al., Stokes and Osnes (1989) continued to express the need for behavior analysts to account for the functional variables responsible for generalization when it has been observed. Their refinement of the generalization-promoting categories centered on the basic principles of behavior, in contrast to the emphasis of Stokes and Baer on procedural aspects of treatment deserving careful attention. They proposed three categories of generalization promotion. The first category, exploit current functional contingencies, reflects the function of natural selection by the consequences of behavior. Train diversely, the second category, reflects the contribution of diversity in the exemplars of learning. The third category, incorporate functional mediators, “addresses the relationship between salient conditions of learning and the stimulus control exerted over behavior by environments related to original learning” (Stokes, 1995, p. 429).

Each of the three categories was discussed in terms of four subcategories:

- A. Exploit Current Functional Contingencies:
  1. Contact natural consequences.
  2. Recruit natural consequences.
  3. Modify maladaptive consequences.
  4. Reinforce occurrences of generalization.
- B. Train Diversely:
  5. Use sufficient stimulus exemplars.
  6. Use sufficient response exemplars.
  7. Make antecedents less discriminable.
  8. Make consequences less discriminable.
- C. Incorporate Functional Mediators:

9. Incorporate common salient physical stimuli.
10. Incorporate common salient social stimuli.
11. Incorporate self-mediated physical stimuli.
12. Incorporate self-mediated verbal and covert stimuli.

It has been 25 years since Stokes and Baer articulated the need for generalization programming in great detail. It has been over 10 years since Stokes and Osnes refined the prior articulation and provided a template for addressing generalization within the work of both practitioners and researchers in behavior analysis. At this time, it is pertinent to address the state of the advancement of generalization programming in behavior analysis application and research today. Have we progressed past the Train and Hope stage of development as a field and advanced the science of human behavior by developing methods that empirically demonstrate a generalization-promoting function?

#### CURRENT STATUS

In an attempt to determine the state of generalization programming today as reflected in behavior analysis journals, a sampling of journals was conducted. The following journals were reviewed for the years 1990-2002: *The Journal of Applied Behavior Analysis*, *Behavior Modification*, the *Journal of Positive Behavior Interventions*, and *The Behavior Analyst Today*. This sample was selected because two of the journals are long-standing journals in the field (*Journal of Applied Behavior Analysis* and *Behavior Modification*). The *Journal of Positive Behavior Interventions* is a relatively new journal, first published in 1999. As such, it was selected because it is possible that its acceptance practices of research for publication might require more stringent examination of generalization variables than would journals that had been in existence prior to 1977 when “An Implicit Technology of Generalization” was published. *The Behavior Analyst Today* was selected for that reason, and also because it is available in electronic format, therefore capable of reaching a broad audience at minimal cost. Importantly, it emphasizes functionalism as well.

From these journals, articles were determined to have generalization foci if they contained any of the following features: the word “generalization” or “maintenance” in the title or in the descriptor words, if those were required by the journal; a statement in the abstract that generalization and/or maintenance was a goal of the research (or article, in the case of review or discussion articles); the presence of a condition to assess maintenance or a follow-up condition; the inclusion of generalization probes; or the use of a reversal design that allowed for assessment of durability of effects post-treatment. In total, 93 articles were identified as meeting these requirements. Four were review articles, one was a discussion article, and the remaining 88 articles were research articles. The articles were scrutinized for the following features: explicit attention to the generalization-promoting strategies of Stokes and Baer (1977) and/or the generalization-promoting principles of Stokes and Osnes (1989); research methods that were designed to control for generalization-promoting variables; the inclusion of explicit generalization probes; and the length of follow-up or maintenance conditions.

### Review and Discussion Articles

Interestingly, all review articles focused on some type of social behavior. While not providing an extensive review of generalization per se, Singh, Deitz, Epstein, and Singh (1991) provided an analysis of intervention studies of the social behavior of students who were classified as seriously emotionally disturbed. They reviewed 28 studies from 10 journals, the majority of which were published after 1980 (N=25). They reported specifically on the studies that programmed for generalization and maintenance, and found that skill generalization, and generalization across settings and untrained persons were programmed for in 14 articles. However, no description of the type of programming was provided. Additionally, they reported separately about studies that assessed follow-up of intervention effects, although it was unclear what the difference between maintenance (assessed in five studies) and follow-up (assessed in 10 studies) was. The reported follow-up times of these studies was predominantly less than six weeks, with a range of two days to one year. Of the five studies that assessed maintenance, the maintenance

condition was less than six weeks in duration. Additionally, they reported on “changes in collateral behaviors that occurred as a result of the programmed contingencies” (p. 83) and found that only two studies reported such effects. The authors stated that the lack of assessment of changes in nontargeted behaviors was a “serious omission” due to the primary aim of the studies to enhance social skills of seriously emotionally disturbed students. Singh et al. did not utilize the generalization-promoting categories or principles of either Stokes and Baer (1977) or Stokes and Osnes (1989), but did cite Stokes and Osnes (1986) as having supported the need for generalization, maintenance and follow-up in social skills training programs.

Chandler, Lubeck, and Fowler (1992) provided an extensive review of generalization and maintenance of preschool children’s social skills. They reviewed 51 studies from 22 journals in behavior analysis and education that spanned the years 1976 to 1990. They analyzed the articles according to four categories: generalization dimension, generalization assessment design, behavior-change strategies, and generalization-promotion strategies. Additionally, they addressed most (N=14 studies) and least successful generalization (N=8 studies) produced. They described the studies within the generalization-promoting strategies of Stokes and Baer (1977), and stated a continued need for researchers to explore the conditions controlling appropriate generalization to obtain information concerning functional variables that account for generalization, as suggested by Stokes and Osnes (1989). They found that four generalization-promoting strategies were combined most frequently: addressing functional target behaviors (exploiting current functional contingencies), specifying a fluency criterion (incorporating functional mediators), using indiscriminable contingencies (training diversely), and using mediation techniques (incorporating functional mediators). They conclude by stating a need to focus on questions of generalization in the next decade of preschool social skills research, a decade that is now at its end. At the end of that decade, Chandler and Dahlquist (2002) used predominantly the generalization-promoting strategies of Stokes and Baer to present a chapter on “Prevention Strategies and Strategies to Promote

Generalization and Maintenance of Behavior” in their book on functional assessment in school settings. This represents a deliberate and laudatory effort to guide practitioners toward the active programming of generalization.

Landrum and Lloyd (1992) reviewed social behavior research with students with emotional or behavioral disorders and examined specifically the extent to which generalization across time, settings, responses, and individuals was addressed explicitly in the studies. Reviewing journals in psychology and special education, 12 studies met their criteria for inclusion. They used the generalization promoting strategies of Stokes and Baer (1977) to guide their analyses of the 12 articles, and discussed their results in terms of the reformulation of the categories suggested by Stokes and Osnes (1989). They found that the studies were relatively evenly divided across four strategies: four studies used train and hope; three studies each used each teaching relevant behaviors and sequential modification (exploit current functional contingencies); and two studies used train sufficient exemplars (train diversely). Maintenance was assessed in seven of the 12 articles, and transfer across responses and across individuals was assessed in only two and five studies, respectively. Furthermore, they reported that these assessments appeared only incidentally or anecdotally. Of final interest here, only one of the 12 studies assessed all four forms of generalization, while six studies assessed two forms of generalization. As a result of their review, the authors recommend that generalization become a dependent variable in more research, as has been suggested since Baer et al. (1968).

Fox and McEvoy (1993) reviewed the assessment and enhancement of generalization and social validity of social-skills interventions with children and adolescents. They state the conclusion early in their article that it is necessary not only to assess but to enhance the generality of interventions for children and adolescents with deficits in social interaction. Issues surrounding the frequently interchangeable use of the terms “generalization” and “generality” were cited as problematic. The topographical definition of generalization used by Stokes and Baer (1977) causes concern due to the implication that the

occurrence of generality of social behavior change may be sufficient instead of requiring an empirical demonstration that generalization occurred. They cite an additional problem with the interchangeable use of the terms “follow-up” and “maintenance” (an observation made by the authors of this article, as well). The confusion caused by the interchangeable use of these terms (among other terms in use, including durability and resistance to extinction) results in an inability to determine what the necessary conditions are that result in generalization. Accordingly, the authors recommend that “only through an intensive analysis of generalization and other environmental changes” may questions about the promotion of more general, durable behavior change be answered (p. 343). They proceed to discuss the selected articles that were reviewed along selected dimensions suggested by Stokes and Baer, while noting that other typologies exist (including Stokes & Osnes, 1989). The Stokes and Baer typology was chosen because “it is well-known, frequently referenced, and reasonably efficient in organizing specific generality programming procedures and their results” (p 346). Their results were both encouraging and discouraging. While they noted an increase in social skills training research that included generality procedures, an increase in the diversity of tactics used, and some behavior change across settings, responses, people, or time, failures to replicate effects across studies were apparent. Additionally, they reported that few studies used experimental designs that could determine empirically the relationship between the resultant generality and any particular programming procedure.

Tillman (2000) discussed generalization programming in the context of behavioral consultation and used selected generalization-promoting tactics from both Stokes and Baer (1977) and Stokes and Osnes (1989) to frame the discussion. While reporting early optimism that generalization of problem-solving and intervention skills resulted from consultation, reality showed that only a handful of studies actively examined generalization. Unfortunately, none of these few studies showed that generalization resulted from school based consultation. The discussion continued to suggest explanations for this dismal finding from the conceptualizations offered by Stokes

and Baer and Stokes and Osnes (1989). Therefore, while concluding that no generalization appears to exist for school-based consultation activities as evidenced by the few studies that provided such investigations, there is a suggestion that the generalization frameworks proffered by Stokes and Baer (1977) and Stokes and Osnes (1989) can provide assistance in the creation of a consultation generalization program. He discusses this possibility in detail in the remainder of his article.

### Research Articles

Eighty-eight research articles were identified that met the criteria for review. Several articles addressed both maintenance and generalization, and/or used both maintenance and follow-up terminology. To summarize, 38 articles used the word “generalization” or “maintenance” in the title or in the descriptor words and/or contained a statement in the abstract that generalization and/or maintenance was a goal of the research; 11 articles included a condition to assess maintenance; 29 articles did not discuss maintenance but included follow-up assessment of post-treatment effects; 16 articles specifically addressed generalization and included generalization probes in their design; and 13 articles used reversal designs that allowed for assessment of durability of effects post-treatment but did not discuss maintenance per se.

### Articles that Used “Generalization” or “Maintenance” in Titles, Descriptors, or Abstracts

Forty-three percent of the articles (N=38) used the terms “generalization” or “maintenance” explicitly in their titles, descriptors, and/or abstracts. Of these, 30 addressed generalization, and eight addressed maintenance. Approximately 47% of the generalization research (N=14 articles) addressed communication or verbal behavior (i.e., Drasgow, Halle, & Ostrosky, 1998; Hughes, Harmer, Killian, & Niarhos, 1995; Krantz & McClannahan, 1998; Serna, Schumaker, Sherman, & Sheldon, 1991; Stewart, Van Houten, & Van Houten, 1992). Fifty-three percent (N=16 articles) addressed nonverbal behavior (i.e., self-injurious behavior [Lalli, Mace, Livezey, & Kates, 1998]; appropriate play by preschoolers [Ward & Stare,

1990]; self-assessment and recruitment of teacher praise by preschoolers [Connell, Carta, & Baer, 1993]).

The bulk of the generalization research provided some overt generalization programming in its procedures. Craft, Alber, and Heward (1998) manipulated the reinforcement schedule by training initially using continuous reinforcement and then fading to intermittent reinforcement in the latter half of their generalization programming condition (exploit current functional contingencies). By introducing generalization programming in multiple baseline fashion, they were able to conclude that the generalization programming condition was responsible for improvements in students’ use of methods to recruit teacher praise. Following cessation of all programming, use of the recruiting strategies maintained for five sessions for all four participants who were developmentally disabled. Halle and Holt (1991) controlled for generalization by using a multielement probe design to systematically manipulate the introduction of various stimuli into the training setting with four young adults with moderate mental retardation (train diversely). Their results clearly show that paired-stimulus probing vs. single-stimulus probing resulted in the exhibition of the target behavior, saying “please.”

Several studies involved peers in training with individuals who exhibited low levels of social responses, therefore incorporating functional mediators in the design of their studies. For example, Pierce and Schreibman (1997) used this approach to increase the social behaviors of two children with autism. They introduced the peers in multiple baseline fashion thereby demonstrating that the presence of the peer was responsible for increases in the appropriate responding by the target children. Following training, the target children exhibited increased social behaviors in nontraining settings with novel peers. The authors propose that the use of pivotal response training (PRT) constituted the use of “loose training”, and may have been responsible for the improvements. Thiemann and Goldstein (2001) also utilized peers in a study to investigate the effects of written text and pictorial cuing with video feedback on the social behaviors of five students with autism. Their use of a multiple



baseline design demonstrated that the treatment package was responsible for improvements in four behaviors for each participant. Unfortunately, it was not possible to distinguish the role of the peers from that of the other training variables (i.e., pictorial cuing, video feedback) because all variables were introduced as a package.

Several studies that focused on improving various nonverbal behaviors were designed to control for generalization-promoting variables. Shore, Iwata, Lerman, and Shirley (1994) used diverse training and systematically varied three stimulus parameters (therapist, setting, and demands) to result in varying levels of generalization on novel probes with three participants who exhibited self-injurious behaviors. Unfortunately, the idiosyncratic nature of the generalized responding was troublesome, and precluded drawing firm conclusions about the effectiveness of the use of the systematic varying of the stimulus parameters. However, the investigation provides an example of a study that was designed to control for generalization-promoting variables. Connell et al. (1993) also reported variable levels of generalization in their well-designed study to program generalization of students' transition skills in classroom settings. The use of a multiple baseline design to explore the effects of self-assessment and self-assessment plus recruitment of teacher praise (exploiting current functional contingencies and incorporating functional mediators) allowed for clear examination of generalized effects from the training setting to the classroom.

Ducharme and Holborn (1997) included generalization-promoting procedures in the design of their study that examined social skills of young children with hearing impairments. Following an intervention condition that included multiple training components, they implemented a second intervention condition that overlaid additional teachers, peers, and materials (sufficient stimulus exemplars) and fading of teacher praise (contacting natural consequences) in a dissimilar room. By using a multiple baseline design to introduce the three conditions (ABC), they were able to conclude that the generalization-promoting strategies resulted in large increases in social interactions in the generalization setting. However, a

limitation of the study is the presence of training in one setting while generalization assessment is occurring in the novel setting. Unfortunately, this resulted in an inability to determine "pure generalization" (generalization with no training procedures in effect in any setting) to the novel setting. Neef, Lensbower, Hockersmith, DePalma, and Gray (1990) provided a clear investigation of the generalization-promoting functions of multiple training exemplars in their study that taught appropriate use of appliances (washers and dryers) to four adults with mental retardation. By using a counterbalanced design that included two types of instruction and probes with untrained appliances, they were able to clearly determine that more generalization errors were present when a broad range of training exemplars was used and not when simulated versus natural training stimuli were used.

Other studies that focused on nonverbal behaviors were not designed to control for generalization-promoting variables but included generalization programming in their procedures, showing that researchers are cognizant of the need to address generalization actively. For example, Donnelly and Olczak (1990) investigated the effect of differential reinforcement of incompatible behaviors (DRI) (exploiting current functional contingencies) to reduce cigarette pica in two adults with intellectual disabilities. A reversal design was used to show experimental control, and results show clearly that pica behavior decreased when the DRI schedule was in effect and increased when no DRI schedule was present. They included a generalization condition in which other staff members used the DRI schedule with the participants, and reduced levels of cigarette pica maintained while the DRI was in effect. Koegel and Koegel (1990) faded the trainer away from the four students with autism after training them to criterion on self-management procedures (exploiting current functional contingencies and incorporating functional mediators). The participants' stereotypic behaviors maintained at reduced levels when the trainer was faded after they had been trained to use the self-management procedures.

#### **Articles that Addressed Maintenance or Follow-up**

Research that addressed maintenance is classified into three categories: research that

explicitly investigated variables that resulted in maintenance of intervention effects; research that assessed presence or absence of maintenance post-intervention; research that included follow-up conditions to assess durability of intervention effects; and intervention research that did not address maintenance but utilized reversal designs that allowed for examination of durability of intervention effects. As Fox and McEvoy (1993) pointed out, the use of both “maintenance” and “follow-up” is distracting because it is not possible to discern the difference between the two conditions. Regardless of which term is used, it appears that the authors use both terms to mean that intervention effects are present after the intervention is withdrawn. Therefore, both categories will be grouped together for the purposes of this discussion.

Only eight articles (9%) explicitly addressed the term “maintenance” in their titles. Of these, five addressed nonverbal behavior (i.e., sorting by children with autism [Dozier et al., 2001]; performance on a reading task [Daly, Martens, Kilmer, & Massie, 1996], and the remaining three addressed functional communication training (FCT) [Durand & Carr, 1992; Shirley, Iwata, Kahng, Mazaleski, & Lerman, 1997; Derby et al., 1997]). Additionally, four articles included maintenance assessments in their designs, but did not describe these in their titles or abstracts (increasing employment productivity by adults with mental retardation [Christian & Poling, 1997]; decreasing sleep disorders among young children [Durand & Mindell, 1990]; using spousal feedback with parents of children with autism [Harris, Peterson, Filliben, Glassberg, & Favell, 1998]; increasing teacher use of interventions [Witt, Noell, LaFleur, & Mortenson, 1997]).

The bulk of the research that addressed maintenance and follow-up provided assessments of intervention effects after intervention withdrawal instead of designing the investigations to enhance maintenance. Only four investigations actively programmed for maintenance, and all used the strategy of exploiting current functional contingencies. Altus, Welsh, and Miller (1991) provided an excellent example of an investigation designed

for maintenance. By transferring responsibility for provision of positive feedback to members of a student housing cooperative from the researchers to members of the cooperative (exploit current functional contingencies), they demonstrated long-term maintenance of completion of tasks by cooperative members. The investigation began in 1985 and was active through 1986, with follow-up in 1987 and again in 1991. All follow-up assessments showed that task completion remained high, with some decrease noted in the 1991 data. Dozier et al. (2001) utilized fixed-time schedules of reinforcement to maintain the performance of two young children with autism on manipulative tasks (exploit current functional contingencies). Variable-ratio and three fixed-time schedules were introduced using multielement and reversal designs. Results suggested that previously acquired responses were maintained using thin, dense, and yoked FT schedules, although there was variability across participants so results should be interpreted with caution. Similarly, Lerman, Iwata, and Shore (1996) demonstrated maintenance of reduced levels of SIB during extinction conditions when intermittent reinforcement was available prior to extinction with adults with mental retardation. Finally, the participants in the investigation of Bennett and Cavanaugh (1998) used self-correction procedures on multiplication tasks to assist in the maintenance of improved responding (incorporate functional mediators). Their findings indicated that immediate self-correction was more effective than delayed or no self-correction procedures in producing appropriate performance and in maintaining performance following instruction.

Encouragingly, 60% of the articles (N=53) that addressed generalization and maintenance contained follow-up conditions. This suggests that behavior analysts have begun to address seriously the need to assess durability of treatment effects. The length of these conditions was highly variable, ranging from one session at the shortest to one year at the longest. A notable exception is the study of Altus et al. (1991), described previously. This range was noted among the research that addressed verbal behavior issues. Among the research that was implemented in school settings, follow-up was conducted from two sessions to six months. A wide variety of

research was conducted in varying settings with various target behaviors, including community, home, hospital, playground, and laboratory settings. The follow-up conditions ranged from 10 days [teaching playground safety skills to elementary school children (Heck, Collins, & Peterson, 2001)] to 10 months [teaching independent living skills to children and young men with visual impairments (Taras, Matson, & Felps, 1993)] in these studies.

The final group of articles reviewed used reversal designs to demonstrate experimental control of intervention procedures. Inherent in the use of reversal designs for this purpose is the problem that, while from a scientific standpoint, the reversal design shows experimental control, from a practitioner's standpoint, it is deleterious for intervention effects to reverse (Miltenberger, 2001). For the purposes of the present discussion, the use of the reversal design allowed examination of the durability of intervention effects after its withdrawal. 15% of the articles (N=13) used reversal designs to demonstrate experimental control in their intervention research, and all were effective in doing so. Therefore, 100% of the intervention research that utilized reversal designs showed experimental control and failed to show durability of intervention effects when intervention was withdrawn. This may suggest that behavior analytic researchers who investigate interventions are caught in a dilemma – if they use the reversal design to demonstrate experimental control and are successful, the research is successful from a scientific standpoint. However, from an applied perspective, the reversal of intervention effects following the withdrawal of the intervention is a disappointment. The intervention areas targeted in these studies included maladaptive behaviors of youth with attention deficit with hyperactivity disorder (Reitman, Hupp, O'Callaghan, Gulley, & Northup, 2001), eye poking (Smith, Russo, & Le, 1999), inappropriate verbal behavior of heroin addicts (Petry et al., 1998), wandering by persons with dementia (Heard & Watson, 1999), automobile safety belt use when leaving the supermarkets (Engerman, Austin, & Bailey, 1997), sleep problems with a toddler (Ashbaugh & Peck, 1998), rapid eating by a young woman with developmental disabilities (Wright & Vollmer, 2002), and food selectivity (Dixon, Benedict, & Larson, 2001). Inspection of these

studies reveals that all investigations manipulated highly discriminable interventions, i.e., presence/absence of a token economy, presence/absence of stickers, presence/absence of prompts, access or lack of access to leisure activities, presence/absence of DRL or DRA procedures. In other words, it was readily discriminable to the studies' participants when interventions were active and when they were not. While demonstrating the effectiveness of the interventions, these studies may have inadvertently demonstrated that the withdrawal of highly discriminable interventions results in a loss of intervention effects. Consistent with the generalization-promoting strategy of Stokes and Osnes (1989), it is plausible that further investigations that manipulate the discriminability of interventions of these types should attempt to demonstrate a generalization-promotion function in addition to demonstrating the effectiveness of the interventions in the immediate time frame.

#### CONCLUSIONS AND RECOMMENDATIONS

This paper embarked on an effort to provide at least a partial answer to the question posed earlier: Have we progressed past the Train and Hope stage of development as a field and advanced the science of human behavior by developing methods that empirically demonstrate a generalization-promoting function? The answer appears to be mixed. On the encouraging side, researchers who are investigating interventions are more often than not including assessments of maintenance in their investigations. Unfortunately, on the discouraging side, researchers are continuing to investigate highly discriminable interventions that fail to demonstrate durability after their withdrawal while demonstrating excellent experimental control and satisfying the scientific process. By carrying their research another step further and including an additional condition to decrease the discriminability of the intervention in an effort to promote maintenance, both the practitioner and the scientific audiences could be satisfied. The current status of generalization research, whether designed to control for generalization-enhancing variables or to establish the durability of the procedures, suggests that generalization continues to be an elusive entity. When obtained, it appears to require much effort. For researchers to

demonstrate a functional relationship between procedures and generalization, much effort is required in the design and implementation of the research. For practitioners to design interventions that result in generalization, more effort is required than to simply demonstrate the immediate effectiveness of the procedures. Such required effort may discourage both researchers and practitioners from delving deeply into the somewhat gray area of generalization-promotion. However, it is precisely this increased effort that is necessary in order for behavior analysis to show the generality of the outcomes of its labors. If such generality fails to be demonstrated, it may be necessary for behavior analysis to “throw in the towel” and acknowledge that our procedures are very effective at producing behavior change but need to be utilized ad infinitum because longlasting and widespread behavior change is a highly obscure commodity.

Conversely, on the encouraging side, there are at least a dozen examples of research presented here that were designed solely to demonstrate the functional relationship between training variables and generalization. It is important to remember, also, that the literature reviewed here is from only a few journals. Undoubtedly, it is safe to assume that a broader literature review would yield even more reason for optimism. Each investigation that controls for generalization variables can and should be considered a model for other investigators to use. A systemic method for accessing and utilizing the extant data base on generalization-promotion may be helpful in increasing the frequency of research in the area. If you will, imagine behavior analysts being able to access the currently imaginary *Journal of Generalization-Promotion*, which would serve as a central receiving point for research and interventions that focus on this critical area.

Another optimistic result of the present review was the extent to which the authors of the research utilized proficiently their discussions of Stokes and Baer (1977) and Stokes and Osnes (1989). It appears obvious that the categories provided by Stokes and Baer have demonstrated maintenance, and that, in and of itself, constitutes one level of effective intervention. Acknowledging the need for generalization promotion is now a well-entrenched part of

behavior analysis that has resulted in a growing data base across diverse areas of the field. Investigators are describing their efforts in terms of the generalization-promoting categories and the categories appear to be driving generalization research. In short, it appears that the categories are becoming increasingly more functional, an outcome that hopefully would please Baer et al. (1968). In that respect, it could be concluded that they are becoming more explicit than implicit, with Train and Hope more an historical artifact than a present day albatross.

However, lest we become too confident that we are making adequate strides in the area of generalization promotion, let us remember that the conceptualization continues to be stronger than the empirical base that supports it. To continue to advance our efforts in this critical area, each behavior analyst should assume responsibility to “raise the bar” and plan no empirical investigations and interventions without generalization promotion as part of the research and intervention plan. Accomplishing the most generalized effects in the least intrusive manner while subjecting the endeavor to a rigorous scientific process may best ensure that our efforts remain true to the field’s tenets of empiricism and parsimony. In this manner, an explicit technology of generalization may have the best opportunity to continue along its current healthy, albeit slow, course of development.

## REFERENCES

- Altus, D. E., Welsh, T. M., & Miller, L. K. (1991). A technology for program maintenance: Programming key researcher behaviors in a student housing cooperative. *Journal of Applied Behavior Analysis, 24*, 667-675.
- Ashbaugh, R., & Peck, S. M. (1998). Treatment of sleep problems in a toddler: A replication of the faded bedtime with response cost protocol. *Journal of Applied Behavior Analysis, 31*, 127-129.
- Baer, D. M., Wolf, M. M., & Risley, T. F. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 1*, 91-97.
- Bennett, K., & Cavanaugh, R. A. (1998). Effects of immediate self-correction, delayed self-correction, and no correction on the acquisition and maintenance of multiplication facts by a fourth-grade student with learning disabilities. *Journal of Applied Behavior Analysis, 31*, 303-306.
- Chandler, L. K., & Dahlquist, C. M. (2002). *Functional assessment: Strategies to prevent and remediate challenging behavior in school settings*. Upper Saddle River, NJ: Merrill-Prentice Hall.

- Chandler, L. K., Lubeck, R. C., & Fowler, S. A. (1992). Generalization and maintenance of preschool children's social skills: A critical review and analysis. *Journal of Applied Behavior Analysis, 25*, 415-428.
- Christian, L., & Poling, A. (1997). Using self-management procedures to improve the productivity of adults with developmental disabilities in a competitive employment setting. *Journal of Applied Behavior Analysis, 30*, 169-172.
- Connell, M. C., Carta, J. J., & Baer, D. M. (1993). Programming generalization of in-class transition skills: Teaching preschoolers with developmental delays to self-assess and recruit contingent teacher praise. *Journal of Applied Behavior Analysis, 26*, 345-352.
- Craft, M. A., Alber, S. R., & Heward, W. L. (1998). Teaching elementary students with developmental disabilities to recruit teacher attention in a general education classroom: Effects on teacher praise and academic productivity. *Journal of Applied Behavior Analysis, 31*, 399-415.
- Daly, E. J., Martens, B. K., Kilmer, A., & Massie, D. R. (1996). The effects of instructional match and content overlap on generalized reading performance. *Journal of Applied Behavior Analysis, 29*, 507-518.
- Derby, K. M., Wacker, D. P., Berg, W., DeRaad, A., Ulrich, S., Asmus, J., Harding, J., Prouty, A., Laffey, P., & Stoner, E. A. (1997). The long-term effects of functional communication training in home settings. *Journal of Applied Behavior Analysis, 30*, 507-531.
- Dixon, M. R., Benedict, H., & Larson, T. (2001). Functional analysis and treatment of inappropriate verbal behavior. *Journal of Applied Behavior Analysis, 34*, 361-363.
- Donnelly, D. R., & Olczak, P. V. (1990). The effect of differential reinforcement of incompatible behaviors (DRI) on pica for cigarettes in persons with intellectual disability. *Behavior Modification, 14*, 81-96.
- Dozier, C. L., Carr, J. E., Enloe, K., Landaburu, H., Eastridge, D., & Kellum, K. K. (2001). Using fixed-time schedules to maintain behavior: A preliminary investigation. *Journal of Applied Behavior Analysis, 34*, 337-340.
- Dragow, E., Halle, J. W., & Ostrosky, M. M. (1998). Effects of differential reinforcement on the generalization of a replacement mand in three children with severe language delays. *Journal of Applied Behavior Analysis, 31*, 357-374.
- Ducharme, D. E., & Holbom, S. W. (1997). Programming generalization of social skills in preschool children with hearing impairments. *Journal of Applied Behavior Analysis, 30*, 639-651.
- Durand, V. M., & Carr, E. G. (1992). An analysis of maintenance following functional communication training. *Journal of Applied Behavior Analysis, 25*, 777-794.
- Durand, V. M., & Mindell, J. A. (1990). Behavioral treatment of multiple childhood sleep disorders: Effects on child and family. *Behavior Modification, 14*, 37-49.
- Engerman, J. A., Austin, J., & Bailey, J. S. (1997). Prompting patron safety belt use at a supermarket. *Journal of Applied Behavior Analysis, 30*, 577-579.
- Fox, J. J., & McEvoy, M. A. (1993). Assessing and enhancing generalization and social validity of social-skills interventions with children and adolescents. *Behavior Modification, 17*, 339-366.
- Halle, J. W., & Holt, B. (1991). Assessing stimulus control in natural settings: An analysis of stimuli that acquire control during training. *Journal of Applied Behavior Analysis, 24*, 579-589.
- Harris, T. A., Peterson, S. L., Filliben, T. L., Glassberg, M., & Favell, J. E. (1998). Evaluating a more cost-efficient alternative to providing in-home feedback to parents: The use of spousal feedback. *Journal of Applied Behavior Analysis, 31*, 131-134.
- Heard, K., & Watson, T. S. (1999). Reducing wandering by persons with dementia using differential reinforcement. *Journal of Applied Behavior Analysis, 32*, 381-384.
- Heck, A., Collins, J., & Peterson, L. (2001). Decreasing children's risk taking on the playground. *Journal of Applied Behavior Analysis, 34*, 349-352.
- Hughes, C., Harmer, M. L., Killian, D. J., & Niarhos, F. (1995). The effects of multiple-exemplar self-instructional training on high school students' generalized conversational interactions. *Journal of Applied Behavior Analysis, 28*, 201-218.
- Koegel, R. L., & Koegel, L. K. (1990). Extended reductions in stereotypic behavior of students with autism through a self-management treatment package. *Journal of Applied Behavior Analysis, 23*, 119-127.
- Krantz, P. J., & McClannahan, L. E. (1998). Social interaction skills for children with autism: A script-fading procedure for beginning readers. *Journal of Applied Behavior Analysis, 31*, 191-202.
- Lalli, J. S., Mace, F. C., Levezey, K., & Kates, K. (1998). Assessment of stimulus generalization gradients in the treatment of self-injurious behavior. *Journal of Applied Behavior Analysis, 31*, 479-483.
- Landrum, T. J., & Lloyd, J. W. (1992). Generalization in social behavior research with children and youth who have emotional or behavioral disorders. *Behavior Modification, 16*, 593-616.
- Lerman, D. C., Iwata, B. A., & Shore, B. A. (1996). Responding maintained by intermittent reinforcement: Implications for the use of extinction with problem behavior in clinical settings. *Journal of Applied Behavior Analysis, 29*, 153-171.
- Miltenberger, R. G. (2001). *Behavior modification: Principles and procedures, second edition*. Belmont, CA: Wadsworth/Thomson Learning.
- Neef, N. A., Lensbower, J., Hockersmith, I., DePalma, V., & Gray, K. (1990). In vivo versus simulation training: An interactional analysis of range and type of training exemplars. *Journal of Applied Behavior Analysis, 23*, 447-458.
- Petry, N. M., Bickel, W. K., Tzani, E., Taylor, R., Kubik, E., Foster, M., & Hughes, M. E. (1998). A behavioral intervention for improving verbal behaviors of heroin addicts in a treatment clinic. *Journal of Applied Behavior Analysis, 31*, 291-297.
- Pierce, K., & Schreibman, L. (1997). Multiple peer use of pivotal response training to increase social behaviors of classmates with autism: Results from trained and untrained peers. *Journal of Applied Behavior Analysis, 30*, 157-160.
- Reitman, D., Hupp, S. D. A., O'Callaghan, P. M., Gulley, V., & Northup, J. (2001). The influence of a token economy and methylphenidate on attentive and disruptive behavior during sports with ADHD-diagnosed children. *Behavior Modification, 25*, 305-323.

- Sema, L. A., Schumaker, J. B., Sherman, J. A., & Sheldon, J. B. (1991). In-home generalization of social interactions in families of adolescents with behavior problems. *Journal of Applied Behavior Analysis, 24*, 733-746.
- Shirley, M. J., Iwata, B. A., Kahng, S., Mazaleski, J. L., & Lerman, D. C. (1997). Does functional communication training compete with ongoing contingencies of reinforcement? An analysis during response acquisition and maintenance. *Journal of Applied Behavior Analysis, 30*, 93-104.
- Shore, B. A., Iwata, B. A., Lerman, D. C., & Shirley, M. J. (1994). Assessing and programming generalized behavioral reduction across multiple stimulus parameters. *Journal of Applied Behavior Analysis, 27*, 371-384.
- Singh, N. N., Deitz, D. E. D., Epstein, M. H., & Singh, J. (1991). Social behavior of students who are seriously emotionally disturbed: A quantitative analysis of intervention studies. *Behavior Modification, 15*, 74-94.
- Smith, R. G., Russo, L., & Le, D. D. (1999). Distinguishing between extinction and punishment effects of response blocking: A replication. *Journal of Applied Behavior Analysis, 32*, 367-370.
- Stewart, G., Van Houten, R., & Van Houten, J. (1992). Increasing generalized social interactions in psychotic and mentally retarded residents through peer-mediated therapy. *Journal of Applied Behavior Analysis, 25*, 335-339.
- Stokes, T. F. (1992). Discrimination and generalization. *Journal of Applied Behavior Analysis, 25*, 429-432.
- Stokes, T. F. (1995). A wrongly filled tabula rasa? *Contemporary Psychology, 40*, 428-430.
- Stokes, T. F., & Baer, D. M. (1977). An implicit technology of generalization. *Journal of Applied Behavior Analysis, 10*, 349-367.
- Stokes, T. F., & Osnes, P. G. (1986). Programming the generalization of children's social behavior. In P. S. Strain, M. J. Guralnick, & H. M. Walker (Eds.), *Children's social behavior: Development, assessment, and modification*. Orlando, FL: Academic Press.
- Stokes, T. F., & Osnes, P. G. (1989). An operant pursuit of generalization. *Behavior Therapy, 20*, 337-355.
- Taras, M. E., Matson, J. L., & Felps, J. N. (1993). Using independence training to teach independent living skills to children and young men with visual impairments. *Behavior Modification, 17*, 189-208.
- Thiemann, K. S., & Goldstein, H. (2001). Social stories, written text cues, and video feedback: Effects on social communication of children with autism. *Journal of Applied Behavior Analysis, 34*, 425-446.
- Tillman, T. C. (2000). Generalization programming and behavioral consultation. *The Behavior Analyst Today, 1*, 30-34.
- Ward, W. D., & Stare, S. W. (1990). The role of subject verbalization in generalized correspondence. *Journal of Applied Behavior Analysis, 23*, 129-136.
- Witt, J. C., Noell, G. H., LeFleur, L. H., & Mortenson, B. P. (1997). Teacher use of interventions in general education settings: Measurement and analysis of the independent variable. *Journal of Applied Behavior Analysis, 30*, 693-696.
- Wright, C. S., & Vollmer, T. R. (2002). Evaluation of a treatment package to reduce rapid eating. *Journal of Applied Behavior Analysis, 35*, 89-93.

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## PARENT-CHILD INTERACTION THERAPY: A PROMISING INTERVENTION FOR ABUSIVE FAMILIES

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The field of child maltreatment continues to struggle with methodological difficulties that impede the development and evaluation of empirically supported interventions. Existing treatments vary from parent education to individual child therapy. One promising treatment for abusive families is Parent-Child Interaction Therapy (PCIT), which focuses on the interactions of the parent-child dyad. This intervention has been empirically supported in its use with children with behavior problems and many clinical attributes of PCIT make its use with abusive families appealing (e.g., direct coaching of skills, focus on relationship enhancement, alteration of coercive cycle). PCIT may not address all issues facing abusive families, but it does offer an effective intervention to modify maladaptive parent-child interactions.

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A substantial amount of research in the area of child maltreatment has been generated within the past 20 years. Investigations into the incidence, prevalence, and consequences of child maltreatment have increased, leading to significant advances in the epidemiological characterization of child maltreatment and its effects (Reece, 2000). Unfortunately, child maltreatment remains challenging to study and to explain. One reason for this lies in the fact that multiple theories have been proposed to explain child maltreatment. Cultural explanations, sociological theories (e.g., Strain Theory), and psychological and biological theories (e.g., Social Learning Theory) have attempted to clarify child maltreatment, yet no one theory explains all cases. In addition, definitional ambiguities exist in the area of child maltreatment. Different professionals and organizations (e.g., researchers vs. law enforcement officers) have specific definitional criteria that are deemed important; thus, acts are seen differently by different individuals. Other difficulties in the field are related to methodological problems. Most research in the area continues to be retrospective and correlational making it virtually impossible to identify causal relationships. Additionally, samples usually are widely divergent, often incorporating clinical rather than representative samples which limit the generalizability of the results to the general population. As a result of these difficulties, empirically supported treatments for child physical abuse are lacking.

One promising treatment for families who have a history of child maltreatment is Parent-Child Interaction Therapy (PCIT; Hembree-Kigin & McNeil, 1995). This

manualized treatment has been empirically supported in its use with children with behavior problems and may prove beneficial to abusive families (Herschell, Calzada, Eyberg, & McNeil, 2002). For instance, its emphasis on relationship enhancement within the parent-child dyad and its focus on behavioral management addresses difficulties specific to abusive families. Many additional clinical features of this treatment (e.g., direct coaching of parenting skills) make it a promising intervention for abusive families.

In attempting to develop efficacious treatments for child physical abuse, researchers have examined the characteristics of child victims, adult perpetrators, as well as the interactional styles between victims and perpetrators. As a result, a substantial body of literature has amassed in the area of child physical abuse (CPA) and has demonstrated that CPA has deleterious effects on child victims including medical/health and psychological problems, intellectual/academic problems, cognitive/perceptual and attributional problems (e.g., likely to attribute hostile intent to peers' behavior), behavioral dysfunction (e.g., heightened aggression, opposition and defiance), internalizing problems and psychiatric disturbances (e.g., hopelessness, depression, posttraumatic stress disorder), and social/interpersonal competence and relationship problems (e.g., insecure attachments, difficulties in peer relationships; Kolko, 2002; Miller-Perrin & Perrin, 1999). Factors that tend to mediate these risks also have been identified and include such things as parental psychopathology, socioeconomic status, and age of mother (Kolko, 2002). Research suggests that abusive parents may have difficulties in problem-solving and

exhibit interactional styles characterized by ineffective strategies. For example, abusive parents exhibit many ineffective parenting skills such as using high rates of negative behavior, high rates of controlling behavior, high rates of inconsistency, low rates of positive behavior, and low rates of overall interaction (e.g., Bousha & Twentyman, 1984; Burgess & Conger, 1978).

### Overview of Current Treatments

Drawing upon the knowledge gained from studying the characteristics of abusive families, researchers have been able to develop interventions for treating CPA. CPA has been described as a “complex problem resulting from multiple interacting factors from many domains including the adult perpetrator, parent-child interactions, family environment, and situational and social conditions” (Miller-Perrin & Perrin, 1999, p. 90). In all cases of CPA, appropriate assessments should be conducted prior to the initiation of interventions to determine specific problems. Based upon the results of the assessments, a treatment plan should be developed that is tailored to the problems and needs of individual family members and the family as a whole. Research consistently has shown that interventions matched correctly to specific problems are more likely to yield successful outcomes than those not matched to problems (Scotti, Mullen, & Hawkins, 1998). Kolko (2002), Miller-Perrin and Perrin, Saunders, Berliner, and Hanson (2001), and others have outlined treatments for CPA. These include child-focused treatment (e.g., day/residential treatment, peer social initiation), parent-focused treatment (e.g., cognitive-behavioral treatment for parents, parent education and support), and family-focused treatment (e.g., abuse-focused family treatment, ecological, family-centered, and home-based intervention services).

As noted, deleterious effects have been seen in children who experience CPA. Therefore, focusing a part of treatment on the individual child is necessary. Children who have experienced CPA often have delayed play skills, poor social interaction skills, and difficulty making friends. Day/residential treatment has been used in treating maltreated preschoolers and attempts to target the socioemotional deficits often seen in children who experience

CPA. The treatment program offers the child an opportunity to engage in different developmentally appropriate and therapeutic activities (e.g., recreation, learning, play). The activities are conducted in child playgroups or in family counseling where trained staff are present and work closely with each group (Kolko, 2002). Resilient peer training, a school-based intervention, is directed toward improving the social competencies of withdrawn maltreated children by pairing them with resilient peers who demonstrate social initiation techniques (Fantuzzo et al., 1996). Individual therapy also has been used with physically abused children and often involves teaching the child relaxation skills, problem-solving strategies, and anger management techniques (Miller-Perrin & Perrin, 1999).

Child and parent physical abuse-focused cognitive-behavioral treatment targets both the abused child and his/her parents. The child and his/her parents attend separate sessions simultaneously while therapists working with the families adhere to parallel protocols. Intrapersonal and interpersonal skills are taught to both the child and parents throughout treatment. Specific areas targeted with children include identification of family stressors and views of violence, teaching safety/support and planning and relaxation skills, and training in interpersonal effectiveness skills to enhance social competence. Parents are taught to identify their views on violence and physical punishment and their expectations for their children. In addition, parents are taught self-control techniques (e.g., anger management) and contingency management techniques (e.g., attention, reinforcement, time-out; Kolko, 2001a).

Wolfe (1999) states that CPA most often occurs during stressful periods in the parent’s life (e.g., during times of instability and disruption). Interventions directly targeting parents usually are cognitive-behavioral in orientation and, as with the abuse-focused intervention, include some form of skills training (e.g., anger management, stress management). The goal of these interventions is to train parents in nonviolent child management skills as well as anger control and stress management techniques. Through demonstration or role-playing opportunities, parents learn to appropriately



deliver reinforcement and punishment (time-out and response cost) for child behaviors. Anger and stress management skills are taught so that parents have alternatives for dealing with the anger and stress that result from their child's behavior (Miller-Perrin & Perrin, 1999). Parent-child education programs for physically abusive parents are home- or clinic-based interventions where the goal is to enhance parental sensitivity and parent-child interactions (e.g., having parents watch and follow the child's actions without directing or interfering), educate parents on reasonable expectations for their child's behavioral and emotional development, and teach parents effective anger control and disciplining techniques (Wolfe, 1991).

Ecological, family-centered, and home-based intervention services also are used in treating families in which physical abuse occurs. Within the family-ecological model, CPA is viewed from a systemic perspective, suggesting that treatment is intensive and is directed toward multiple participants (individual, family, and social network). The goal of several of these programs including Intensive Family Preservation Services (e.g., Homebuilders; Whittaker, Kinney, Tracy, & Booth, 1990) and the programs developed by Lutzker and colleagues (i.e., Project 12-Ways, Project SafeCare; Lutzker, Bigelow, Doctor, Gershater, & Greene, 1998) is family preservation (i.e., preventing child out-of-home placement). Treatment components are individualized and matched to specific problem areas being experienced within the family. Multisystemic family treatment is ecologically based and provides multiple, comprehensive interventions that have empirical support (e.g., cognitive-behavioral techniques for anger management are taught to the abusive parent; Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 1998).

Kolko's (2001b) physical abuse-informed family therapy is ecologically based and views CPA from a systemic perspective. Treatment consists of three phases: engagement phase, skill-building phase, and application/termination phase. In the engagement phase, family members' roles and interactions (e.g., genogram) are assessed, family members are taught to reframe negative attributions of blame, negative effects of

physical force are reviewed, and family members agree to a no-violence contract. The skill-building phase consists of training in specific problem solving and communication skills at home. Problem-solving family routines are established as alternatives to coercion or physical punishment during the application/termination phase. Overall, the goal of treatment is to enhance the cooperation and motivation of all family members (Kolko, 2001b).

The above outlined treatments for CPA are child-focused, parent-focused, or family-focused and utilize a variety of different formats. Parent-Child Interaction Therapy is unique in that its focus is on the interactions of the parent-child dyad and uses a direct, or in vivo, coaching model. As the act of child physical abuse occurs within the context of a maladaptive parent-child interaction, PCIT targets the interaction directly by coaching parents in the use of more effective skills to use in place of physical abuse.

#### **Description of PCIT**

Parent-Child Interaction Therapy is a manualized treatment developed for children with behavior problems (Hembree-Kigin & McNeil, 1995). PCIT is based on the 2-stage operant model developed by Hanf (1969). Eyberg (1988) modified the Hanf model by incorporating aspects of traditional play therapy. Throughout the intervention, the therapist observes parent-child interactions from behind a one-way mirror. The parent wears a bug-in-the-ear device, a small ear phone that allows the therapist to coach and provide feedback on skills throughout the session. In the absence of this technology, the coaching may be provided in the home environment, or clinic, with a therapist shadowing the parent and providing feedback discretely. Initially, the child may attempt to engage the therapist in play, but if the therapist ignores attempts to be engaged, the child soon begins interacting with the parent.

PCIT begins with a relationship enhancement phase, or Child Directed Interaction (CDI), designed to create a more positive interaction between the parent and child. This is accomplished in a variety of ways. First, the parent learns to implement new skills in the context of play. The parent is instructed to

follow the child's lead and play along with him or her. To allow their child to lead, parents are taught to avoid questions, criticisms, and commands. Allowing the child to lead the play increases the likelihood that the child's behavior will be at its best, giving parents many opportunities to praise good behavior. During this phase, parents also are instructed in the use of differential reinforcement. Parents provide enthusiastic attention using behavioral play therapy skills. These skills come together to create the acronym, *PRIDE* (i.e., praise, reflection, imitation, description, enthusiasm). If the child becomes disruptive (e.g., playing roughly with the toys), parents are instructed to ignore the behavior. While ignoring, the parent physically turns away from the child such that there is no eye contact, physical contact, or verbal contact. Once the child returns to appropriate play, the parent is instructed to turn his or her attention back to the child enthusiastically. This phase lasts approximately 4-7 weeks or until the parent has reached the "mastery criteria" for the parenting skills (e.g., 8 labeled praises in 5 minutes).

Once CDI is completed, parents move on to Parent-Directed Interaction (PDI) during which parents are taught a safe and effective discipline procedure. During this phase, child compliance is targeted more directly. Parents are taught three skills to manage misbehavior: (1) how to give an effective instruction, (2) how to praise compliance to instructions, and (3) how to punish the child for noncompliance using a systematic time-out procedure. Parents are coached to be consistent and remain calm during discipline interactions.

## RATIONALE FOR PCIT WITH ABUSIVE FAMILIES

### Physical Abuse and Child Behavior Problems

An extensive literature exists describing the presence of behavior problems in abused children. In a review, Kolko (1992) reported that abused children have been found to have high levels of aggressive behavior compared to nonabused and neglected children and have displayed this aggressive behavior towards parents, nonparent family members, and nonfamily members. Physically abused children also have been found to display such behaviors

as poor self-control, distractibility, negative affect, and resistance to directions (Gaensbauer & Sands, 1979). Research suggests that children who display behavior problems (e.g., aggression, opposition, defiance) may be at higher risk for physical abuse due to the fact that these behaviors increase parental stress (see Ammerman, 1990, for review).

Lorber, Felton, and Reid (1984) found that mother-child dyads maintained a pattern of behavior in which they reinforced each other's aversive behaviors. In other words, mothers were likely to reinforce their child's negative behavior and children were likely to reinforce their mother's negative behavior. In addition, research indicates that abused children display higher levels of opposition and defiance when compared to nonabused, non-clinical children (e.g., Oldershaw, Walters, & Hall, 1986; Trickett & Kuczynski, 1986).

PCIT was designed specifically to reduce behavior problems in young children. Many studies have demonstrated the effectiveness of PCIT (Eisenstadt, Eyberg, McNeil, Newcomb, & Funderburk, 1993; McNeil, Eyberg, Eisenstadt, Newcomb, & Funderburk, 1991; Schuhmann, Foote, Eyberg, Boggs, & Algina, 1998). According to parent report, child behavior problems go from above normal limits at pre-treatment to within normal limits at post-treatment. In addition, parents report less personal distress as their child's disruptive behavior decreases (Schuhmann et al.).

### Relationship Enhancement

Research suggests that abusive families often engage in negative interactions (Bousha & Twentyman, 1984; Lahey, Conger, Atkeson, & Treiber, 1984). These negative interactions are characterized by the presence of negative behaviors such as whining, yelling, and criticizing. For example, Bousha and Twentyman determined that abusive mothers were more likely to engage in physically aggressive (i.e., biting, grabbing, kicking, punching, slapping, spitting on, or hitting another person) and verbally aggressive (i.e., threatening, swearing, yelling, criticizing, name calling, or screaming at another person) behaviors with their children when compared to

both neglectful and nonabusive mothers. PCIT makes an effort to correct this interaction style by teaching parents to conduct special playtime with their child, during which the goal is to decrease negative behavior (e.g., criticism, physical aggression) and increase positive behavior (e.g., reflection, praise). During CDI, the child's needs are met by a parent who is thoughtful and responsive, and the parent is exposed to a more pleasant, rewarding interaction with their child.

### Cognitive Difficulties

Literature has suggested that abusive parents may have difficulty with problem-solving and other cognitive skills (Nayak & Milner, 1998), which places them at a disadvantage for acquiring new parenting skills such as those taught in PCIT. Although these difficulties may make skill acquisition more difficult, the format of instruction used in PCIT likely will be beneficial because the material is reviewed numerous times in multiple modalities. Typically, skills are first reviewed with the parent in a didactic, or lecture, format. Next, the therapist role-plays the skills for the parent to watch. The parent is then asked to practice the skills with the therapist, while receiving feedback. Finally, with the therapist observing from behind a one-way mirror and coaching via a bug-in-the-ear device, the parent practices the skills with their child. Coaching is a critical component of PCIT and one that may help parents acquire the skills more quickly (Borrego & Urquiza, 1998). Herschell et al (2002a) discuss three reasons coaching is effective in parent training. One, coaching allows therapists to provide direct feedback to parents regarding their behavior and gives them an opportunity to correct mistakes before they become a part of the parent's repertoire. Two, parents may learn skills more quickly given the immediacy and intensity of the feedback. Three, the therapist may coach parents through situations that are unique to the family. For example, some abusive parents may have difficulty managing their anger during interactions with their children. Coaching allows the therapist to provide the parent with feedback in managing their anger in the moment. Given that abusive parents typically have difficulties with problem-solving, coaching and overlearning of parenting skills may be helpful interventions with this population.

### Appropriate Discipline

Researchers such as Gelles (1973) have suggested that, child physical abuse, in conjunction with an environment of high aversive behavior and low positive behavior, often occurs in the context of discipline. As a result of this observation, many researchers (e.g., Susman, Trickett, Iannotti, Hellenbeck, & Zahn-Waxler, 1985; Trickett & Kuczynski, 1986) have studied the role of discipline in abusive families and how it differs from nonabusive families. A study by Susman et al. compared child-rearing patterns in abusive mothers, nonabusive depressed mothers, and nonabusive, non-depressed mothers. These researchers found that abusive mothers rated high on several child rearing factors related to discipline and control techniques (i.e., authoritarian control, anxiety-induction, and guilt-induction) while they rated low on rational guidance (e.g., reasoning with the child when they misbehave). PCIT teaches parents what to do (in the context of discipline) instead of what not to do. It provides them with a discipline program that is safe and effective. In addition, PCIT teaches parents to be consistent and predictable with their discipline and to always follow-through with stated expectations and consequences

### Increasing Consistency

Research indicates that abusive parents are more controlling, more likely to use aversive forms of punishment, and are more inconsistent in the use of punishment (Oldershaw et al., 1986; Susman et al., 1985). In an observational study, Oldershaw et al. determined that abusive mothers, when compared to nonabusive mothers, were more likely to use noncontingent commands (i.e., repeated commands regardless of child compliance or noncompliance). In addition, they found that abusive mothers were equally likely to respond to child compliance with either positive reinforcement or a power-assertive behavior (i.e., threat, negative physical, humiliation, disapproval, negative demand; Oldershaw et al.).

Other researchers (Cerezo & D'Ocon, 1995; Lorber et al., 1984) have examined abusive parents' noncontingent responses to child behavior. Generally, noncontingent

responses are defined as prosocial parental responses to a child's aversive behavior or aversive parental responses to a child's prosocial behavior (Lorber et al., 1984). Lorber et al. examined the difference between abusive mothers', distressed, nonabusive mothers' (i.e., mothers of children with behavior problems), and nonproblem mothers' behaviors. Abusive mothers were found to be less "successful" (i.e., mother administering punishment and child continuing to behave aversively) in punishing their child's behavior than nonabusive mothers. Results further indicated that abusive mothers and mothers of aggressive children were equally likely to reinforce their child's aversive behavior (Lorber et al.). Similarly, Cerezo, D'Ocon, and Dolz (1996) attempted to identify which behaviors would correctly discriminate abusive mothers from nonabusive mothers and found that the best predictor was the mother's inappropriate response to her child's prosocial behavior. The second best predictor was the mother's inappropriate response to her child's aversive behavior. In this study, responses deemed inappropriate were those with inappropriate affect, content, or that lacked a response. In a similar study that examined sequential behaviors of abusive families, D'Ocon (as cited in Milner, 1994) found that indiscriminate responding by abusive mothers was likely to decrease after child deviant behavior occurred. This finding suggests that children of abusive parents are more likely to receive consistent responding from their mothers when they are engaging in deviant behaviors. In addition, Oldershaw et al. (1986) found that abusive mothers were most consistent when responding to child noncompliance. These authors suggested that children may prefer consistent parenting, and thus, may be more likely to behave inappropriately (i.e., noncomply; Oldershaw et al.; Sears, Maccoby, & Levin, 1957). In other words, in order to obtain consistent parenting, children may behave inappropriately based on the fact that their parents will respond consistently (although aversively) to their behavior.

Given that children prefer consistency in their parent's behavior and occasionally become disruptive in order to achieve it, PCIT provides children with an alternative for receiving consistent behavior from their parents. In addition, PCIT teaches parents how to be more

consistent for their child (i.e., they are taught to be predictable). For example, parents are taught that when their child is engaging in appropriate behavior, they should always respond with positive attention. Similarly, when their child is misbehaving, the behavior should be predictably ignored or disciplined with time-out, depending on the severity of the discretion.

### Coercive Cycle

Coercive parent-child interactions commonly occur in abusive families (Azar, Barnes, & Twentyman, 1988). The term coercion "refers to the contingent use of aversive behaviors of another person" (Patterson, 2002, p 25). Patterson (2002) suggests that the coercive family process begins early in a child's life, perhaps when the infant is 10 to 18 months of age. At this stage and from the moment that they are born, infants are a bundle of needs. For example, they often get irritable and cry leaving parents searching for whatever it might be that will appease them. Once the child's behavior is attended to appropriately and the aversive state (i.e., the irritable crying) is terminated, the aversive state is negatively reinforced. These negatively reinforced microsocial exchanges, occurring between child and caregiver, may become maladaptive as in the case of child physical abuse.

The model of coercive family processes helps explain the pattern of behavior (i.e., the cycle of negative parent-child interaction) often seen in physically abusive families (Patterson, 1976; Patterson & Reid, 1970). As mentioned previously, abusive parents have the tendency to respond noncontingently to their child's behavior. When their child behaves appropriately, they often do not praise or attend to the child's behavior, and when their child behaves inappropriately, they often provide too much attention to that behavior. For example, a parent may issue commands to a child in order to get the child to do a particular task. The child does not comply with the commands and begins screaming. The parent may remove the commands (i.e., give up), in which case the child no longer has to listen to the parent's commands and the child does not have to complete the task. In this situation, the child learns that escalating negative behavior can thwart parental instruction. Alternatively, the parent's behavior

may escalate along with the child's behavior (i.e., yelling) until either the child complies (reinforcing the parent's power assertive behavior), or, until an incident of child physical abuse occurs. This social learning framework suggests that abusive parents are likely to engage in these interactions due to their lack of parenting skills and their child's aversive behavior.

PCIT intervenes in the coercive cycle and teaches parents how to stop it directly. First, parents are taught to ignore annoying and obnoxious behaviors (e.g., whining, screaming) that are often used by children to get out of completing tasks. By teaching parents to ignore their child's behavior, the responsibility is on the parent to avoid being drawn into the coercive cycle. By ignoring their child's behavior, the parent becomes a brick wall and alters the coercive cycle. In addition, in PCIT parents are taught that, once a parent gives a command, the parent must follow through. Instead of giving up when their child is screaming and throwing a tantrum because they don't want to clean up their toys, the parent is taught to follow-through with a time-out procedure that ends with compliance of the clean-up command.

### CONCLUSION

Parent-Child Interaction Therapy offers abusive families an opportunity to modify their interaction style and gives parents the skills to create a safe, nurturing environment for their children. Admittedly, PCIT does not address all issues associated with child maltreatment, such as posttraumatic stress symptomology or depression, and families may need to seek additional services to address these problems. However, one of the most pressing concerns for the abusive family is terminating the physical abuse and providing parents with skills that are safer and more effective. For concerns with the parent-child dyadic interaction, PCIT provides a promising avenue for treatment. We look forward to future research exploring the efficacy of PCIT with abusive families.

### REFERENCES

- Achenbach, T. M., & Edelbrock, C. (1983). *Manual for the Child Behavior Checklist and revised child behavior profile*. Burlington, VT: Queen City Printers.
- Ammerman, R. T. (1990). Etiological models of child maltreatment: A behavioral perspective. *Behavior Modification, 14*, 230-254.
- Azar, S. T., Barnes, K. T., & Twentyman, C. T. (1988). Developmental outcomes in abused children: Consequences of parental abuse or a more general breakdown in caregiver behavior? *Behavior Therapist, 11*, 27-32.
- Borrego, J., Jr., & Urquiza, A. J. (1998). Importance of therapist use of social reinforcement with parents as a model for parent-child relationships: An example with parent-child interaction therapy. *Child and Family Behavior Therapy, 20*(4), 27-54.
- Bousha, D. M., & Twentyman, C. T. (1984). Mother-child interactional style in abuse, neglect, and control groups: Naturalistic observations in the home. *Journal of Abnormal Psychology, 93*(1), 106-114.
- Burgess, R. L., & Conger, R. D. (1978). Family interaction in abusive, neglectful, and normal families. *Child Development, 49*, 1163-1173.
- Cerezo, M. A., & D'Ocon, A. (1995). Maternal inconsistent socialization: An interactional pattern in maltreated children. *Child Abuse Review, 4*, 14-35.
- Cerezo, M. A., D'Ocon, A., & Dolz, L. (1996). Mother-child interactive patterns in abusive families versus nonabusive families: An observational study. *Child Abuse and Neglect, 20*, 573-587.
- Eisenstadt, T. H., Eyberg, S. M., McNeil, C. B., Newcomb, K., & Funderburk, B. (1993). Parent-child interaction therapy with behavior problem children: Relative effectiveness of two stages and overall treatment outcome. *Journal of Clinical Child Psychology, 22*, 42-51.
- Eyberg, S. M. (1988). Parent-child interaction therapy: Integration of traditional and behavioral concerns. *Child and Family Behavior Therapy, 10*, 33-46.
- Fantuzzo, J., Sutton-Smith, B., Atkins, M., Meyers, R., Stevenson, H., Coolahan, K., Weiss, A., & Manz, P. (1996). Community-based resilient peer treatment of withdrawn maltreated preschool children. *Journal of Clinical and Consulting Psychology, 64*, 1377-1386.
- Gaensbauer, T. J., & Sands, K. (1979). Distorted affective communication in abused/neglected infants and their potential impact on caretakers. *Journal of the American Academy of Child Psychiatry, 18*, 236-250.
- Gelles, R. J. (1973). Child abuse as psychopathology: A sociological critique and reformulation. *American Journal of Orthopsychiatry, 43*(4), 611-621.
- Hanf, C. A. (1969). *A two-stage program for modifying maternal controlling during mother-child (M-C) interaction*. Paper presented at the meeting of the Western Psychological Association, Vancouver.
- Hembree-Kigin, T. L., & McNeil, C. B. (1995). *Parent-Child Interaction Therapy*. New York: Plenum Press.
- Henggeler, S. W., Schoenwald, S. K., Borduin, C. M., Rowland, M. D., & Cunningham, P. B. (1998). *Multisystemic treatment of antisocial behavior in children and adolescents*. New York: Guilford.
- Herschell, A. D., Calzada, E. J., Eyberg, S. M., & McNeil, C. B. (2002a). Clinical issues in parent-child interaction therapy. *Cognitive and Behavioral Practice, 9*(1), 16-27.

- Herschell, A. D., Calzada, E. J., Eyberg, S. M., & McNeil, C. B. (2002b). Parent-child interaction therapy: New research directions. *Cognitive and Behavioral Practice, 9*(1), 9-16.
- Kolko, D. J. (1992). Characteristics of child victims of physical violence. *Journal of Interpersonal Violence, 7*, 244-276.
- Kolko, D. (2001a). Individual child and parent physical abuse-focused cognitive-behavioral treatment. In B. E. Saunders, L. Berliner, & R. F. Hanson, *Guidelines for the Psychosocial Treatment of Intrafamilial Child Physical and Sexual Abuse* (Final Draft Report: July 30, 2001, pp. 40-41). Charleston, SC: Authors.
- Kolko, D. (2001b). Physical abuse-informed family therapy. In B. E. Saunders, L. Berliner, & R. F. Hanson, *Guidelines for the Psychosocial Treatment of Intrafamilial Child Physical and Sexual Abuse* (Final Draft Report: July 30, 2001, pp. 81-82). Charleston, SC: Authors.
- Kolko, D. J. (2002). Child physical abuse. In J. E. B. Myers, L. Berliner, J. Briere, C. T. Hendrix, C. Jenny, & T. A. Reid (Eds.), *The APSAC handbook on child maltreatment* (2<sup>nd</sup> ed., pp. 21-54).
- Lahey, B. B., Conger, R. D., Atkeson, B. M., & Treiber, F. A. (1984). Parenting behavior and emotional status of physically abusive mothers. *Journal of Consulting and Clinical Psychology, 52*, 1062-1071.
- Lorber, R., Felton, D. K., & Reid, J. B. (1984). A social learning approach to the reduction of coercive processes in child abusive families: A molecular analysis. *Advances of Behavior Research and Therapy, 6*, 29-45.
- Lutzker, J. R., Bigelow, K. M., Doctor, R. M., Gershater, R. M., & Greene, B. F. (1998). An ecobehavioral model for the prevention and treatment of child abuse and neglect. In J. R. Lutzker (Ed.), *Handbook on child abuse research and treatment* (pp. 239-266). New York: Plenum.
- McNeil, C. B., Eyberg, S. M., Eisenstadt, T. H., Newcomb, K., & Funderburk, B. W. (1991). Parent-child interaction therapy with behavior problem children: Generalization of treatment effects to the school setting. *Journal of Clinical Child Psychology, 20*, 140-151.
- Milner, J. S. (1994). Assessing physical child abuse risk: The child abuse potential inventory. *Clinical Psychology Review, 14*, 547-583.
- Miller-Pemin, C. L., & Perrin, R. D. (1999). *Child Maltreatment: An Introduction*. Thousand Oaks: Sage Publications.
- Nayak, M. B., & Milner, J. S. (1998). Neuropsychological functioning: Comparison of mothers at high-risk and low-risk for child abuse. *Child Abuse & Neglect, 22*, 687-703.
- Oldershaw, L., Walters, G. C., & Hall, D. K. (1986). Control strategies and noncompliance in abusive mother-child dyads: An observational study. *Child Development, 57*, 722-732.
- Patterson, G. R. (1976). *Living with children: New methods for parents and teachers*. Champaign, IL: Research Press.
- Patterson, G. R. (2002). The early development of coercive family process. In J. B. Reid, G. R. Patterson, & J. Snyder (Eds.), *Antisocial behavior in children and adolescents: A developmental analysis and model for intervention*, (pp.25-44). Washington, DC: American Psychological Association.
- Patterson, G. R., & Reid, J. B. (1970). Reciprocity and coercion: Two facets of social systems. In C. Neuringer & J. D. Michael (Eds.), *Behavior modification in clinical psychology* (pp. 133-177). New York: Appleton-Century-Crofts.
- Reece, R. M. (2000). *Treatment of child abuse*. Baltimore: John Hopkins University Press.
- Saunders, B. E., Berliner, L., & Hanson, R. F. (2001). *Guidelines for the psychosocial treatment of intrafamilial child physical and sexual abuse* (Final Draft Report: July 30, 2001). Charleston, SC: Authors.
- Schuhmann, E., Foote, R., Eyberg, S. M., Boggs, S., & Algina, J. (1998). Parent-child interaction therapy: Interim report of a randomized trial with short-term maintenance. *Journal of Clinical Child Psychology, 27*, 34-45.
- Scotti, J. R., Mullen, K. B., & Hawkins, R. P. (1998). Child conduct and developmental disabilities: From theory to practice in the treatment of excess behaviors. In J. J. Plaud & G. H. Eifert (Eds.), *From behavior theory to behavior therapy* (pp. 172-202). Boston: Allyn and Bacon.
- Sears, R. R., Maccoby, E. E., & Levin, H. (1957). *Patterns of child rearing*. New York: Harper Row.
- Susman, E. J., Trickett, P. K., Iannotti, R. J., Hollenbeck, B. E., & Zahn-Waxler, C. (1985). Child-rearing patterns in depressed, abusive, and normal mothers. *American Journal of Orthopsychiatry, 55*, 237-251.
- Trickett, P. K., & Kuczynski, L. (1986). Children's misbehaviors and parental discipline strategies in abusive and nonabusive families. *Developmental Psychology, 22*, 115-123.
- Whittaker, J. K., Kinney, J. M., Tracy, E. M., & Booth, C. L. (1990). Reaching high-risk families: Intensive family preservation in human services. New York: Aldine.
- Wolfe, D. A. (1991). *Preventing physical and emotional abuse of children*. New York: Guilford.
- Wolfe, D. A. (1999). *Child abuse: Implications for child development and psychopathology* (2<sup>nd</sup> ed.). Thousand Oaks, CA: Sage.

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## THE EARLY COMMUNICATION INDICATOR (ECI) FOR INFANTS AND TODDLERS:

### WHAT IT IS, WHERE IT'S BEEN, AND WHERE IT NEEDS TO GO

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Measuring children's fluency learning a new skill is a component of applied behavior analysis of long standing. In special and general education programs in elementary schools today, fluency measurement can be seen as *Curriculum-Based Measurement* (CBM), and in preschool and kindergarten programs as *Dynamic Indicators of Basic Early Literacy Skill* (DIBELS). Each of these forms of fluency measurement provides a valid and sensitive means of measuring the effectiveness of instructional interventions in reading (CBM: Shinn, 1989) or emerging literacy skills like phonemic segmentation (DIBELS: Kaminski & Good, 1996) that are precursors to reading. In this paper, we discuss an effort to extend this approach to infants and toddlers, children birth to three years of age. Progress developing an early communication fluency indicator is described, and an example of where research and practice needs to go to advance this work is provided. Implications for further research and practice are discussed.

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A concern exists that early interventionists lack adequate means of monitoring the individual progress of young children particularly infants and toddlers, children birth to three years old (e.g., Greenwood, 2002; McConnell, 2000). Needed for example, are better measures of identifying children with delays developing communication skills and of directly informing early intervention intended to support learning communication skills (McConnell, Priest, Davis, & McEvoy, 2002). Communication is a socially valid general outcome and indicators of increased proficiency in communicative skill are needed (e.g., Priest et al., in press). Early interventionists, childcare practitioners, and home visitors often rely on specialists for assessment of early communication because most lack the training and skills to administer and interpret the standardized tests and ratings typically used for this purpose. While these measures may identify children with delays relative to typically developing children, findings from tests and ratings too often have little direct utility for early intervention (Fuchs & Deno, 1991; Fuchs & Fuchs, 1986). One reason is that the conceptual frameworks of most early measures reflect person variables and do not connect with the "alterable" interaction and ecological variables under the control of early interventionists. Another reason is that these measures may not be administered frequently

enough, for example, no sooner than 6-months, to be useful in planning or modifying an intervention. Early interventionists need sensitive, reliable, measures specifically designed for measuring early intervention results.

Luze et al. (2001) recently reported an effort to develop an expressive communication fluency indicator (ECI) for use by early interventionists. Like CBM and DIBELS measures, evidence of the measure's sensitivity to growth over time and age, and its technical adequacy in terms of criterion validity and reliability are reported. They also described a case example of how the measure might be used to monitor communication proficiency and to monitor the effects of intervention in a childcare center organized around milieu teaching (Greenwood, Luze, & Carta, 2002).

Briefly, Luze et al. (2001) reported that the ECI was sensitive to changes in specific prelinguistic (i.e., gestures, vocalizations) and spoken language skills (i.e., single words, multiple words) measured monthly for a sample of 50 children. The ECI was sensitive to differences in age, with older children in the third year of life demonstrating more fluent and proficient communication skills than children in their second year, compared to the first year of life. The ECI was significantly correlated with a standardized measure of early communication,

the Preschool Language Scale - 3 (Zimmerman, Steiner, & Pond, 1992), and a parent rating measure indicating the ECI measures communication skills (see Luze et al.). They also reported that the ECI met reasonable standards for test-retest, alternate forms reliability and interobserver agreement. However, the treatment utility of the ECI with early interventionists using the measure independently of the developers has yet to be demonstrated.

The purpose of this report was to provide an example of the ECI's sensitivity to an intervention developed and implemented by an early interventionist. Like CBM or DIBELS, we sought to use the ECI intermittently (monthly) to screen all children's progress and for children with identified concerns, increase measurement to weekly to measure effects of intervention. Because of the relative absence of knowledge about the ECI's sensitivity to any treatment, a simple intervention provided just prior to the ECI assessment in a weekly home visit was employed as an initial test of treatment sensitivity. Thus, the ECI's sensitivity to a weekly high-active, warm-up activity provided by a home visitor was examined.

## METHOD

### Overview

A trainer-of-trainers model was used to teach a number of early interventionists in a regional cooperative education unit in the Midwestern United States to use the ECI over two years. The area education agency used a problem-solving model based on continuous progress monitoring as its basis for identification and provision of early childhood special education services (Deno, 2002). In the first year, a group of four education unit staff members meet with the developers of the ECI in a two-day meeting where they learned its rationale and basic procedures. They viewed videotapes of its administration and scoring, and observed administrations taking place in local childcare centers. They learned the definitions of communication skill elements and recorded them from videotapes of children to high standards of interobserver agreement.

After making preliminary preparations among their local staff, some several months

later, the developers made several presentations to a larger group of potential users of the ECI at the regional area agency, and provided feedback on their preparations to implement the ECI. The original group then trained their agency colleagues to the ECI using the same procedures. Implementation in the second year occurred in a year-long pilot project designed to evaluate feasibility as a progress monitoring and problem solving tool for infants and toddlers. During this period, the ECI was used to assess progress of 30-35 children. The developers provided feedback and individual child progress data was exchanged and evaluated.

### Participants/Setting

A young girl and an early interventionist participated in this case study. The girl was 26 months of age at the beginning of the study and was receiving early intervention services under an Individual Family Service Plan (IFSP). She had been previously described as having a developmental delay in expressive communication based on standardized testing. She was receiving early intervention services in a childcare center and also received intervention visits at home at a frequency of 1 per week for 45 minutes. The early interventionist was a school psychologist and early childhood specialist trained to use the ECI by the original developers as previously described. The study took place within the child's home. ECI assessment and intervention was provided by the early interventionist.

### Procedures

The child's communication was monitored using the ECI on a weekly basis over a period of 20 weeks, January-May, 2000. Weekly monitoring also enabled a look at monthly data at every fourth week. A simple AB design was used. The A condition was a baseline condition that occurred in the absence of a specific "warm-up" intervention, condition B. The B condition occurred in the home just prior to administration of the ECI. Condition B was a gross-motor, high-active, warm-up activity designed to accomplish two objectives. One was to promote the child's verbal communication in the context of engaging in the warm-up, the other was to improve the child's muscle tone.



## Measurement

The ECI was conducted as described by Luze et al. (2001). Each measurement involved (a) setting up a low-structure play task shared by a familiar adult, in this case the early interventionist, and the child using either the Fisher-Price™ Barn or House as alternate-session toy forms, (b) playing with the child for six minutes, and (c) recording the frequency of occurrence of four communication skills on a paper recording form designed for this purpose

(see Table 1). The recording form was a simple matrix of cells defined by six 1-minute rows by four communication behaviors, gestures through multiple words, and a total column. Behavior occurrences were tallied in the appropriate cell by minute of observation and type of behavior. The adult's role in the ECI was to set up and initiate the play session, and thereafter, to support the child's communication by following their lead within ongoing interactive play (Luze et al.).

**Table 1. DEFINITIONS OF EARLY COMMUNICATION KEY SKILL ELEMENTS**

| <b>Element</b>       | <b>Definition</b>  |
|----------------------|--|
| Gesture              | Any physical movement made by the child in an attempt to communicate with the partner (e.g., showing, giving an object or toy, pushing away or rejecting a toy, reaching for a toy, pointing to a person or object, nodding or shaking his/her head to indicate 'yes' or 'no') |
| Vocalization         | Non-word utterance voiced by the child to a partner (laughing, making animal sounds, sounds that appear to be unintelligible words).   |
| Single Word          | A one word intelligible utterance used in isolation (not part of a longer intelligible utterance).   |
| Multi-Word Utterance | Intelligible utterance of two or more words understood by the observer.  |

Following the 6-minute administration, the frequencies of occurrence were transferred to the child's MS-Excel spreadsheet running on a notebook computer and scores calculated in terms of rate per minute for each key skill element (see Luze et al., 2001). The spreadsheet was preprogrammed to allow entry of the frequency of gestures, vocalizations, single words, and multiple words. Once data was entered, graphs were automatically plotted and updated to reflect current trends. The *monthly data display* provided an analysis of the individual child's level and trend in total early communication compared to the sample mean and  $\pm 1$  SD trajectories as reported by Luze et al. The *weekly data display* illustrated the trends in the rates of each of the four specific skills (see Table 1) and provided a means of tracking intervention changes and dates.

To calculate a total early communication composite score, the separate skill frequencies were combined. In order to weight the frequencies in favor of single words and multiple words in the calculation, each instance of single word counted as 2 and multiple word

as 3. Gestures and vocalizations each counted as 1 per occurrence. According to Luze et al. (2001), weighting of the total communication indicator was necessary to reflect growth in communication proficiency by offsetting declines in gestures and vocalization that occur as children increasing learn to use spoken rather than prelinguistic communication skills.

## RESULTS

*Did this child have a communication problem on the ECI and what was the effect of intervention on communication proficiency based on monthly data?*

In terms of mean level and trend, it was clear from the first three months of data that this child was not highly communicative in absolute terms and in comparison to mean levels of children this same age in the original Luze et al. sample. Although, based on 3 monthly data points, the slope indicated that that child was apparently growing in communication proficiency (see Figure 1). The effect of intervention, as evidenced by the last two

monthly data points, was to substantially increase total weighted communication

compared to baseline and relative to the mean of the comparison sample.

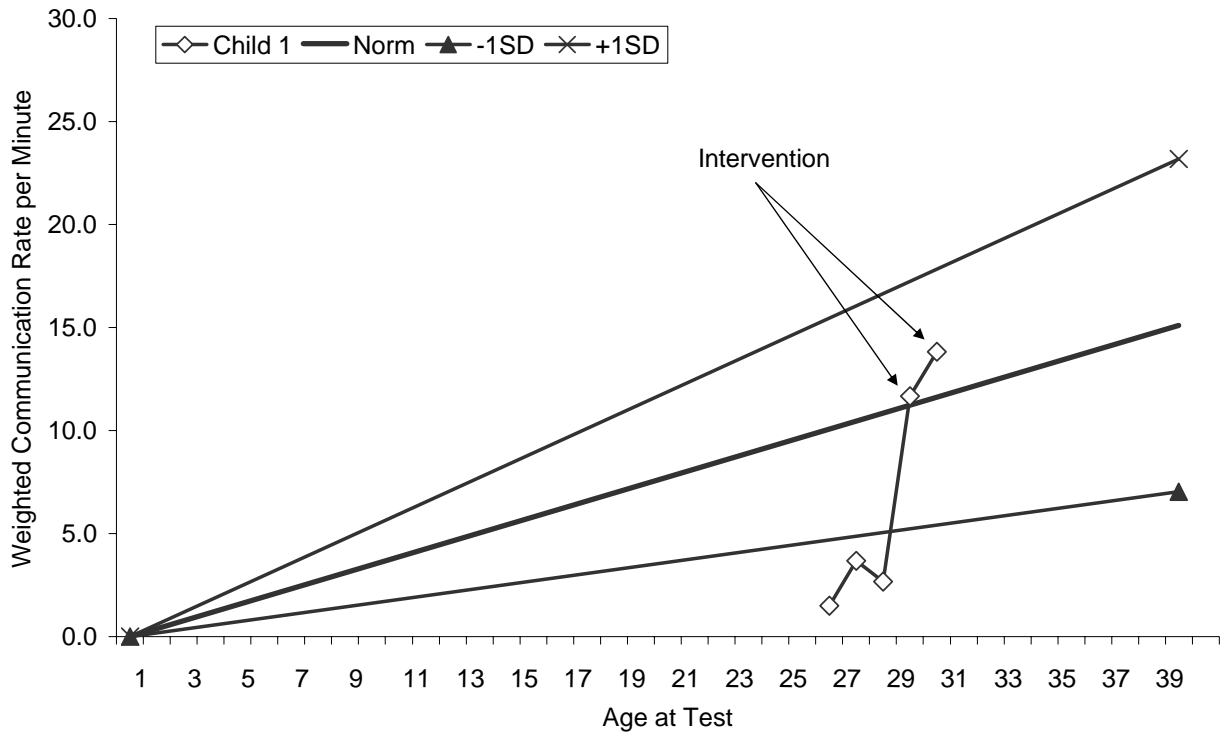
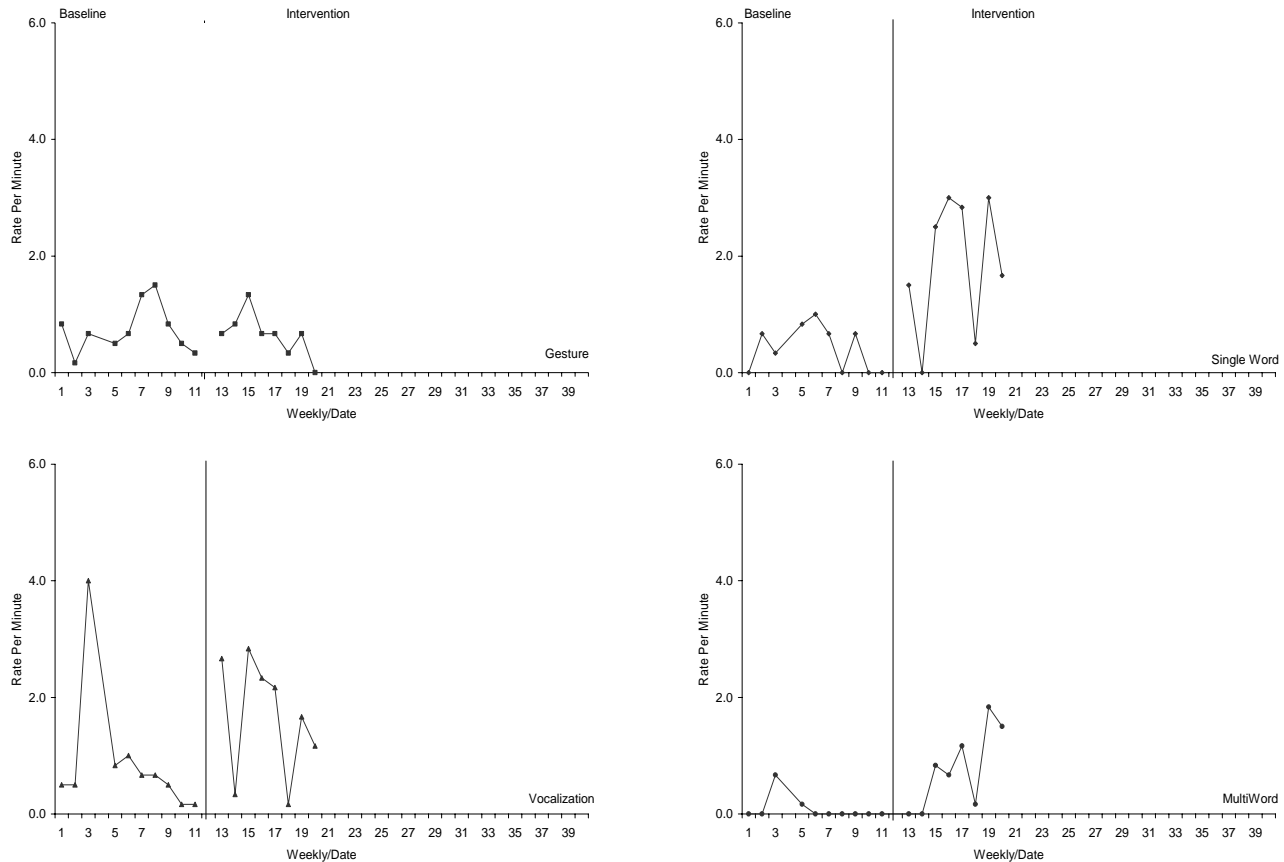


Figure 1. Child’s total weighted communication rate over age at testing before and during intervention plotted against a normative linear trajectory defined by the mean and -1 and +1 a standard deviation confidence range (taken from Luze et al., 2001).

*What skill elements changed in association with the “Warm-Up” Intervention based on weekly data?*

The weekly trends in communication skills are illustrated in Figure 2. Baseline data across 11 weeks indicated that this child communicated primarily using gestures, vocalization, and single words prior to the intervention and trends of each of these skills were level or declining. With the onset of the intervention, three of the four skills (i.e., vocalization, single, and multiple word utterances), appeared most changed in level

compared to baseline. And, during intervention, not only were communicative behaviors occurring more frequently, compared to baseline, but an increasing number of multiword utterances were used. In terms of growth over time during intervention, trends indicated increases in single and multiple word communications, with decline in vocalization. Alternately, the intervention appeared to have had relatively little, if not a decreasing effect, on the rate of gestures.



**Figure 2.** Child's communication weekly rates of gestures (upper left panel), vocalizations (lower left panel), single words (upper right panel), and multiple word utterances (lower right panel).

## DISCUSSION

In an AB case study involving one child, the sensitivity of the ECI was explored. Initial baseline level and trend in monthly total weighted communication indicated performance well below expectation at this age. More frequently assessed weekly data indicated low level use of all communicative behaviors, about one occurrence per minute per behavior, during baseline and little growth in skills over time. In comparison to these relatively low and stable baseline levels, the onset of the "warm-up" intervention was associated with visually apparent differences in both weighted total communication collected monthly (Figure 1) and in terms of three of the four key skill elements (Figure 2). Perhaps most importantly, the intervention increased the child's single and multiple word use fluency and thus, overall communication proficiency. These changes combined to produce levels of communication

as large as those of age-mates in the original sample reported by Luze et al. (2001).

While these data provided an encouraging initial demonstration of the ECI's sensitivity, they remain limited, however. Because of the AB design, a functional demonstration of the effects of intervention on communication fluency remains to be demonstrated in future research. Also, to establish the generality of the ECI's sensitive to treatment and treatment validity, both direct and systematic replications of its use to monitor intervention results will be required.

These data also prompt some interesting future intervention research questions that may be addressed using the ECI. One was the relatively large effect of the rather simple intervention. Effects were surprisingly large, closing the gap with peers for a child with an

identified communication delay. Effects this large may suggest that the child had previously learned some of these skills but systematically chose not to display them in the absence of the intervention. This was evident in baseline were this child did display some rate of all four behaviors, and therefore, perhaps able to accelerate responding under the appropriate contingencies of reinforcement. This stands in contrast to a much young child, having not yet learned any of these skills as evidenced by no base rate of some or most of these behaviors (e.g., single words and multiple words).

A second was the nature of the intervention itself and whether or not it would operate similarly if given prior to rather than after the ECI. For example, one may hypothesize effects being a function of "behavioral momentum," produced when presented prior to the ECI with effects spilling over into the ECI measurement. Would one find similar communication effects if the intervention followed the ECI, representing a cumulative generalization effect from prior week's exposures? These and other interesting communication intervention related questions remain to be addressed and appear possible using the ECI where prior work has demonstrated its sensitivity, and technical adequacy. Current and future work remains is needed next to provide pervasive evidence of its sensitivity to intervention results and practical utility when used by early interventionists across a range of children, ages, disabilities, and interventions.

## REFERENCES

- Deno, S. L. (2002). Problem solving as "best practice." In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology IV* (pp. 37-56). Washington, DC: National Association of School Psychology.
- Fuchs, L. S., & Deno, S. L. (1991). Paradigmatic distinctions between instructionally relevant measurement models. *Exceptional Children, 57*, 488-500.
- Fuchs, L. S., & Fuchs, D. (1986). Linking assessment to instructional intervention: An overview. *School Psychology Review, 15*, 318-323.
- Greenwood, C. R. (2002). *Development of a general outcome measure of growth in movement for infants and toddlers*. Paper presented at the Conference on Research in Early Intervention, San Diego, CA.
- Greenwood, C. R., Luze, G. J., & Carta, J. J. (2002). Assessment of intervention results with infants and toddlers. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology IV* (Vol. 2, pp. 1219-1230). Washington DC: National Association of School Psychology.
- Kaminski, R. A., & Good, R. H. (1996). Toward a technology for assessing basic early literacy skills. *School Psychology Review, 25*, 215-227.
- Luze, G. J., Linebarger, D. L., Greenwood, C. R., Carta, J. J., Walker, D., Leitschuh, C., & Atwater, J. B. (2001). Developing a general outcome measure of growth in expressive communication of infants and toddlers. *School Psychology Review, 30*(3), 383-406.
- McConnell, S. R. (2000). Assessment in early intervention and early childhood special education: Building on the past to project into the future. *Topics in Early Childhood Special Education, 20*, 43-48.
- McConnell, S. R., Priest, J. S., Davis, S. D., & McEvoy, M. A. (2002). Best practices in measuring growth and development for preschool children. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology IV*. (Vol. 2, pp. 1219-1230). Washington DC: National Association of School Psychology.
- Priest, J. S., McConnell, S. R., Walker, D., Carta, J. J., Kaminski, R. A., McEvoy, M. A., Good, R. H., III, Greenwood, C. R., & Shinn, M. R. (in press). General growth outcomes for children between birth and age eight: Where do we want young children to go today and tomorrow? *Journal of Early Intervention*.
- Shinn, M. R. (1989). *Curriculum-based measurement: Assessing special children*. New York: Guilford.
- Zimmerman, I. L., Steiner, V. G., & Pond, R. V. (1992). *Preschool language scale - 3*. San Antonio, TX: The Psychological Corporation.

## THE FAMILY SAFETY/APPLIED BEHAVIOR ANALYSIS INITIATIVE: AN INTRODUCTION AND OVERVIEW

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The Family Safety/Applied Behavior Analysis Initiative at the University of Florida is part of a statewide project designed to serve foster caregivers and foster children under the care of the Florida Department of Children and Families. Currently, our primary method for addressing child problem behavior involves parent training, in the form of classroom instruction, and in-home services. However, in order to identify the most effective and efficient methods for disseminating information to foster parents, we will be conducting research that is specifically designed to evaluate the current caregiver-training program. In this paper, we review methodological issues in assessing and treating child behavior problems that have necessitated a departure from methodologies used in more typical behavior analysis service areas. Specific areas that may require alternative methodologies include the assessment and treatment of low frequency, high intensity, and covert behavior as well as innovative approaches to reinforcer identification, the assessment of treatment integrity, and the development of manageable interventions. Finally, areas for future research that address academic deficits and the efficacy of medications as treatment are discussed.

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The Florida Department of Children and Families (DCF) provides services for a variety of populations in need of assistance. Currently within the DCF, there are five subdivisions: a) Family Safety, b) Developmental Services, c) Adult Services, d) Alcohol, Drug Abuse, and Mental Health, and e) Economic Self-Sufficiency. Of the five major subdivisions, behavior analytic methodology has had its greatest impact in the area of Developmental Services. The Developmental Services subdivision is designed to provide services for individuals with developmental disabilities including residential support, therapeutic services, and job training. In part, as a result of the success of behavior analysis within Developmental Services, the DCF has extended the role of behavior analysis to include the subdivision of Family Safety.

The Family Safety subdivision specializes in the treatment of children who have been abused (physically or sexually), neglected, or both. Prior to the development of the Family Safety-Applied Behavior Analysis (ABA) Initiative, abused and neglected children in the state of Florida received behavioral services from practitioners trained from a standard mental health perspective. That is, children were exposed to psychological testing, psychotherapy, psychoanalysis, and hypnotherapy (to name only a few) as treatment for severe problem behavior. Although those procedures are still in use today, the effectiveness has been called into question (Weisz, Donenberg, Han, & Kauneckis, 1995).

In contrast, the ABA Initiative is designed to teach current and potential foster parents behavioral principles that have been empirically demonstrated, in order to reduce or eliminate problematic behavior and increase appropriate behavior of abused and neglected children, and to enhance parent-child relationships.

One of the greatest challenges to the child protection system is the placement and maintenance of a substitute home environment for child victims of abuse or neglect (Friedman, Baron, Lardieri, & Quick, 1982; Kutash & Rivera, 1995; Webster, Barth, & Needell, 2000). For example, Webster et al. recently evaluated *placement instability*, defined as three or more moves after the first year in care, and found that 52% of children placed in non-relative care experienced three or more placement disruptions within an 8-year period. High levels of placement instability also may be correlated with decreased academic performance and increased levels of criminal behavior, delinquency, and drug abuse in adulthood. Windom (2000) reported that 31.2% of children who are abused or neglected are arrested as juveniles as compared to 19% of their peers.

The sheer number of children in care in the United States makes the task of maintaining stable placements difficult. Data collected by the Adoption and Foster Care Analysis and Reporting System have shown that as of September of 1999, there were approximately 568,000 children in foster care in the United States. The costs associated with cases of abuse

and neglect is also astounding. Data recently released by Prevent Child Abuse America© report that the estimated *annual* cost of both direct (i.e., those associated with the immediate needs of abused or neglected children) and indirect (i.e., those associated with the long-term effects of child abuse and neglect) sources of care is approximately \$118,461,229,831 in the United States. Within the state of Florida alone, 29,021 children entered foster care during the 1999-2000 fiscal year (Brown, Yampolskaya, & Trinidad, 2000).

Numerous studies have reported that foster children are much more likely to exhibit problem behavior compared to the general school-aged population. Researchers often gauge levels of problem behavior via parent report. For example, when the Child Behavior Checklist was given to foster parents, reports of problem behavior displayed by foster children ranged from 35% (Dubowitz, Zuravin, Starr, Feigelman, & Harrington, 1993), to 40% (Clausen, Landsverk, Ganger, Chadwick, & Litwinik, 1998), and 46% (McIntyre & Keesler, 1986), while the percentage of children displaying significant levels of problem behavior in the normative population is 10% (Achenback & Edelbrock, 1983).

A previously mentioned effect of problem behavior displayed by foster children is the heightened probability of placement disruption. One review estimates that approximately one-third of foster children are moved from foster homes 3 or more times due to behavior problems (Cooper, Peterson, & Meier, 1987). Other researchers have suggested that behavior problems are the major cause of placement breakdown (Aldgate & Hawley, 1986; Berridge & Cleaver, 1987; Colton, Aldgate, & Heather, 1990). It is important to note that two components of the indirect costs incorporated in the figures reported above include special education costs, and mental health and health care costs; however, two less frequently studied areas related to problem behavior are the academic deficits of foster children and the medications of foster children for behavioral reasons that directly contribute to the cost of child abuse and neglect.

Currently, the focus of our new program involves the assessment and treatment of child

problem behavior; however, we are developing procedures to evaluate academic deficiencies and medication issues in foster care. In order to address the needs of as many foster parents and children as possible, Michael Stoutimore and his colleagues with the Florida DCF, developed a 10-week, competency-based, training curriculum derived primarily from the book, *The Power of Positive Parenting*, (Latham, 2000). A more detailed description of the curriculum will be discussed below. Briefly, however, the curriculum consists of 10 3-hr classroom sessions and a (minimum) 10-week follow-up period. Caregivers are taught nine “tools” and given the opportunity to practice each of the tools during class and scheduled home visits. The term *tool* refers to the basic procedure, or combination of procedures, each caregiver is taught (e.g., differential reinforcement, time-out).

One of the primary assumptions driving the development of the training curriculum was the notion that problem behavior exhibited by children in foster care would be best treated by teaching foster caregivers to arrange environments that increase appropriate behavior and decrease inappropriate behavior. A pilot project was conducted in one of Florida’s 15 districts (District 6). The results suggested that the curriculum was successful in decreasing the costs associated with placement disruptions (i.e., removal from one home to another) as well as restrictive placements (i.e., a large percentage of the children were placed in less restrictive settings).

Therefore, based on the effectiveness of the pilot project, with the goal of reducing placement instability at its core, the Family Safety subdivision of the Florida DCF recently allocated funding for 60 behavior analyst positions. The University of South Florida received funding for 24 behavior analyst positions, independently contracted agencies (e.g., Family Continuity, Behavior Analysis Inc.) received funding for 12 positions, and the University of Florida received funding for 24 positions. Currently, the University of Florida provides behavior analysis services to foster caregivers and foster children in 6 of Florida’s 15 districts (in the northern region of the state). During the fiscal year beginning July of 2001, and ending June of 2002, the University of

Florida provided behavior analysis services to 504 of Florida's caregivers, and 108 of Florida's foster children will receive intensive behavioral assessments. These projections do not include additional services common to our program (see below).

We are currently developing several lines of research that may expand the role of behavior analysis in foster care, as it exists in the state of Florida. In what follows, we will discuss five general areas for research in development: a) parent training, b) program evaluations, c) practical concerns in expanding the role of behavior analysis to dynamic systems, d) academic deficits, and e) potential overmedication experienced by foster children.

### Parent Training

A recent study found that nearly one third of the foster children living with surveyed foster parents in Florida were reported to have severe behavioral and emotional problems (Feaver et al., 2001). Not surprisingly, approximately 63% of the foster parents surveyed reported a need for additional parent training. Specifically, foster parents identified an interest in behavior management. Indeed, the *Parenting Tools for Positive Behavior Change* course teaches parents behavior analysis principles and procedures.

### The Current Parent Training Program

The current parent-training program consists of two major components: the parent training curriculum and on-site visits by behavior analysts. The *Parenting Tools for Positive Behavior Change* curriculum is a 30-hour course taught over a 10-week period. Parents are introduced to basic behavioral principles and then are taught a series of "tools" designed to address common situations and problem behavior. Each tool consists of a series of required steps. For example, in the "Give Positive Consequences" tool, parents are instructed to provide descriptive praise following an instance of appropriate behavior. In addition, parents are required to get physically near the child and touch the child appropriately (e.g., a pat on the back, a high-five). More detailed steps are required for more complicated tools, such as the "Setting

Expectations" tool, in which parents discuss with the child expected behavior and resulting consequences. Throughout the course, parents participate in role-plays in which behavior analysts play the part of the child and the parents respond to the inappropriate and appropriate behavior of the child. Role-plays are set up to address specific situations that call for the use of a particular tool. These role-plays are conducted prior to training and again following training.

Another major component of the program is weekly home visits conducted by behavior analysts. During these home visits, parents practice the techniques learned in class and are assisted with any specific behavior problems displayed by foster children living in their homes. At the completion of the 30-hour course, behavior analysts continue to visit the homes for a minimum of 10 weeks, to observe parent-child interactions. Specifically, the parents are expected to perform with 100% accuracy each tool in a naturalistic situation involving the foster children. Competency training is achieved upon having demonstrated each tool twice with 100% accuracy.

Behavior analysts also conduct on-site visits for parents and children who have not participated in the classroom training. On occasion, behavior analysts are asked to provide services to foster children who display particularly high levels of problem behavior resulting in an increased risk of placement disruptions. These in-home services may incorporate both material from the 30-hour course and individualized behavioral interventions.

### Evaluating Program Effectiveness

To date, program effectiveness has been measured in two ways. First, improvements in parenting skills are identified by comparing scores on the role-plays conducted prior to training to those conducted following training. Measures of parent behavior primarily have focused on their demonstration of specific tools or techniques and improvements in child behavior have been based on parent report (e.g., home data collection). However, it is unclear whether overall parent-child interactions improve following the completion of the course. Descriptive data collected on parent-child

interactions across a variety of natural situations before, during, and after classroom and competency training, may provide a broader analysis of parenting skills and child behavior. Data may be collected on parent responses, such as attention, access to tangibles, and provision of escape from work, and child behavior including appropriate and inappropriate behavior, using procedures similar to those described by Vollmer, Borrero, Wright, Van Camp, and Lalli (2001). For example, the conditional probability of receiving attention (i.e., following problem and appropriate behavior) would be compared to the background probability (i.e., following random points of time within the session) to determine if the probability of receiving attention is increased, decreased, or unaffected by the occurrence of various behavior. Improvements in parenting skills could be defined as increases in the level of positive reinforcement provided contingent on appropriate behavior and a decrease in reinforcement made contingent on inappropriate behavior. As positive reinforcement for appropriate behavior increases, corresponding increases in the child's appropriate behavior would be expected (Borrero & Vollmer, 2002). Such analyses may help behavior analysts determine whether accurate implementation of the parenting tools correspond with overall improvements in parent-child interactions and improvements in child behavior.

When a parent has demonstrated competency by using all tools with perfect accuracy in the home, the second and more important measure of curriculum effectiveness can be evaluated: effects of the curriculum on the frequency of placement disruptions. As mentioned above, the primary goal of the ABA Initiative is to decrease placement disruptions. As such, the rate of behaviorally based placement disruptions in foster homes before and after competency training has been emphasized as the foremost measure of curriculum effectiveness. Basically, the number of behaviorally based placement disruptions (i.e., foster parents having children removed due to behavior problems) is divided by the time (in years or months) between when the foster parent was licensed and when the parent was competency trained. This measure is taken every three months following competency training to produce a post-competency

comparison of behaviorally based disruption rates.

Additional measures of placement disruptions may also be valuable in evaluating curriculum effectiveness. First, it may be important to evaluate the median length of stay. Brown et al. (2000) have reported that the median length of stay for foster children in Florida is 11.2 months. The data reported by Brown et al. should be interpreted with caution because: a) these data include placement disruptions without respect to the reason for the disruption (i.e., behaviorally based or otherwise), and b) foster children referred to our program are among those with the highest rates of placement disruptions (i.e., with lengths of stay far less than 11.2 months). For example, foster children removed due to problem behavior prior to competency training may have stayed in a foster home for only 2 weeks. After competency training, foster children removed from the same home may have stays of over 2 months. Although the number of behaviorally based placement disruptions for that foster parent may not decrease, an increase in the length of stay might indicate an improvement in the foster parent's ability to manage inappropriate child behavior. Second, it may be important to track the placement disruptions of individual children. Potentially, children known to have high levels of problem behavior and frequent placement disruptions may maintain longer placements with competency trained parents than with non competency trained parents. Length of stays in each home could be tracked, competency trained homes would be differentiated from non-competency trained homes and, potentially, patterns may emerge to support the effectiveness of the parent training curriculum. Likewise, length of placements for different children in a particular competency-trained home could also be tracked. Visual analyses of plotted data could indicate whether fewer placement disruptions occurred following competency training, or whether lengths of placements have increased following competency training. Additionally, such analyses could indicate if and when the effects of the training have decreased, thereby identifying the need for repeated training or "booster" sessions (Eyberg, Edwards, Boggs, & Foote, 1998; Marcus, Swanson, & Vollmer, 2001).



Finally, a large-scale analysis of program effectiveness should not be limited to those parents who have achieved competency. Some foster parents who have completed classroom training but who have not achieved competency may also show a decrease in behaviorally based placement disruptions. In addition, foster parents who are unable to attend classes may sometimes receive services from a behavior analyst in response to the behavior problems displayed by a particular child. These parents receive training in general behavior management skills and specific training on interventions to address that child's behavior. These skills could also influence future placements in the absence of classroom training or competency training.

### **Component Analyses of Various Parent Training Components**

Parent training programs may include various classroom and in-home components. It is unclear whether classroom training, in-home services, or both are necessary to produce optimal improvements in parenting skills. Parametric analyses evaluating both classroom training, in-home services, and combinations of these two components along varying dimensions (e.g., number of in-home visits, number of classes taught) must be conducted in order to identify the most cost effective method by which parents are taught new parenting skills.

Analyses of individual classroom training components also should be conducted. Behavioral parent training could include an assortment of behavior analysis information and techniques. For example, training may emphasize the use of certain techniques to address particular behavioral issues, whereas other types of training may emphasize knowledge of behavioral principles. Decisions regarding whether to teach only positive reinforcement to the exclusion of response cost, whether to teach behavioral contracts, token economies, self-management, etc. will to some degree be determined by the needs of the parents; however, such decisions should also depend on empirical evaluations of the effectiveness of the training with regard to producing the desired changes in parenting behavior.

Finally, the method by which information is disseminated should also be evaluated. Generally, classroom training may include lectures, demonstrations, class activities, practice, feedback, role-plays and homework. Research to determine the most effective and efficient techniques to train parenting skills should be conducted.

### **Alternative Curricula**

In the current curriculum, a series of tools or techniques are taught with respect to specific situations. For example, when a child engages in some minor inappropriate behavior, the "Ignore Junk" tool should be implemented. Some principles of behavior are discussed but not emphasized in class. The basic premise of the course is that parents will be equipped with a set of tools to address the most typical types of problematic situations. However, the generalization of these tools has not yet been demonstrated and is, therefore, an open question for research. One potential limitation of teaching certain techniques for specific situations is that new parenting skills may not generalize to new situations.

Another type of parent training curriculum could focus more on a general understanding of the principles of behavior. For example, parents could be taught that behavior is a product of the environment (primarily previous contact with reinforcers and punishers). In any given situation, children may engage in a variety of behavior; generally, the behavior that is most likely to occur is that which will maximize reinforcement and minimize punishment. Parents would then be taught ways in which they can alter the environment to increase the probability of appropriate behavior. Parents could be instructed in the use of (functional) extinction, differential reinforcement, noncontingent reinforcement (NCR), response cost, etc. Parents could also be taught how different factors might influence choice (e.g., effort, delay, and quality of the reinforcer). Rather than implementing a particular technique to address a specific problem, parents could rely on general principles of behavior to assist them in developing individualized interventions for a variety of situations. The outcome of various approaches to teaching behavioral principles remains open for empirical analyses.

## DEVELOPING AND ASSESSING BEHAVIORAL INTERVENTIONS FOR FOSTER CHILDREN

### Reinforcer Assessments.

The identification of reinforcers is one of the most important components to effective treatment development (Kazdin, 2001). Kutash and Rivera (1995) noted that a key feature of treatment programs for children in care was the use of positive reinforcement procedures. However, the methods used to identify reinforcers have not been clearly elucidated.

Within the area of developmental disabilities, behavior analysts have developed a number of methods to assess preference among stimuli (DeLeon & Iwata, 1996; Fisher et al., 1992; Pace, Ivancic, Edwards, Iwata, & Page, 1985). Generally, a complete reinforcer assessment is made up of two phases: a) identification of preferred stimuli, and b) determination of a reinforcement effect (Ivancic, 2000). For example, after identifying a preferred activity via one of many available preference assessment methods, the next step might be to demonstrate that the activity will result in an increase in some other response, such as table tasks (e.g., Roane, Vollmer, Ringdahl, & Marcus, 1998).

Fisher et al. (1992) presented individuals with a choice between two concurrently available stimuli. Sixteen stimuli were presented in pairs, and an approach response produced brief access (5 s) to that stimulus. Next, the authors evaluated the reinforcing efficacy of stimuli that were identified as highly preferred (i.e., selected during 80% of trials) compared to stimuli identified as low preferred (i.e., selected during less than 60% of trials). Results suggested that stimuli identified as highly preferred were effective in increasing an arbitrary response. The method described by Fisher et al. has become a standard by which to compare novel reinforcer assessment procedures.

Roane et al. (1998) provided an array of stimuli to 20 individuals with developmental disabilities and measured time allocated to manipulation of each item during 5-min observations. The authors termed this method of assessment, the *free-operant preference*

*assessment*. Next, the authors presented stimuli identified as highly preferred via the free operant preference assessment contingent on some arbitrary response and observed increases in the levels operant responding. Because of its brevity, the free operant preference assessment may be an attractive alternative to other more involved assessments.

The majority of behavior analytic research on reinforcer assessments has been conducted among individuals with developmental disabilities. Often the results of a reinforcer assessment are used to develop interventions designed to increase the frequency of appropriate behavior and decrease the frequency of inappropriate behavior. However, the effectiveness of these methods for children in foster care has not been systematically evaluated. Therefore, future research may be designed to conduct systematic and direct replications of procedures known to be effective for individuals with developmental disabilities. For example, behavior analysts might conduct free operant preference assessments as a component of weekly home visits in order to identify stimuli that may be delivered contingent on appropriate behavior (e.g., completion of household chores). As an alternative, future research may assess the utility of training caregivers to conduct reinforcer assessments. From a training standpoint, reinforcer assessment methodology could be easily incorporated into existing caregiver training curricula. One advantage of training caregivers to conduct reinforcer assessments is that they would become familiar with an array of preferred activities that may be incorporated into intervention packages. A second advantage of training caregivers to conduct reinforcer assessments is that parents could assess reinforcer efficacy on a more frequent basis (e.g., daily).

As noted above, once preferred stimuli have been identified, a reinforcement effect is typically demonstrated by way of some arbitrary response. Piazza, Fisher, Hagopian, Bowman, and Toole (1996) evaluated the reinforcing efficacy of preferred stimuli using in-chair or in-seat as the operant, whereas DeLeon and Iwata (1996) used microswitch pressing and block placing as operants for two participants. For the purposes of these studies, the behavior selected

was not a socially relevant response per se. However, few studies have evaluated increases in socially significant behavior (e.g., personal hygiene, academic behavior) based on the findings of a reinforcer assessment. By expanding the scope of reinforcer assessment methods to new populations and socially significant behavior, behavior analysts may identify potential limitations and spur new research on the topic. In addition, behavior analysts may be more successful in assisting foster caregivers in developing effective treatments that ultimately reduce unnecessary placement disruptions.

In work with developmentally “typical” foster children, there may be a need to focus more on activity preference (e.g., a trip to the movies) and token reinforcement, as opposed to discrete stimulus presentations characteristic of developmental disabilities research. In a series of studies, Phillips and colleagues (Phillips, 1968; Phillips, Phillips, Fixen, & Wolf, 1971) established token economies for pre-delinquent youths. Collectively, the results suggested that contingent privileges were effective in increasing a variety of behavior (e.g., room cleaning, mealtime promptness). At the time, the reinforcer assessment literature was in its early development. Therefore, a reevaluation of token economy systems among children in foster care may be warranted. For example, comparisons between the effectiveness of token economies that utilize caregiver-selected stimuli as compared to those that utilize stimuli selected by children may be evaluated. Further, it may also be interesting to evaluate the effectiveness of token economies incorporating stimuli and activities that have been shown to be reinforcers versus those identified via a preference assessment alone.

Within the area of developmental disabilities, the use of non-vocal assessment procedures is often used because of the limited vocal capacities of the individuals served. However, children in foster care often have extensive verbal repertoires. Therefore, reinforcer assessment methods that rely on verbal report should be studied more extensively. Northup, George, Jones, Broussard, and Vollmer (1996) compared the efficacy of three different methods for assessing reinforcer value with highly verbal children. The

researchers compared a reinforcer survey, a verbal choice preparation, and pictorial choice procedure. The results suggested that the inclusion of verbal or pictorial choice enhanced the differentiation of high and low preferred stimuli, and provided a model for a relatively low-cost method of identifying reinforcers when tangible stimuli are not readily available. Although Northup et al. combined both indirect and direct assessment methods; the use of indirect assessment methods alone may also be effective.

Fisher, Piazza, Bowman, and Amari (1996) administered a survey (Reinforcer Assessment for Individuals with Severe Disabilities) to caregivers of several individuals with developmental disabilities in conjunction with a direct assessment method (Fisher et al., 1992). Results suggested that caregiver’s verbal report identified potent reinforcers equally well, if not better than, the direct assessment method. Possibly such surveys could be applied directly to foster children, who might serve as the survey respondent.

#### **Assessment of Low Frequency or Very Dangerous Behavior**

Research has indicated that foster children are more likely than the general population to engage in stealing, destructiveness, enuresis, and temper tantrums (Keane, 1983). Often, foster children are reported to engage in relatively low frequency (i.e., once a day or less) behavior such as lying, stealing, and truancy (Colton et al., 1990). More detrimental and potentially fatal behavior such as alcohol abuse and suicide attempt also are displayed more often by foster children compared to the normal population (Windom, 2000). A recent survey of Florida foster parents found that the most frequently reported behavior problems included running away from home, inappropriate sexual behavior, drug or alcohol use, harming themselves or others, vandalism, stealing, and carrying weapons (Feaver et al., 2002). Assessment and treatment may be made difficult by the covert features and relative sporadic occurrence of this type of behavior.

The success of behavior analysis in producing socially significant changes in behavior is invariably tied to its methods.

Behavior analysts have been most effective in the assessment and treatment of overt behavior that occur at a relatively high frequency. For example, Iwata, Dorsey, Slifer, Bauman, and Richman (1982/1994) described a functional analysis methodology designed to identify the operant function of self-injurious behavior (SIB) for 9 individuals with developmental disabilities. The SIB occurred several times per minute. Since its development, the basic procedures of the functional analysis have been applied to a range of problem behavior including aggression (Thompson, Fisher, Piazza, & Kuhn, 1998), stereotypy (Repp, Felce, & Barton, 1988), disruption (Vollmer et al., 1998), and tantrums (Lalli et al., 1999), to name only a few. However, the effectiveness of functional analysis methodology in identifying behavioral function depends, in part, on the frequency of the behavior, and the opportunity for the behavior analyst to observe the behavior. Many of the behavior problems exhibited by children in foster care are problematic in part because they are covert in nature. In addition, the behavior problems are often too severe to allow for the purposes of assessment. For example, attempts to directly observe low frequency or covert behavior such as arson or department store theft would be futile because of: a) the severity of the behavior, and b) the implicit covert properties of the behavior. Thus, behavior analysts are faced with developing or improving upon methods of assessment for children in foster care. Some possibilities are discussed below.

First, indirect assessment methods, such as questionnaires, could be evaluated and improved upon. Although verbal report is not consistent with traditional behavioral assessment, the alternative may be that some behavior problems are never assessed. For example, it may be better to ask a parent questions about their child's severe aggression toward a sibling than to ask nothing at all. Paclawskyj, Matson, Rush, Smalls, and Vollmer (2001) evaluated the convergent validity of two indirect assessment interviews (*Questions About Behavioral Function*, [QABF] Matson & Vollmer, 1995; *Motivational Assessment Scale*, [MAS] Durand & Crimmins, 1988) and experimental functional analysis (Iwata et al., 1982/1994). The results were informative in that both indirect assessments were highly

correlated with one another, and the QABF was more highly correlated with the results of the functional analysis when compared to the MAS. Evidence of this sort suggests that the use of indirect assessment methods may be an effective alternative when behavior is not amendable to direct assessment methods. Extensions of this line of research to children in foster care may be particularly effective in treatment development.

A second alternative for the assessment of low rate, high intensity problem behavior is to target precursor behavior (i.e., behavior that typically occurs before the more dangerous behavior). Lalli, Mace, Wohn, and Livesky (1995) conducted a functional analysis of one young girl's problem behavior. Specifically, the girl exhibited screams, aggression, and SIB. Results of the functional analysis suggested that each of the problematic behavior was sensitive to escape from instructional demands as reinforcement. Most importantly, the researchers found that the problem behavior was emitted in the same sequence. By presenting contingent escape (reinforcement) for one or more of the responses, systematic changes in response latencies were observed. For example, when screaming was reinforced, aggression and SIB (the second and third responses in the hierarchy), occurred at very low levels, and the latency to screaming was approximately 1 second. This general strategy could also be applied to problem behavior exhibited by foster children. For example, if one were to determine that extreme property destruction (e.g., kicking down doors, shattering windows) occurs about once per month on average, but is reliably preceded by screaming, one might conduct a functional analysis of screaming-- the higher rate, less dangerous behavior.

A third area with potential application for low frequency but very dangerous behavior involves analyses of response products. Grace, Thompson, and Fisher (1996) conducted one such analysis. The participant engaged in several topographies of severe self-injury that produced observable lesions, but the behavior was rarely observed. The researchers identified several preferred activities and presented those activities contingent on the omission of self-injury. Results showed that the lowest levels of new injuries were observed when preferred activities were presented contingent on the

omission of SIB. Although the specific variables supporting self-injury were not directly assessed, the method proved useful in decreasing dangerous SIB that was not observed frequently enough to conduct a functional analysis. Methods similar to those described by Grace et al. may also prove useful for children in foster care who exhibit low frequency yet dangerous problem behavior. For example, we have already seen several adolescents who were referred to us in part because they “self-cut” with sharp objects. Self-cutting leaves response products such as lesions and scars. The products could be measured and treated as dependent variables.

In a similar vein, outcome measures may also prove useful in identifying variables that support dangerous problem behavior. For example, many children in foster care have extensive histories with the juvenile justice system (Braukman & Wolf, 1987). Therefore, one assessment method would involve measuring the frequency of contact with law enforcement agencies prior to treatment implementation and subsequent to treatment implementation. Although contact with law enforcement is not the target behavior *per se*, in many instances it is correlated with occurrences of the target behavior (e.g., stealing). Coupled with the appropriate experimental designs, outcome measures of this sort could provide information about individual treatment effectiveness.

### Treatment Integrity

The term *treatment integrity* generally refers to the accurate implementation of the independent variable (Peterson, Homer, & Wonderlich, 1982). Several studies have been designed to evaluate the integrity with which independent variables are delivered (e.g., Iwata et al., 2000; Noell et al., 2000; Northup et al., 1994). Generally, studies of this sort are concerned with the accurate implementation of treatment when novices (e.g., school teachers) are responsible for treatment implementation. For example, Northup et al. (1994) conducted extensive training with several schoolteachers and measured independent variable implementation during both assessment and treatment phases.

Evaluations of treatment integrity are germane to the training of foster caregivers. As described above, parents are taught specific components (or steps) of various procedures in the training curriculum (e.g., differential reinforcement). Currently, caregivers are required to complete each step of a particular procedure twice with 100% accuracy. However, it is not clear whether demonstrating a procedure with 100%, or 80%, 70%, or 50% accuracy produces significant differences in the child's behavior.

Several studies have also evaluated the effectiveness of treatment implementation when treatment integrity was less than optimal (Northup, Fisher, Kahng, Harrell, & Kurtz, 1997; Van Camp, Lerman, Kelley, Contrucci, & Vorndran, 2000; Vollmer, Roane, Ringdahl, & Marcus, 1999; Worsdell, Iwata, Hanley, Thompson, & Kahng, 2000). For example, Vollmer, Roane, et al. (1999) evaluated the effectiveness of a differential reinforcement of alternative behavior (DRA) procedure in reducing problem behavior when the procedure was implemented at optimal level (100%) and less than optimal levels (e.g., 20%, 40%, 75%). Results showed that treatment effects were observed when the schedule of reinforcement contingent upon appropriate behavior was implemented with less than 100% integrity.

Research of this sort is closely related to the earlier discussion of the component analyses of the training curriculum itself. For example, if a caregiver repeatedly fails to complete one correct response during a natural exchange with his or her foster child, the caregiver would not be considered competent with respect to that procedure. Similarly, errors of commission may result in a caregiver failing to achieve competency with respect to a particular procedure. For example, if descriptive praise were occasionally paired with a reprimand in testing situations, a caregiver would not be considered competent with respect to a particular procedure. However, it may be the case that the omitted or committed response has no effect on the integrity of the treatment outcome.

### Effects of More Manageable Interventions

Recent census results indicate that approximately 26% of all children in the United States live in single parent households (Key National Indicators of Well-Being, 2001) with all households averaging 3.14 persons (U.S. Census Bureau, Census 2000). The number of children in abusive and neglectful environments however, is often significantly higher than the national average. Paxson and Waldofoegel (2000) evaluated the impact of welfare reform on child maltreatment and found that family size was positively correlated with substantiated reports of maltreatment. That is, the probability of maltreatment increased with increases in the number of children per household, and as noted above, child victims of abuse and neglect are more likely to engage in problematic behavior when compared to the general population (Keane, 1983). Taken together, these results suggest that in order to increase the likelihood that caregivers will implement carefully designed intervention packages; behavior analysts should make efforts to make those packages manageable in dynamic environments. The term *manageable* is used to refer to interventions that are easily applicable, yet maintain their effectiveness in the natural environment.

It is already known that behavioral treatments can be effective under tightly controlled environmental conditions (Stromer, McComas, & Rehfeldt, 2000). However, successful implementation of many of these interventions in the natural environment has not always been demonstrated. In order to increase the manageability of interventions, and their applicability to foster children and foster caregivers, behavior analysts may wish to assess stimulus variability, schedule thinning, and delay to reinforcement specifically during treatment development.

In the caregiver training curriculum described above, parents are taught three basic reinforcement-based procedures to address the behavior of children in care: a) DRA, b) differential reinforcement of other behavior (DRO), and c) NCR. Current research evaluating these basic procedures has typically targeted relatively dense schedules of reinforcement (e.g., fixed ratio [FR] 1) and

relatively short terminal schedules (e.g., 5 min). Often, although not always, the schedule of reinforcement is closely related to the delay to reinforcement. For example, Lalli et al. (1999) thinned the schedule of reinforcement for task completion from FR 1 to FR 20, for one participant, and from FR 1 to FR 60, for a second participant. Therefore, the schedule of reinforcement was thinned (more responses were required to produce reinforcement), and the delay to reinforcement was also increased.

Similar increases in schedule requirements may be achieved by incorporating appropriate experimental designs. Hartmann and Hall (1976) utilized a changing criterion design to demonstrate increases in a dependent variable (number of math problems correctly completed) and decreases in a dependent variable (number of cigarettes smoked per day). Following an initial baseline phase, each treatment phase was associated with a change in the criterion rate. For example, in case 2 of Hartmann and Hall, the first treatment criterion was a 5% decrease in the rate of cigarettes smoked in order to obtain reinforcement. Once stable rates of responding were observed under the first treatment criterion, the second treatment phase reduced the criterion to fewer cigarettes smoked, and so on. The manageability of interventions designed for foster caregivers may be greatly improved if caregivers are taught to determine treatment criteria empirically. For example, foster caregivers may be taught to effectively increase the amount of time allocated to academic assignments using a changing criterion design.

Other research has focused on increasing the delay to reinforcement while maintaining relatively low schedule requirements. Hanley, Iwata, and Thompson (2001) taught individuals with developmental disabilities to request reinforcers via a communicative response (FR 1) and observed maintenance of responding following delays to reinforcement up to 4 min.

Similarly, NCR and DRO have been implemented at intervals of 5 min (Vollmer, Iwata, Zarcone, Smith, & Mazeleski, 1993). Few studies however, have evaluated delays to reinforcement that exceed 5 min. Vollmer, Borrero, Lalli, and Daniel (1999) conducted an

assessment of impulsive behavior for two boys with developmental disabilities. Though not the focus of the study, the researchers showed that for one participant, a communicative response (i.e., mand) could be maintained following a 10 min signaled delay. Although the study by Vollmer, Borrero, et al. (1999) represents a successful attempt to increase the ease of treatment implementation, to be successful on a larger scale, alternative methods will be need to be examined carefully.

At its most basic level, little is known about the effectiveness of manageable interventions in the natural environment. Generally, reinforcement effects are thought to be most pronounced when the event is presented contiguous with behavior. However, the reinforcing efficacy of events delivered at a more distal point in time has not been extensively evaluated. Further evaluation of the role of signals and conditioned reinforcers during delay to reinforcement intervals, schedule fading, and self-management procedures utilizing appropriate single-subject experimental designs may prove informative in developing more manageable schedules in the natural environment.

#### OTHER ISSUES RELATED TO PROBLEM BEHAVIOR: ACADEMICS AND MEDICATION

##### Academic Problems

Few studies have evaluated the academic functioning of foster children in particular. Heath, Colton and Aldgate (1989) conducted a longitudinal study of the educational progress of foster children compared to the educational progress of children whose families were receiving help from social workers. Educational achievement was evaluated via standardized tests in reading, vocabulary, and math. In addition, both parents and teachers completed child behavior questionnaires. In the first round of testing, 91% of foster children scored below average on one or more tests, and about 31% of foster children were reported to have significant behavior problems. Interestingly, the comparison group of children also scored poorly on the academic tests and had high levels of problem behavior. In the second round of testing conducted two years later, the researchers found that the children who

had done poorly in the first round of testing improved relative to their previous scores; however, they still scored below average compared to national averages (Aldgate, Colton, Ghate, & Heath, 1992). In the third round of testing, the researchers found similar results (Heath, Colton, & Aldgate, 1994). Overall, these results suggested that the academic functioning of foster children was relatively lower than that of the general population.

Some researchers have suggested that academic deficits in foster children may be related to placement disruptions (Berridge & Cleaver, 1987; Rowe & Lambert, 1973). In one study, measures of problem behavior, academic functioning, and rates of placement disruptions were collected for over 300 foster children (Zima et al., 2000). Over 25% of foster children experienced 5 or more placement disruptions, and one third of those children changed schools more than once. Sixty-nine percent of foster children were reported to have problem behavior or academic deficits, and a statistically significant relationship was found between placement disruptions and academic delays.

Other researchers have focused on the special education placement of foster children. In the United States, approximately 10% of children are in special education and less than 1% are identified as having an emotional-behavioral disorder (EBD) (U.S. Department of Education, 1994). In one study, 30% of foster children in Illinois were in special education and 15% of foster children were labeled EBD (Goerge, Van Voorhis, Grant, Casey, & Robinson, 1992). A study conducted with foster children living in Baltimore found that 30% of children in kinship care due to neglect or abuse were in special education (Sawyer & Dubowitz, 1994). Another study identified twice as many foster children in special education compared to school-aged children as a whole (Hill, Hayden, Lakin, Menke, & Amando, 1990).

In each of these studies, academic functioning was evaluated via standardized tests that were given only once or that were repeated every few years (Heath et al., 1994) for the purpose of assessment. Although these results clearly indicate that foster children are experiencing higher than normal academic deficits, the tests themselves offer very little in

the way of a potential solution to the problem. Some criticisms of standardized tests are that they do not adequately sample the curricula in which the student is being instructed, and do not adequately measure deficits or improvements in academic achievement (Allinder, Fuchs, & Fuchs, 1998). Often, such norm-referenced testing is designed to compare a student to same-age peers for the purpose of placement; however, these tests cannot be used to gather repeated measures of academic behavior because only one or two forms of the tests are available.

An alternative to standardized testing that has been widely investigated in special education research is curriculum-based assessments (Shinn, 1998). Not unlike behavior analysis methodologies, curriculum-based assessments require repeated measures. In addition, curriculum-based assessments are drawn from the individual student's curricula, and assessment information is used to make instructional decisions (Tucker, 1987). Curriculum-based measurement is more involved in that standardized measurements of an entire year's curriculum are used to develop long-term goals (Fuchs, Fuchs, & Hamlett, 1990). Typically, academic functioning is assessed through brief (1 to 5 min) probes taken directly from the current curriculum. These probes are repeated over time in order to assess student progress. Curriculum-based assessments and measurement have been used successfully with elementary and secondary students, students of racial minorities and language minorities, and students with mild disabilities (Shinn, 1998)

Similarly, curriculum-based assessments could be used to identify specific academic deficits of foster children. More importantly, curriculum-based assessment may provide valuable information regarding academic interventions and ongoing progress. When children are moved from one school to another due to changes in home placements, they are presumably being exposed to different curricula. Curriculum-based assessments could be used to identify a student's strengths and weaknesses in each changing curricula. For example, it is possible that at one school, a student's performance in math is comparable to that of his peers. Upon moving to another school, the student may fall below his peers in the new

curriculum. Academic interventions could be designed to provide the student with the necessary skills to "catch-up" with the rest of his peers. In addition, academic probes may be repeated in a reinforcement condition whereby the student may earn a preferred item or activity if he/she beats the previous scores. This type of assessment could identify whether the student's academic problem is due to a skill deficit or a "motivational" deficit.

### Medication Evaluations

Given the higher than normal levels of problem behavior displayed by foster children, another concern is that some of these children may be unnecessarily medicated. Few studies have investigated this problem in the foster care population. Zima, Bussing, Crecelius, Kaufman, and Belin (1999) surveyed over 300 foster children and found that over 16% had received a psychotropic medication during their lifetime. Of those, 62% had received stimulants. Eighteen percent of the foster children had been diagnosed with attention deficit hyperactivity disorder (ADHD). Although the majority of foster parents reported that the medication was helpful, no direct measures of child behavior were obtained. In a recent survey of Florida foster parents, almost 21% of the foster children were reported to have a diagnosis of ADHD, and over 75% were receiving treatment (Feaver et al., 2001). Presumably, the primary form of treatment was medication. In comparison, 3% to 5% of children in the general school population are diagnosed with ADHD (American Psychological Association, 1994) and 4.6% and 2.2% receive psychotropic medication and methylphenidate, respectively (Zito, Safer, dosReis, & Riddle, 1998). Taken together, these studies indicate that foster children are receiving medication more often than the general school-aged population. It is not known whether these children are appropriately diagnosed. Also, it is not known whether medications are the most clinically effective, efficient, and cost-effective intervention for those children even if they are appropriately diagnosed with ADHD.

In the past decade, there has been an increase in the evaluation of the comparative effects of medication (primarily methylphenidate) and behavioral treatments for ADHD. Some research has focused on



comparing changes in off-task and disruptive behavior across behavioral interventions with and without methylphenidate (Abramowitz, Echstrand, O'Leary, & Dulcan, 1992; Cooper et al., 1993; Hoza, Pelham, Sams, & Carlson, 1992; Northup et al., 1999; Pelham, Schnelder, Bologna, & Contreras, 1980; Rapport, Murphy, & Bailey, 1982). Overall, vast individual differences in the effects of medication and behavioral treatments were found both between studies and within individual studies. Studies that have directly manipulated different doses of medication have also found idiosyncratic results (Abramowitz et al.; Gulley & Northup, 1997; Hoza et al.; Rapport et al.). Such individual differences have also been found with respect to academic and social measures of medication effectiveness (Gulley & Northup).

Taken together, these results suggest that one cannot assume that methylphenidate will produce the desired changes in behavior in any particular child. Given the relatively high percentage of foster children diagnosed with ADHD in Florida (and in the United States in general) and the highly idiosyncratic effects of methylphenidate, it is conceivable that a number of foster children are unnecessarily receiving medication to control their behavior. Studies similar to those described above should be conducted for other types of medications (other stimulants, psychotropic medications) to determine the degree to which their effects are idiosyncratic. With respect to methylphenidate in particular, research results suggest that individualized medication assessments should be conducted with each child who is, or will be receiving methylphenidate. Such assessments could include functional analyses of problem behavior while systematically evaluating medication effects (see Cooper et al, 1993, and Northup et al., 1999). The effects of medication on academic and social functioning also should be assessed (Gulley & Northup, 1997). Finally, the relative effectiveness of reinforcers should be evaluated both on and off medication due to potential changes in establishing operations produced by medication (see Northup, Fusilier, Swanson, Roane, & Borrero, 1997).

### CONCLUSION

The Family Safety/Applied Behavior Analysis Initiative at the University of Florida is

part of a statewide project designed to serve foster parents and foster children under the jurisdiction of the Florida Department of Children and Families. Our primary objective is to address child problem behavior from a scientific perspective. Child problem behavior is the core of most clinical services and research questions addressed by this project. Parent training, in the form of classroom instruction and in-home services, currently is our primary vehicle for addressing the child behavior problems and resulting placement disruptions. Research on our current parent training program and curriculum is needed to identify the most effective, efficient, and cost-effective method for disseminating information to foster parents. Specific methodological issues in assessing and treating child behavior problem have presented themselves, demanding a departure from the methodologies used in more typical service areas. Innovative methodologies should be developed in order to successfully address low frequency, high intensity, and covert behavior. In addition, research in the areas of reinforcer assessments, treatment integrity, and manageable interventions is needed. Finally, as foster children are experiencing academic deficits and psychiatric disorders at higher rates than the general school-aged population, research in the areas of academics and medication also is needed. Obviously, the field of behavior analysis has a great deal to offer in each of these areas, and it is our objective to tackle these issues with a continuing commitment to the population we serve and to the advancement our field.

### REFERENCES

- Abramowitz, A. J., Eckstrand, D., O'Leary, S. G., Dulcan, M. K. (1992). ADHD children's responses to stimulant medication and two intensities of a behavioral intervention. *Behavior Modification, 16*, 193-203.
- Achenback, T. M., & Edelbrock, C. (1983). *Manual for the Child Behavior Checklist and Revised Child Behavior Profile*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Aldgate, J., Colton, M., Ghate, D., & Heath, A. (1992). Educational attainment and stability in long-term foster care. *Children and Society, 6*, 91-103.
- Aldgate, J., & Harley, D. (1986). *Recollections of disruption: A study of foster home breakdown*. London: National Foster Care Association.
- Allinder, R. M., Fuchs, L. S., & Fuchs, D. (1998). Curriculum-based measurement. In H. B. Vance (Ed.), *Psychological*

- assessment of children: Best practices for school and clinical setting (2<sup>nd</sup> ed., pp. 106-129). New York: Wiley.
- America's Children: Key national indicators of well-being (2001). Population and family characteristics. Retrieved June 25, 2002, from <http://www.childstats.gov/ac2001/poptxt.asp>.
- Beridge, D., & Cleaver, H. (1987). *Foster home breakdown*. Oxford: Blackwell.
- Borrero, J. C., & Vollmer, T. R. (2002). An application of the matching law to severe problem behavior. *Journal of Applied Behavior Analysis*, 35, 13-27.
- Braukman, C., & Wolf, M. (1987). Behaviorally-based group homes for juvenile offenders. In E. K. Morris & C. J. Braukman (Eds.), *Behavioral approaches to crime and delinquency: A handbook of application, research, and concepts* (pp. 135-160). New York: Plenum.
- Brown, E. C., Yampolskaya, S., & Trinidad, V. (2000). The information utilization project: A profile of children in Florida's Child Protection System fiscal year 1999-00. University of South Florida: Louis de la Parte Florida Mental Health Institute Department of Child and Family Studies Consortium for Child Welfare Studies.
- Clausen, J. M., Landsverk, J., Ganger, W., Chadwick, D., & Litrownik, A. (1998). Mental health problems of children in foster care. *Journal of Child and Family Studies*, 7, 283-296.
- Colton, M., Aldgate, J., & Heath, A. (1990). Behavioural problems among children in and out of care. *Social Work and Social Sciences Review*, 2, 177-191.
- Cooper, C. S., Peterson, N. L., & Meier, J. H. (1987). Variables associated with disrupted placement in a select sample of abused and neglected children. *Child Abuse and Neglect*, 11, 75-86.
- Cooper, L. J., Wacker, D. P., Millard, T., Derby, K. M., Cruikshank, B. M., & Rogers, L. (1993). Assessing environmental and medication variables in an outpatient setting: A proposed model and preliminary results with ADHD children. *Journal of Developmental and Physical Disabilities*, 5, 71-85.
- DeLeon, I. G., & Iwata, B. A. (1996). Evaluation of a multiple-stimulus presentation format for assessing reinforcer preferences. *Journal of Applied Behavior Analysis*, 29, 519-532.
- Dubowitz, H., Starr, R. H., Feigelman, S., & Harrington, D. (1993). Behavior problems of children in kinship care. *Journal of Developmental and Behavioral Pediatrics*, 14, 386-393.
- Durand, V. M., & Crimmins, D. B. (1988). Identifying the variables maintaining self-injurious behavior. *Journal of Autism and Developmental Disorders*, 18, 99-117.
- Eyberg, S. M., Edwards, D., Boggs, S. R., & Foote, R. (1998). Maintaining the treatment effects of parent training: The role of booster sessions and other maintenance strategies. *Clinical Psychology: Science and Practice*, 5, 544-554.
- Feaver, E., Clarke, L. L., Amey, C., Spevack, M., Ansary, S., Stavreva, G., & Gale, S. (2001). *Medical, developmental and behavioral problems of foster children and the capacity of foster caregivers in Florida: Final report*. Tallahassee, FL: The Lawton and Rhea Chiles Center, and Gainesville, FL: Department of Health Policy and Epidemiology Institute for Health Policy Research.
- Fisher, W. W., Piazza, C. C., Bowman, L. G., & Amari, A. (1996). Integrating caregiver report with a systematic choice assessment. *American Journal on Mental Retardation*, 101, 15-25.
- Fisher, W., Piazza, C. C., Bowman, L. G., Hagopian, L. P., Owens, J. C., & Slevin, I. (1992). A comparison of two approaches for identifying reinforcers for persons with severe and profound disabilities. *Journal of Applied Behavior Analysis*, 25, 491-498.
- Friedman, R. M. Baron, A., Lardieri, S., & Quick, J. (1982). Length of time in foster care: A measure in need of analysis. *Social Work*, 27, 499-503.
- Fuchs, L. S., Fuchs, D., & Hamlett, C. L. (1990). Curriculum-based measurement: A standardized, long-term goal approach to monitoring student progress. *Academic Therapy*, 25, 615-632.
- Goerge, R. M., Van Voorhis, J., Grant, S., & Casey, K. (1992). Special education experiences of foster children: An empirical study. *Child Welfare*, 71, 419-437.
- Grace, N. C., Thompson, R., & Fisher, W. W. (1996). The treatment of covert self-injury through contingencies on response products. *Journal of Applied Behavior Analysis*, 29, 239-242.
- Gulley, V., & Northup, J. (1997). Comprehensive school-based behavioral assessment of the effects of methylphenidate. *Journal of Applied Behavior Analysis*, 30, 627-638.
- Hanley, G. P., Iwata, B. A., & Thompson, R. H. (2001). Reinforcement schedule thinning following treatment with functional communication training. *Journal of Applied Behavior Analysis*, 34, 17-38.
- Hartman, D. P., & Hall, R. V. (1976). The changing criterion design. *Journal of Applied Behavior Analysis*, 9, 527-532.
- Heath, A., Colton, M., & Aldgate, J. (1989). The educational progress of children in and out of care. *British Journal of Social Work*, 19, 447-460.
- Heath, A., Colton, M., & Aldgate, J. (1994). Failure to escape: A longitudinal study of foster children's educational. *British Journal of Social Work*, 24, 241-260.
- Hill, B. K., Hayden, M. F., Lakin, K. C., Menke, J., & Amado, A. R. N. (1990). State-by-state data on children with handicaps in foster care. *Child Welfare*, 69, 447-462.
- Hoza, B., Pelham, Jr., W. E., Sams, S. E., & Carlson, C. (1992). An examination of the "dosage" effects of both behavior therapy and methylphenidate on the classroom performance of two ADHD children. *Behavior Modification*, 16, 164-192.
- Ivancic, M. T. (2000). Stimulus preference and reinforcer assessment applications. In J. Austin, & J. E. Carr (Eds.), *Handbook of applied behavior analysis* (pp. 19-38). Reno, NV: Context Press.
- Iwata, B. A., Dorsey, M. F., Slifer, K. J., Bauman, K. E., Richman, G. S. (1982/1994). Toward a functional analysis of self-injury. *Journal of Applied Behavior Analysis*, 27, 197-209. (Reprinted from *Analysis and Intervention in Developmental Disabilities*, 2, 3-20, 1982).
- Iwata, B. A., Wallace, M. D., Kahng, S., Lindberg, J. S., Roscoe, E. M., Conners, J., Hanley, G. P., Thompson, R. H., & Worsdell, A. S. (2000). Skill acquisition in the implementation of functional analysis methodology. *Journal of Applied Behavior Analysis*, 33, 181-194.

- Kazdin (2001). *Behavior modification in applied settings*. Belmont, CA: Wadsworth/Thomson Learning.
- Keane, A. (1983). Behavior problems among long-term foster children. *Adoption and Fostering*, 53-62.
- Kohlenberg, R., & Phillips, T. (1973). Reinforcement and rate of litter depositing. *Journal of Applied Behavior Analysis*, 6, 391-396.
- Kutash, K. & Rivera, V. R. (1995). Effectiveness of children's mental health services: A review of the literature. *Education and Treatment of Children*, 18, 443-477.
- Lalli, J. S., Mace, F. C., Wohn, T., & Livezy, K. (1995). Identification and modification of a response-class hierarchy. *Journal of Applied Behavior Analysis*, 28, 551-559.
- Lalli, J. S., Vollmer, T. R., Progar, P. R., Wright, C., Borrero, J., Daniel, D., Barthold, C. H., Tocco, K., & May, W. (1999). Competition between positive and negative reinforcement in the treatment of escape behavior. *Journal of Applied Behavior Analysis*, 32, 285-296.
- Latham, G. I. (2000). *The power of positive parenting*, 6<sup>th</sup> Ed. North Logan, UT: P & T Ink.
- Marcus, B. A., Swanson, V., & Vollmer, T. R. (2001). Effects of parent training on parent and child behavior using procedures based on functional analyses. *Behavioral Interventions*, 16, p 87-104.
- Matson, J.L., & Vollmer, T. R. (1995). *User's Guide: Questions About Behavioral Function (QABF)*. Scientific Publishers, Inc. Baton Rouge, LA.
- Noell, G. H., Witt, J. C., LaFleur, L. H., Mortenson, B. P., Ranier, D. D., & LeVelle, J. (2000). Increasing intervention implementation in general education following consultation: A comparison of two follow-up strategies. *Journal of Applied Behavior Analysis*, 33, 271- 284.
- Northup, J., Fisher, W., Kahng, S., Harel, B., & Kurtz, P. (1997). An assessment of the necessary strength of behavioral treatments for severe behavior problems. *Journal of Developmental and Physical Disabilities*, 9, 1-16.
- Northup, J., Fusilier, I., Swanson, V., Huete, J., Bruce, T., Freeland, J., Gullely, V., & Edwards, S. (1999). *Journal of Applied Behavior Analysis*, 32, 35-50.
- Northup, J., Fusilier, I., Swanson, V., Roane, H., & Borrero, J. (1997). An evaluation of methylphenidate as a potential establishing operation for some common classroom reinforcers. *Journal of Applied Behavior Analysis*, 30, 615-625.
- Northup, J., George, T., Jones, K., Broussard, C., & Vollmer, T. R. (1996). A comparison of reinforcer assessment methods: The utility of verbal and pictorial choice procedures. *Journal of Applied Behavior Analysis*, 29, 201-212.
- Northup, J., Wacker, D. P., Berg, W. K., Kelly, L., Sasso, G., & DeRaad, A. (1994). The treatment of severe behavior problems in school settings using a technical assistance model. *Journal of Applied Behavior Analysis*, 27, 33-47.
- Pace, G. M., Ivancic, M. T., Edwards, G. L., Iwata, B. A., & Page, T. J. (1985). Assessment of stimulus preference and reinforcer value with profoundly retarded individuals. *Journal of Applied Behavior Analysis*, 23, 249-255.
- Paclawskyj, T. R., Matson, J. L., Rush, K. S., Smalls, Y., & Vollmer, T. R. (2001). Assessment of the convergent validity of the Questions About Behavioral Function scale with analogue functional analysis and the Motivation Assessment Scale. *Journal of Intellectual Disability Research*, 45, 484-494.
- Paxson, C., & Waldfogel, J. (2000). Welfare reforms, family resources, and child maltreatment. In B. Meyer & G. Duncan (Eds.), *The incentives of government programs and the well-being of families*. Joint Center for Poverty Research.
- Pelham, W. E., Schnedler, R. W., Bologna, N. C., & Contreras, J. A. (1980). Behavioral and stimulant treatment of hyperactive children: A therapy study with methylphenidate probes in a within-subject design. *Journal of Applied Behavior Analysis*, 13, 221-236.
- Peterson, L., Homer, A. L., & Wonderlich, S. A. (1982). The integrity of independent variables in behavior analysis. *Journal of Applied Behavior Analysis*, 15, 477-492.
- Phillips, E. L. (1968). Achievement place: Token reinforcement procedures in a home-style rehabilitation setting for pre-delinquent boys. *Journal of Applied Behavior Analysis*, 1, 213-223.
- Phillips, E. L., Phillips, E. A., Fixsen, D. L., & Wolf, M. M. (1971). Achievement Place: Modification of the behaviors of pre-delinquent boys within a token economy. *Journal of Applied Behavior Analysis*, 4, 45-59.
- Piazza, C. C., Fisher, W. W., Hagopian, L. P., Bowman, L.G., & Toole, L. (1996). Using a choice assessment to predict reinforcer effectiveness. *Journal of Applied Behavior Analysis*, 29, 1-9.
- Prevent Child Abuse America©. Retrieved March 13, 2002, from [http://www.preventchildabuse.org/learn\\_more/research.html](http://www.preventchildabuse.org/learn_more/research.html).
- Rapport, M. D., Murphy, H. A., & Bailey, J. S. (1982). Ritalin vs. response cost in the control of hyperactive children: A within-subject comparison. *Journal of Applied Behavior Analysis*, 15, 205-216.
- Repp, A. C., Felce, D., & Barton, L. E. (1988). Basing the treatment of stereotypic and self-injurious behaviors on hypotheses of their causes. *Journal of Applied Behavior Analysis*, 21, 281-289.
- Roane, H. S., Vollmer, T. R., Ringdahl, J. E., & Marcus, B. A. (1998). Evaluation of a brief stimulus preference assessment. *Journal of Applied Behavior Analysis*, 31, 605-621.
- Rowe, J., & Lambert, L. (1973). *Children who wait*. London: British Agencies for Adoption and Fostering.
- Sawyer, R. J., & Dubowitz, H. (1994). School performance of children in kinship care. *Child Abuse and Neglect*, 18, 587-597.
- Shinn, M. R. (ed.). (1998). *Advanced applications of curriculum-based measurement*. New York: Guilford Press.
- Stromer, R., McComas, J. J., & Rehfeldt, R. A. (2000). Designing interventions that include delayed reinforcement: Implications of recent laboratory research. *Journal of Applied Behavior Analysis*, 33, 359-371.
- Thompson, R. H., Fisher, W. W., Piazza, C. C., & Kuhn, D. E. (1998). The evaluation and treatment of aggression maintained by attention and automatic reinforcement. *Journal of Applied Behavior Analysis*, 31, 103-116.
- Tucker, J. (1987). Curriculum-based assessment is not fad. *The Collaborative Educator*, 1, 4-10.
- U.S. Census Bureau, Census 2000. Profile of general demographic characteristics: 2000. Retrieved June 25, 2002, from

- <http://www.census.gov/press-release/www/2001/demoprofile.htm>.
- U.S. Department of Education. (1994). *Sixteenth annual report to Congress on the implementation of the Individuals with Disabilities Education Act*. Washington, DC.
- Van Camp, C. M., Lerman, D. C., Kelley, M. E., Contrucci, S. A., & Vomdran, C. M. (2000). Variable-time reinforcement schedules in the treatment of socially maintained problem behavior. *Journal of Applied Behavior Analysis, 33*, 545-557.
- Vollmer, T. R., Borrero, J. C., Lalli, J. S., & Daniel, D. (1999). Evaluating self-control and impulsivity in children with severe behavior disorders. *Journal of Applied Behavior Analysis, 32*, 51-466.
- Vollmer, T. R., Borrero, J. C., Wright, C. S., Van Camp, C., & Lalli, J. S. (2001). Identifying possible contingencies during descriptive analyses of severe behavior disorders. *Journal of Applied Behavior Analysis, 34*, 269-287.
- Vollmer, T. R., Iwata, B. A., Zarcone, J. R., Smith, R. G., & Mazaleski, J. L. (1993). The role of attention in the treatment of attention-maintained self-injurious behavior: Noncontingent reinforcement and differential reinforcement of other behavior. *Journal of Applied Behavior Analysis, 26*, 9-21.
- Vollmer, T. R., Lalli, J. S., Progar, P. R., Van Camp, C. M., Sierp, B., Wright, C. S., Nastasi, J., & Eisenschink, K. (1998). Fixed-time schedules attenuate extinction-induced phenomena in the treatment of severe aberrant behavior. *Journal of Applied Behavior Analysis, 31*, 529-542.
- Vollmer, T. R., Roane, H. S., Ringdahl, J. E., & Marcus, B. A. (1999). Evaluating treatment challenges with differential reinforcement of alternative behavior. *Journal of Applied Behavior Analysis, 32*, 9-23.
- Webster, D., Barth, R. P., & Needell, B. (2000). Placement stability for children in out-of-home care: A longitudinal analysis. *Child Welfare, 79*, 614-632.
- Weisz, J. R., Donenberg, G. R., Han, S. S., & Kauneckis, D. (1995). Child and adolescent psychotherapy outcomes in experiments versus clinics: Why the disparity? *Journal of Abnormal Child Psychology, 23*, 83-106.
- Windom, C.P. (2000) Childhood victimization: Early adversity, later psychopathology. *National Institute of Justice Journal*. Retrieved May 2, 2002, from <http://ncjrs.org/pdffiles1/jr000242b.pdf>.
- Worsdell, A. S., Iwata, B. A., Hanley, G. P., Thompson, R. H., & Kahng, S. (2000). Effects of continuous and intermittent reinforcement for problem behavior during functional communication training. *Journal of Applied Behavior Analysis, 33*, 167-179.
- Zima, B. T., Bussing, R., Crecelius, G. M., Kaufman, A., & Belin, T. R. (1999). Psychotropic medication treatment patterns among school-aged children in foster care. *Journal of Child and Adolescent Psychopharmacology, 9*, 135-147.
- Zima, B. T., Bussing, R., Freeman, S., Yang, X., Belin, T. R., & Fomess, S. R. (2000). Behavior problems, academic skill delays and school failure among school-aged children in foster care: Their relationship to placement characteristics. *Journal of Child and Family Studies, 9*, 87-103.
- Zito, J. M., Safer, D. J., dosReis, S., Riddle, M. A. (1998). Racial disparity in psychotropic medication prescribed for youths with Medicaid insurance in Maryland. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*, 179-184.

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## BRIDGE STUDIES IN BEHAVIOR ANALYSIS: EVOLUTION AND CHALLENGES IN JABA

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The evolution of bridge studies in the *Journal of Applied Behavior Analysis* has led to fundamental changes in the types of studies published and the methods used to analyze behavior. This evolution has led to a substantial increase in our understanding of response-reinforcer relations with socially meaningful behavior and has served as a base for the development of novel treatment models. Concerns regarding the over-representation of participants with developmental disabilities and the social validity of these studies are briefly discussed along with some future directions for research.

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One of the strengths of behavior analysis is the explicit link that exists between basic and applied research. As several authors have noted (Fisher & Mazur, 1997; Hake, 1982; Mace, 1994; Mace & Wacker, 1994; Wacker, 1996), this link between the basic and applied aspects of behavior analysis offers a rather unique and exciting possibility for reciprocity of research conducted by applied and basic researchers. For example, Wacker (2000) described how researchers who seek to apply basic processes to socially relevant behavior can both extend the generalizability of those processes and identify difficulties with the applications. Researchers conducting basic research can then conduct further investigations on the specific behavioral mechanisms of interest and, perhaps, show why the difficulty in application occurred.

Although the link between applied and basic research in behavior analysis has always been present, the goal of strengthening links between basic and applied research and the development of an integrated science of human behavior have proven to be challenging to achieve. In this article, I describe why the continued evolution of studies that bridge basic and applied research is critically important to our science, some examples showing that this evolution is occurring, and some outcomes of this evolution in the *Journal of Applied Behavior Analysis (JABA)*.

### Bridge Studies as the Cornerstone for Applied Behavior Analysis

The links between basic and applied research are studies that directly show how basic mechanisms can be applied in socially relevant contexts. Hake (1982) labeled these as bridge studies because they bridge information on the

basic mechanisms that underlie responding to the applications of those mechanisms. Thus, Hake conceptualized behavior analysis as existing along a continuum, with basic and applied research residing on either end of the continuum. Rather than viewing behavior analysis as having two distinct components (basic and applied), Hake suggested that all behavioral analysis research exists along one continuum and therefore all such research is linked as a single, internally integrated science.

As discussed by Mace (1994), the continuum that connects applied and basic research in behavior analysis offers the possibility that the evolution of our science will occur via the reciprocal interaction between basic and applied research. For applied researchers and practitioners, the most direct benefit of this bridge is the development of novel treatments. For example, basic research on choice responding has had many successful applications, such as the development of more effective preference assessments (Fisher et al., 1992). Of equal importance, the initial applications led to programmatic lines of research on various dimensions of choice responding, such as studies evaluating how to bias the responding of adolescents on academic tasks (Neef, Mace, Shea, & Shade, 1992) and of preschoolers' instruction-following behavior (Harding et al., 1999; Peck et al., 1996). These applied studies of basic mechanisms underlying choice responding occurred because of the original bridge studies of Fisher et al. (1992) and Neef and her colleagues (Neef et al., 1992; Neef, Mace, & Shade, 1993; Neef, Shade, & Miller, 1994). This progression of research on choice responding, from basic analysis to applications with socially meaningful behavior, shows the importance of bridge studies. As discussed by Fisher and Mazur (1997), basic analyses of

choice responding (e.g., Herrnstein, 1961) led to discussions of human application (e.g., McDowell, 1988), which led to bridge studies (e.g., Neef et al., 1992), which led to field applications (e.g., Peck et al., 1996). As each study or set of studies was reported in the literature, behavior analysts learned increasingly more about the generalizability of the mechanisms being studied (e.g., the matching law), the variables influencing responding in different contexts (e.g., the dimensions of reinforcement that influence human choice responding; Mace & Roberts, 1993), and the limitations of the model as currently applied (Fuqua, 1984).

A positive collateral effect of this evolution was the development of new methodologies conducted in applied settings. In this case, the use of concurrent schedules designs, rarely used in applied behavior analysis but relatively common in basic studies, were reported much more frequently in the applied literature (e.g., Cuvo et al., 1998; Harding et al., 1999; Peck et al., 1996). Thus, not only did our understanding of choice responding improve but also new procedures and designs were developed to better analyze changes in behavior.

The keys to this evolution were the bridge studies that first showed how the basic mechanism could be applied. The studies reported by Neef et al. (1992) and Fisher et al. (1992) demonstrated the initial applications which, in turn, led to an ever-increasing series of analyses by multiple research teams studying a wide array of behavior, including analyses of food refusal by typically developing toddlers (Cooper et al., 1999), self-destructive behavior displayed in homes and in schools by preschoolers with severe disabilities (Peck et al., 1996), math performance of adolescents (Mace et al., 1996), and reinforcer identification for students diagnosed with attention deficit hyperactivity disorder (Northup et al., 1996). Without the original bridge studies, the evolution of these applied procedures, at best, would have been far more difficult.

Wacker (1996) described one dilemma for researchers who conduct bridge studies: their ability to disseminate the results of their studies. Bridge studies, by definition, occur in the middle of the applied—basic continuum and are rare

relative to studies that are at either end of the continuum (applied or basic). Plotting the frequency of occurrence of these studies would result in a U-shaped curve, with applied studies at one end and basic studies at the other end. For both ends of the continuum, multiple journals are available as potential outlets for dissemination. For bridge studies, however, very few outlets are available, and perhaps no outlet is a comfortable fit. This lack of a good fit is a result of our continued insistence on categorizing research as applied or basic. If we used *JABA* and *JEAB* as examples and plotted studies along the applied—basic continuum in both journals, a highly skewed distribution would occur for both journals, with most studies in *JABA* being applied and most in *JEAB* being basic. Of interest here are the tails of both distributions, because the studies in those tails represent bridge studies. The goal is not to extend the tails of either distribution, but rather to increase the frequency of bridge studies relative to the curve in both journals to promote the integration of our science.

We cannot take this integration for granted. For example, Poling et al. (1994) showed that cross-citations between *JABA* and *JEAB* were rare, suggesting that there was a strong possibility that the explicit link between basic and applied research was disappearing. As discussed by Wacker (1996), concerns such as these led *JABA*, during Nancy Neef's tenure as Editor (1992-1995), to devote a special issue to the integration of basic and applied research (Mace & Wacker, 1994) and to the development of a series of discussion articles on the developments and applications of basic processes. This series has now been continued by three subsequent editors of *JABA*, leading to a substantial increase in *JEAB* citations in *JABA*.

#### **Some positive outcomes of bridge studies in *JABA*.**

As *JABA* began not only to accept but also to invite bridge studies, the percentage of articles appearing in *JABA* that might be classified as bridge studies increased. As mentioned previously, a direct benefit of this evolution has been the development of new treatments. Of equal importance is that the evaluation of these treatments has often involved analyses of why (or under what conditions) the treatments were successful, as opposed to (or in



addition to) demonstrations that the treatments had positive effects. Thus, both the development of new treatments and the analyses of those treatments have changed and appear to be correlated with the evolution of bridge studies.

Many examples of the development of novel treatments based on applications of basic processes are available, including those discussed previously on choice responding. Choice responding and the mechanisms responsible for response and time allocation provide a good example of the benefits of bridge studies. These applications have been impressive in terms of the diversity of subgroups, target behaviors, and settings represented in those studies. What unites them is their specific focus on the influence of various dimensions of reinforcement on choice behavior. This unified feature is apparent only because of their explicit links to the basic mechanisms underlying choice responding and the matching law.

Other examples of bridge studies in *JABA* include articles on establishing operations (e.g., Iwata, Smith, & Michael, 2000; Michael, 2000), behavioral persistence (Mace et al., 1988), fixed-time schedules of reinforcement (e.g., Ringdahl et al., 1997), and behavioral economics (Kerwin et al., 1995). Of these latter areas of study, the analyses of establishing (and abolishing) stimuli have been especially impressive relative to the frequency of published articles and the overall application across multiple contexts. As shown by Iwata et al. (2000), a substantial increase has occurred throughout the 1990s in *JABA* in the number of articles using the term “establishing operations” or the citation of the original articles (Michael, 1982, 1993). Vollmer and Iwata (1991) provided the original bridge study, which led, in turn, to a series of published articles culminating in a special issue on establishing operations in *JABA* (2000). Within this special issue, articles on applications to assessment (e.g., Berg et al., 2000) and treatment (e.g., Hagopian et al., 2000) are well-represented. Of even more interest, however, is the discussion article by Michael (2000). This article is of special interest because it provides an example of the reciprocity of basic and applied research envisioned by Hake (1982) and discussed by Mace (1994). Michael (2000) specifically addressed applications of the establishing operations concept to the functional

analysis and treatment of aberrant behavior and sought to clarify some of these relations that have troubled applied researchers. In this case, Vollmer and Iwata’s (1991) original bridge study was followed by many application studies in *JABA*, which, in turn, led not only to the special issue but to Michael’s (2000) discussion article.

The reciprocal process shown for establishing operations, although still rare, is no longer unique in *JABA*. A discussion article by Nevin (*JABA*, 1996) addressed similar issues related to the concept of behavioral momentum. Comparable to the applied research on establishing operations, numerous applications of behavioral persistence were reported in *JABA* following the bridge study by Mace et al. (1988). Concerns and confusion occurred in the applied literature, and Nevin’s (1996) discussion article clarified the concept and addressed many of those concerns.

These examples of choice responding, establishing operations, and behavioral persistence support the supposition that *JABA* has become the major outlet for bridge studies in behavioral analysis. The evolution of bridge studies has produced some very important contributions to our applied science and has also led to some fundamental changes in the analytic methods used in the majority of studies published in *JABA*. As discussed by Wacker (1996), few treatment studies are now published in *JABA* that compare Treatment X to Treatment Y with the result being that one treatment is superior to another. For example, treatments of aberrant behavior are most often linked directly to the reinforcers maintaining those behaviors (Iwata et al., 1994). In the applied literature, this is often referred to as matching treatment to the function of aberrant behavior. This linking of treatment to the underlying mechanisms of behavior has led to a more comprehensive understanding of why specific treatments are successful and to the development of “menus” of treatment options that may be effective for behavior defined in functional terms (e.g., for behavior maintained by negative reinforcement). Again, demonstrations of treatment effectiveness that are tied to specific behavioral mechanisms have increased not only the number of treatments available but also our understanding

of the robustness or generalizability of the mechanisms.

As one example, consider the treatment of aberrant behavior maintained by negative reinforcement. Prior to Iwata's (1987) discussion article and the development of functional analysis (Iwata et al., 1982/1994), few applied studies were available for this functional class of aberrant behavior. Currently, the treatment options include direct manipulations of the amount of negative reinforcement provided (Peck et al., 1996), the reinforcement of mands (Wacker et al., 1990), escape extinction (Lerman & Iwata, 1996), the use of positive reinforcers to compete with negative reinforcers (Harding et al., 1999), manipulation of the establishing operation via fixed-time schedules of reinforcement (Vollmer, Marcus, & Ringdahl, 1995), and various punishment procedures combined with any of the procedures mentioned above (e.g., Fisher et al., 1993).

These studies of treatment based on negative reinforcement provide strong evidence that the evolution of bridge studies can have a positive influence on the evolution of our science. Bridge studies provide novel applications, novel designs and analyses, and novel interpretations of existing findings. They serve both to stimulate new approaches to treatment and to provide more compelling evidence of the robustness of the applications of a behavioral process. Given these positive outcomes, it is not surprising that *JABA* has embraced the increased publication of bridge studies by providing a receptive home for their dissemination.

### **Current challenges and future directions**

. One current dilemma facing *JABA* is that the majority of published bridge studies involve participants with developmental disabilities. Although there are some notable exceptions to this trend (e.g., Neef et al., 1993), the fact remains that a relatively high percentage of bridge studies are also studies with individuals with diagnosed developmental disabilities. This has caused concern for some in our field who worry that *JABA* is becoming a journal of studies in developmental disabilities.

The correlation between bridge studies and developmental disabilities is strong. One reason for this strong relationship may be the development of functional analysis methods by Iwata et al. (1982/1994). Functional analysis, as an assessment model, was developed specifically for persons who had developmental disabilities and displayed self-injurious behavior. As discussed by Wacker (2000), the development and application of functional analysis caused a shift in studies on aberrant behavior toward analyses of the dimensions of reinforcement maintaining behavior and away from topographical descriptions of the behavior. Thus, treatment was matched to function and not to topography, leading to a large increase in reinforcement-based treatments (Iwata, Roscoe, Zarcone, & Richman, 2002) and to a dramatic increase in the use of functional analysis methods (Kahng, Iwata, & Lewin, 2002). The emphasis on function rather than on topography or other structural characteristics of the behavior or participants likely set the occasion for a much greater interest in how behavioral mechanisms, such as establishing operations, also influenced responding.

A corresponding change was the focus on assessment rather than on treatment. The analysis of behavior was the primary focus of most early studies in functional analysis and was, in fact, the only analysis conducted for several of those studies. As discussed by Wacker (2000), this focus on analysis rather than on treatment was not socially valid. Instead, behavior was manipulated in tightly controlled analogue conditions, and no attempt was made to show explicitly that the manipulation of behavior in the analogues resembled ongoing manipulation in "natural" settings. What researchers in functional analysis provided was the direct link to basic mechanisms, which increased our understanding of the operant functions of aberrant behavior. This increased understanding of response-reinforcer relations then led to literally hundreds of applied studies that used this increased understanding to develop creative treatments such as functional communication training (Carr & Durand, 1985). Thus, the original study by Iwata et al. (1982/1994) functioned as a bridge study and provided the basis for field studies on the generalized merits of this approach for treating aberrant behavior (e.g., Wacker et al., 1998).



The evolution of functional analysis also led to changes in the way target behavior was assessed. Rather than showing baseline rates under one set of conditions, multi-element analyses were conducted to show the relative effects of distinct classes of reinforcement. This emphasis on relative effects likely led to increased interest in other forms of relativistic analysis such as the use of concurrent schedules designs to study stimulus preferences (Fisher et al., 1992).

Thus, both the focus (tightly controlled analyses of operant functions) and the design (relative influences of reinforcement) of functional analysis studies served as bridges to more basic processes and likely stimulated increased interest and acceptance of bridge studies. A similar approach to analysis with other subgroups, as has been accomplished by Neef et al. (1993) and Northup et al. (1996) with participants diagnosed with ADHD, and by Cooper et al. (1999) with typically developing young children with feeding disorders, is needed. As described by Kazdin (1978), the reciprocal relationship between the clinic and the lab facilitated the development of behavior therapy in the 1960s. The increased use of bridge studies might again be useful in the applied literature for other groups of individuals who represent a wider range of diagnoses and target behaviors.

Additional forms of bridge studies are needed to further our understanding of behavior. For example, Mace and Mauk (1999) and Schroeder et al. (2001) provided bridges between biologic and genetic variables and displays of self-injury. These types of more basic analyses and discussions are correlated with an increasing number of bio-behavioral studies in areas such as sleep (Piazza, Fisher, & Kahng, 1996) and pain (O'Reilly, 1997). These studies, which also involve individuals with developmental disabilities, suggest that other types of bridge studies can contribute to our understanding of behavior and, thus, to the development of novel applied interventions.

Bridge studies should be evaluated based on their functional properties and not on their structural components. Bridge studies should function to improve our understanding of operant processes, and the generalizability of

those processes, and should serve as direct links between basic and applied research. As links in a bridge, their applied value may be limited, except for the base they provide for the development of novel interventions. The structural properties of the studies, such as the participants, should be viewed in correlational terms. At any given moment in time, different subgroups, stimulus conditions, or target behaviors will likely be represented more than others because of uncontrolled variables such as the publication histories of research teams and funding initiatives. These variables are correlated with, but are not controlling or being controlled by, the independent variables manipulated in bridge studies.

To further advance our science, it is critical that *JABA* continue to seek out and publish bridge studies. There are many applied journals that disseminate field studies and other forms of applied studies. There are relatively few journals that publish behavioral analyses that function as bridge studies. A logical next step in the continued evolution of these studies is to show their generalizability across subgroups, stimulus conditions, and target behaviors. Alternatively, the evolution of other forms of bridge studies, such as bio-behavioral analyses, is also needed to further increase our understanding of behavior and to better explain behavioral variability.

Increasing the frequency of bridge studies is critical because they represent the integration of our science. Bridge studies provide the links that make it possible to describe research in behavior analysis as existing along a continuum. They provide the explicit integration of science and practice that is only rarely found in other fields of study in psychology, education, and medicine.

## REFERENCES

- Berg, W. K., Peck, S., Wacker, D. P., Harding, J., McComas, J., Richman, D., & Brown, K. (2000). The effects of pre-session exposure to attention on the results of assessments of attention as a reinforcer. *Journal of Applied Behavior Analysis, 33*, 463-477.
- Carr, E. G., & Durand, V. M. (1985). Reducing behavior problems through functional communication training. *Journal of Applied Behavior Analysis, 18*, 111-126.
- Cooper, L. J., Wacker, D. P., Brown, K., McComas, J. J., Peck, S. M., Drew, J., Asmus, J., & Kayser, K. (1999). Use of a

- concurrent operants paradigm to evaluate positive reinforcers during treatment of food refusal. *Behavior Modification*, 23, 3-40.
- Cuvo, A. J., Lerch, L. J., Leurquin, Gaffaney, T. J., & Poppen, R. L. (1998). Response allocation to concurrent fixed-ratio reinforcement schedules with work requirements by adults with mental retardation and typical preschool children. *Journal of Applied Behavior Analysis*, 31, 43-63.
- Fisher, W. W., & Mazur, J. E. (1997). Basic and applied research on choice responding. *Journal of Applied Behavior Analysis*, 30, 387-410.
- Fisher, W., Piazza, C. C., Bowman, L. G., Hagopian, L. P., Owens, J. C., & Slevin, I. (1992). A comparison of two approaches for identifying reinforcers for persons with severe and profound disabilities. *Journal of Applied Behavior Analysis*, 25, 491-498.
- Fisher, W., Piazza, C., Cataldo, M., Harrell, R., Jefferson, G., & Conner, R. (1993). Functional communication training with and without extinction and punishment. *Journal of Applied Behavior Analysis*, 26, 23-36.
- Fuqua, R. W. (1984). Comments on the applied relevance of the matching law. *Journal of Applied Behavior Analysis*, 17, 381-386.
- Hagopian, L. P., Crockett, J. L., van Stone, M., DeLeon, I. G., & Bowman, L. G. (2000). Effects of noncontingent reinforcement on problem behavior and stimulus engagement: The role of satiation, extinction, and alternative reinforcement. *Journal of Applied Behavior Analysis*, 33, 433-449.
- Hake, D. F. (1982). The basic-applied continuum and the possible evolution of human operant social and verbal research. *The Behavior Analyst*, 5, 21-28.
- Harding, J. W., Wacker, D. P., Berg, W. K., Cooper, L. J., Asmus, J. A., Mlela, K., & Muller, J. (1999). An analysis of choice making in the assessment of young children with severe behavior problems. *Journal of Applied Behavior Analysis*, 32, 63-82.
- Herrnstein, R. J. (1961). Relative and absolute strength of response as a function of frequency of reinforcement. *Journal of the Experimental Analysis of Behavior*, 4, 267-272.
- Iwata, B. A. (1987). Negative reinforcement in applied behavior analysis: An emerging technology. *Journal of Applied Behavior Analysis*, 20, 361-378.
- Iwata, B. A., Dorsey, M. F., Slifer, K. J., Bauman, K. E., & Richman, G. S. (1994). Toward a functional analysis of self-injury. *Journal of Applied Behavior Analysis*, 27, 197-209. (Reprinted from *Analysis and Intervention in Developmental Disabilities*, 2, 3-20.)
- Iwata, B. A., Pace, G. M., Dorsey, M. F., Zarcone, J. R., Vollmer, T. R., Smith, R. G., et al. (1994). The functions of self-injurious behavior: An experimental-epidemiological analysis. *Journal of Applied Behavior Analysis*, 27, 215-240.
- Iwata, B. A., Roscoe, E. M., Zarcone, J. R., & Richman, D. M. (2002). Environmental determinants of self-injurious behavior. In S. Schroeder, M. Oster-Granite, & T. Thompson (Eds.), *Self-injurious behavior* (pp. 93-103). Washington, DC: American Psychological Association.
- Iwata, B. A., Smith, R. G., & Michael, J. (2000). Current research on the influence of establishing operations on behavior in applied settings. *Journal of Applied Behavior Analysis*, 33, 411-418.
- Kahng, S. W., Iwata, B. A., & Lewin, A. B. (2002). The impact of functional assessment on the treatment of self-injurious behavior. In S. Schroeder, M. Oster-Granite, & T. Thompson (Eds.), *Self-injurious behavior* (pp. 119-131). Washington, DC: American Psychological Association.
- Kazdin, A. E. (1978). *History of behavior modification*. Baltimore: University Park Press.
- Kerwin, M. E., Ahearn, W. J., Eicher, P. S., & Burd, D. M. (1995). The costs of eating: A behavioral economic analysis of food refusal. *Journal of Applied Behavior Analysis*, 28, 245-260.
- Lerman, D. C., & Iwata, B. A. (1996). Developing a technology for the use of operant extinction in clinical settings: An examination of basic and applied research. *Journal of Applied Behavior Analysis*, 29, 345-382.
- Mace, F. C. (1994). Basic research needed for stimulating the development of behavioral technologies. *Journal of the Experimental Analysis of Behavior*, 61, 529-550.
- Mace, F. C., Hock, M. L., Lalli, J. S., West, B. J., Belfiore, P., Pinter, E., & Brown, D. K. (1988). Behavioral momentum in the treatment of noncompliance. *Journal of Applied Behavior Analysis*, 21, 123-141.
- Mace, F. C., & Mauk, J. E. (1999). Biobehavioral diagnosis and treatment of self-injury. In A. Repp & R. Homer (Eds.), *Functional analysis of problem behavior: From effective assessment to effective support* (pp. 78-97). Belmont, CA: Wadsworth.
- Mace, F. C., Neef, N. A., Shade, D., & Mauro, B. C. (1996). Effects of problem difficulty and reinforcer quality on time allocated to concurrent arithmetic problems. *Journal of Applied Behavior Analysis*, 29, 11-24.
- Mace, F. C., & Roberts, M. L. (1993). Factors affecting selection of behavioral interventions. In J. Reichle & D. Wacker (Eds.), *Communicative alternatives to challenging behavior: Integrating functional assessment and intervention strategies* (pp. 113-133). Baltimore: Paul H. Brookes.
- Mace, F. C., & Wacker, D. P. (1994). Toward greater integration of basic and applied behavioral research: An introduction. *Journal of Applied Behavior Analysis*, 27, 569-574.
- McDowell, J. J. (1988). The importance of Herrnstein's mathematical statement of the law of effect for behavior therapy. *American Psychologist*, 37, 771-779.
- Michael, J. (1982). Distinguishing between discriminative and motivational functions of stimuli. *Journal of Experimental Analysis of Behavior*, 37, 149-155.
- Michael, J. (1993). Establishing operations. *The Behavior Analyst*, 16, 191-206.
- Michael, J. (2000). Implications and refinements of the establishing operation concept. *Journal of Applied Behavior Analysis*, 33, 401-410.
- Neef, N. A., Mace, F. C., & Shade, D. (1993). Impulsivity in students with serious emotional disturbance: The interactive effects of reinforcer rate, delay, and quality. *Journal of Applied Behavior Analysis*, 26, 37-52.
- Neef, N. A., Mace, F. C., Shea, M. C., & Shade, D. (1992). Effects of reinforcer rate and reinforcer quality on time allocation: Extensions of matching theory to educational settings. *Journal of Applied Behavior Analysis*, 25, 691-699.

- Neef, N. A., Shade, D., & Miller, M. S. (1994). Assessing influential dimensions of reinforcers on choice in students with serious emotional disturbance. *Journal of Applied Behavior Analysis, 27*, 575-583.
- Nevin, J. A. (1996). The momentum of compliance. *Journal of Applied Behavior Analysis, 29*, 535-547.
- Northup, J., George, T., Jones, K., Broussard, C., & Vollmer, T. R. (1996). A comparison of reinforcer assessment methods: The utility of verbal and pictorial choice procedures. *Journal of Applied Behavior Analysis, 29*, 201-212.
- O'Reilly, M. F. (1997). Functional analysis of episodic self-injury correlated with recurrent otitis media. *Journal of Applied Behavior Analysis, 30*, 165-167.
- Peck, S. M., Wacker, D. P., Berg, W. K., Cooper, L. J., Brown, K. A., Richman, D., McComas, J. J., Frischmeyer, P., & Millard, T. (1996). Choice-making treatment of young children's severe behavior problems. *Journal of Applied Behavior Analysis, 29*, 263-290.
- Piazza, C. C., Fisher, W. W. & Kahng, S. W. (1996). Sleep patterns in children and young adults with mental retardation and severe behavior disorders. *Developmental Medicine and Child Neurology, 38*, 335-344.
- Poling, A., Alling, K., & Fuqua, R. W. (1994). Self- and cross-citations in the *Journal of Applied Behavior Analysis* and the *Journal of the Experimental Analysis of Behavior*: 1983-1992. *Journal of Applied Behavior Analysis, 27*, 729-731.
- Ringdahl, J. E., Vollmer, T. R., Marcus, B. A., & Roane, H. S. (1997). An analogue evaluation of environmental enrichment: The role of stimulus preference. *Journal of Applied Behavior Analysis, 30*, 203-216.
- Schroeder, S. R., Oster-Granite, M. L., Berkson, G., Bodfish, J. W., Breese, G. R., Cataldo, M. F., et al. (2001). Self-injurious behavior: Gene-brain-behavior relationships. *Mental Retardation and Developmental Disabilities Research Review, 7*, 3-12.
- Vollmer, T. R., & Iwata B. A. (1991). Establishing operations and reinforcement effects. *Journal of Applied Behavior Analysis, 24*, 279-291.
- Vollmer, T. R., Marcus, B. A., & Ringdahl, J. E. (1995). Noncontingent escape as treatment for self-injurious behavior maintained by negative reinforcement. *Journal of Applied Behavior Analysis, 28*, 15-26.
- Wacker, D. P. (1996). Behavior analysis research in *JABA*: A need for studies that bridge basic and applied research. *Experimental Analysis of Human Behavior Bulletin, 14* (1), 11-14.
- Wacker, D. P. (2000). Building a bridge between research in experimental and applied behavior analysis. In J. C. Leslie & D. Blackman (Eds.), *Experimental and applied analysis of human behavior* (pp. 205-212). Reno, NV: Context Press.
- Wacker, D. P., Berg, W. K., Harding, J. W., Derby, K. M., Asmus, J. M., & Healy, A. (1998). Evaluation and long-term treatment of aberrant behavior displayed by young children with disabilities. *Journal of Developmental and Behavioral Pediatrics, 19*, 260-266.
- Wacker, D., Steege, M., Northup, J., Sasso, G., Berg, W., Reimers, T., Cooper, L., Cigrand, K., & Donn, L. (1990). A component analysis of functional communication training across three topographies of severe behavior problems. *Journal of Applied Behavior Analysis, 23*, 417-429.

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## BEHAVIOR ANALYSIS AND THE SCIENTIFIC STUDY OF COUPLES

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Behavior analysis has recently contributed a great deal to the study of couples. The current paper reviews several of those contributions. First, the contributions of behavior analysis to the development of Integrative Behavioral Couple Therapy (ICT) are discussed. It is concluded that behavior analysis has guided ICT to be more flexible, more thoroughly contextual, and more attentive to naturally occurring contingencies for change. Second, a behavior analytic exploration of acceptance is discussed, highlighting the what, when, and how of acceptance in therapy. Third, a behavioral conceptualization of intimacy is reviewed, highlighting the contributions that behavior analytic principals make to our understanding of the intimacy process. Finally, the contributions of behavior analysis to the study and treatment of depression are briefly reviewed, with an emphasis on conceptualizing depression in context.

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Behavior analysis has recently contributed a great deal to the study of couples. Although the study of couples has a long history of using behavioral observation as a key method, a great deal of the work has been either consciously pre-theoretical (in an inductive sense; e.g., Gottman, 1994) or inspired by common-sense theory. Recently, however, those in the field are rediscovering the theoretical and practical utility of behavior analysis.

### A Behavior Analytic Approach to Couple Therapy

An excellent example of this process of rediscovery can be found in the evolution of traditional behavioral marital therapy (Jacobson & Margolin, 1979) into its current manifestation as integrative couple therapy (Christensen & Jacobson, 1991; Jacobson & Christensen, 1998). Traditionally, behavioral marital therapy was rooted in social learning and behavior exchange theories. As such it was primarily focused on identifying relationship skill deficits as the etiology of relationship distress and addressing those skill deficits through systematic skills training. In addition to being focused on observable interpersonal skills, traditional behavioral marital therapy was inspired by the results of nomothetic research that highlighted the differences between groups of distressed couples versus groups of non-distressed couples. In other words, the targets of intervention were those things that had been found through nomothetic research to distinguish distressed from non-distressed couples. For example, distressed couples appeared to communicate more poorly, to have more difficulty solving even small problems, and to engage in fewer exchanges of positive behaviors than non-distressed couples. From a social learning theory

perspective, these group differences were interpreted as skill deficits and interventions were formulated to teach partners the skills that would allow them to communicate and solve problems more effectively, and exchange positive behaviors more frequently. Unfortunately, these topographical group differences in many instances may have been simple reflections of other problems having little to do with literal skill deficits. For example, what appeared to be poor problem-solving skills may have been in fact the end result of partners being too emotionally upset with each other to cooperate effectively. In their daily lives, the partners in these couples tend to have no difficulty communicating and problem solving with others. It is only in the context of an emotionally strained marriage that these "deficits" materialize. In addition to seeing skill deficits where no such deficits actually existed, outcome studies of traditional behavioral marital therapy were finding that only approximately half of those couples presenting for therapy eventually improved their marital satisfaction and remained improved over time (Jacobson & Follette, 1985; Jacobson, Schmaling, & Holtzworth-Munroe, 1987). Although a 50% success rate is admirable, it remained the case that a great many couples were not benefiting as much as would be ultimately desirable. Further investigation suggested that those couples who did not do well in traditional marital therapy were those likely to be the least collaborative in working together to learn new skills (e.g., couples too emotionally polarized or in very traditional relationships; Jacobson, Follette, & Pagel, 1986).

Given this set of circumstances, Jacobson and Christensen (1998) set out to

formulate a more powerful form of couple therapy capable of successfully treating those couples who were difficult to treat with the original form of therapy. They called this new approach Integrative Couple Therapy (ICT) to denote the integration of traditional skills-based change strategies with the newer emphasis on promoting acceptance. This is where an appeal to behavior analytic principals was found to be most useful. For example, in ICT a greater emphasis is placed on issues of context and functional analyses. Thus, rather than assuming that distressed couples have communication skill deficits, ICT focuses on developing an individualized case conceptualization based on a functional analysis of the couples' complaints in context. Thus, one couple may fight about money because they have very little and it is a cause of genuine deprivation, whereas another couple may fight about money because, although they have enough to live comfortably on, they both have very different styles of managing it. How an ICT therapist effectively addresses these arguments over money is likely to be quite different for these two couples if considered contextually. Thus, rather than focus on the apparent communication problem (which Christensen and Jacobson would call a derivative problem) and intervene by training both of these couples in "better" communication techniques, the ICT therapist would first work to understand the functional context of the issue for each set of partners. For the first couple, the principal source of suffering is limited access to necessary resources. In this case, the therapist can help the partners to work as a team to manage available resources and to actively seek assistance in the community. For the second couple, the principal source of suffering is framing their differences as something aversive, located within each of them, that must be defeated. In this case, the therapist can help by fostering empathic understanding. For example, the therapist might guide the partners toward discovering that one partner, having experienced genuine deprivation in the past, now feels genuine fearfulness when she does not feel like they are saving enough money to protect them in an emergency, whereas the other partner, having suffered genuine loss, wants to use money to enjoy life before it is too late. Through processes described later, the new stories about their differences foster greater acceptance, deeper

intimacy, and more compassionate understanding.

In short, attention to the behavior analytic emphasis on context and functional analyses allows an approach to couple therapy that is more flexible and thus capable of dealing with the variety of issues that couples bring to therapy. Where traditional behavioral marital therapy was blinded by the topography of the couple's problem, ICT, with its roots in behavior analysis, is more conscientious about pursuing the meaning of the problem in context.

Another example from the development of ICT involves greater attention to naturally occurring versus arbitrary reinforcers. For example, it was often found that even those couples who initially did very well learning the communication and problem-solving techniques taught in traditional marital therapy, did not necessarily use those skills at home. Upon reflection, the absence of generalization could be explained by the arbitrary nature of the reinforcers for those behaviors. The reinforcement for learning and using the communication skills, such as active listening, came primarily from the therapist through active coaching, correcting, and assigning homework. When the therapist was no longer around to deliver consequents, the behavior failed to emerge, because salient consequents in the natural environment of the relationship were missing. Alternatively, ICT helps partners make contact with naturally occurring contingencies by drawing their attention to those destructive patterns they engage in with each other and by helping partners to discover their own strategies for addressing their major issues. For example, if two partners tend to have their biggest fights around issues of closeness and distance, then recognizing that pattern as something normal and non-blameworthy allows them to better accept those individual differences. In other words, changing the meaning of their different needs for closeness sets the stage for different behavior, and that different behavior in turn is shaped and maintained by its effects in the relationship.

Another example was a couple we worked with who had particularly dismal communication skills. They snapped at each other constantly, fought often, were prone to

serious miscommunication, and tended to infer malicious intent to the other's behavior. The therapeutic goals for this couple included decreasing the frequency and destructiveness of the partners' arguments, improving the level of understanding between them, and diminishing their negative attributions. These goals would likely be the same in both traditional behavioral marital therapy and ICT. Within the traditional approach, the therapist would reinforce compliance with the rules of communication and problem solving in the hopes that that behavior would (1) be reinforced by beneficial effects on the partners and, thus (2) replace the targeted destructive behavior. Unfortunately, what was reinforced was compliance with the therapist's rules, rather than effective communication and problem-solving behavior, so couples would learn to look like they were communicating and problem solving when the therapist was salient, but would not engage in similar behavior under the control of their actual daily problems.

Alternatively, ICT helped the couple examine the pattern of their interactions in the search for how those interactions emerged naturally from their daily lives. Over the course of therapy, this couple found that they became more contemptuous, more dismissive, and more easily moved to anger when the pressures of daily life interfered with the amount of time they spent talking and enjoying each other's company (possibly because their salience as sources of positive reinforcement diminished in relation to their salience as sources of frustration and annoyance). Recognizing this pattern increased the salience of the circumstances contributing to their distress, thus allowing those circumstances to gain control over healthier behavior. As a result, the partners developed, on their own, ways of spending more quality time together that, in turn, had dramatically positive effects on the quality of their interactions. In addition, when they found themselves slipping into bickering again, that bickering itself set the stage for renewed efforts to increase the amount of shared quality time. Finally, these new opportunities for spending time together developed outside of therapy and were well maintained, theoretically because they resulted from naturally occurring circumstances rather than arbitrary circumstances arranged in therapy. Thus, greater attention to behavior analytic principals has aided in the development of

therapeutic strategies that are more likely to lead to change maintained by the circumstances in partners' daily lives rather than by the arbitrary attentions of the therapist.

There are several other examples of the influence of behavior analytic principals on the development of ICT (Christensen & Jacobson, 1991; Cordova, Jacobson, & Christensen, 1998; Jacobson & Christensen, 1998; Jacobson, Christensen, Prince, Cordova, & Eldridge, 2000). Perhaps most important of the developments has been the greater focus on promoting acceptance, itself a movement within the behavior therapy community that has been heavily influenced by behavior analysis.

### **A Behavior Analytic Conceptualization of Acceptance**

Although acceptance as a therapeutic goal has received widespread attention within the behavior therapy community (e.g., Hayes, Jacobson, Follette, & Dougher, 1994), the conceptualization of what acceptance is remains somewhat murky. As with most such terms, the field was initially quite comfortable with the common understanding of its meaning, and in most circumstances, that common, fuzzy meaning was perfectly adequate. However, progress in the conceptualization and empirical study of the phenomenon itself is greatly hindered to the degree that the referent phenomenon is inadequately specified. Some preliminary conceptual work has been done defining acceptance as "a change in the behavior evoked by a stimulus from that functioning to avoid, escape, or destroy to behavior functioning to maintain or pursue contact (Cordova, 2001)." The benefit of this conceptualization is that it defines acceptance as an observable change in an individual's behavior in relation to a given stimulus, thus potentially facilitating the observational study of acceptance in the transaction of organism and environment. In addition, behavior analytic principals provide a framework for addressing how and when to facilitate acceptance. We have argued that techniques for facilitating a change from aversion to acceptance of a given stimulus can be targeted at any of the three components of the three-term contingency.

Acceptance can be promoted by directly targeting the function of an aversive stimulus

(the Sd). An aversive stimulus, such as a partner's "tightfistedness," can be discussed in therapy in relation to a related but more "attractive" stimulus in an attempt to promote a transfer of function through derived bidirectional relating. In ICT, one technique for promoting acceptance involves uncovering the "understandable reasons" for a partner's aversive behavior. In this example, a partner's tightfistedness might be discussed in terms of his or her need to actively save money in order to feel safe and comfortable in the world. The partner's stinginess can be related to his or her fearfulness of financial insecurity stemming from a childhood in which lack of money was a significant emotional hardship. In the couple therapy literature, this kind of intervention, in which understandable reasons are uncovered and sympathy-eliciting emotions are disclosed, is presented as the type of intervention likely to promote increases in acceptance of one partner's frugality by the other partner. The behavioral processes by which this type of technique works are not specified, but attention to the behavior analytic literature suggests reasonable candidates for the processes at work. For example, vocal discussion of the partner's tightfistedness involves utterances that have acquired some of the stimulus functions of events in which the partner actually engaged in tightfisted behavior. Similarly, discussion of the associated fearfulness involves utterances that have acquired some of the stimulus functions of experienced fearfulness. Pairing these two classes of stimuli in talk therapy theoretically allows for the transfer of function from the more sympathy-eliciting "fearfulness" to the more aversion-eliciting "tightfistedness." Then through the process of derived bidirectional relating, it is theoretically possible for actual instances of tightfistedness occurring outside of the therapy session to take on some of the stimulus function of experienced fearfulness. If such a transfer of function does successfully take place, then future instances of tightfistedness should elicit less aversion and more sympathy. In other words, the stimulus function involving expressions of tightfistedness are transformed toward stimulus functions involving expressions of fearfulness. Note that this change fits our definition of acceptance in that the topography of tightfistedness does not necessarily change, but its stimulus function for the other partner does change from one that elicits attack,

avoidance, or withdrawal to one that elicits a relationship-healthy tendency to approach and offer comfort. Thus these two fairly well documented behavioral phenomena (the transfer of stimulus function and derived bidirectional relating) allow for an effective and actionable explanation of the therapeutic phenomenon.

Acceptance techniques have also been developed that target the aversion behavior itself (e.g., attacking, avoiding or withdrawing). One might target aversion behavior, for example, with techniques such as exposure and response prevention for compulsive hand washing (e.g., Abramowitz, 1997). This technique places the individual in contact with the aversive stimulus and then prevents him or her from engaging in the usual aversion behavior (e.g., hand washing). Such techniques have been found to be very effective treatments for a range of problems, including obsessive-compulsive behavior and post-traumatic stress disorder (Foa, Rothbaum, Riggs, & Murdock, 1991). The changes in behavior that result fit our definition of acceptance in that the stimulus remains topographically the same (e.g., unwashed hands), but the function changes from eliciting aversion (compulsive hand washing) to maintaining contact while pursuing a richer life.

One might also promote acceptance by targeting the consequences of aversion by, for example, differentially reinforcing behavior that results in greater interpersonal contact (e.g., increased eye contact, increased self-disclosure) in a client with a history of difficulty with intimate relationships (e.g., Kohlenberg & Tsai, 1991). In this instance, all approximations of the behavior class in question (making and maintaining interpersonal contact) are differentially reinforced by the therapist, shaping over time a change in the relationship between the client and other people from one in which the presence of others elicits withdrawal and avoidance to one in which the presence of others is more likely to elicit approach and engagement. A more detailed exploration of the application of behavior analytic principals to our understanding of acceptance can be found in Cordova (2001).

### A Behavior Analytic Conceptualization of Intimacy

The principals of behavior analysis have also influenced us (Cordova & Scott, 2001) in our understanding of the intimacy process. Our theory posits that intimacy is a process driven by the reinforcement of interpersonally vulnerable behavior. The theory defines interpersonally vulnerable behavior as any behavior occurring in an interpersonal context that has been associated with punishment by others in the past. In other words, a behavior is considered interpersonally vulnerable to the extent that a person has (1) been punished for it in the past, (2) seen others punished for it, or (3) been informed that it is subject to punishment. The process of intimacy is set in motion when one person engages in vulnerable behavior and another person reinforces it. This sequence of events is called an *intimate event* and results in an increase in the frequency of the first person's subsequent interpersonally vulnerable behavior in relation to the reinforcing partner. In other words, not only does the reinforcement of vulnerable behavior result in its increase, but it results in its increase specifically in relation to the person who reinforced it. This increase in behavioral frequency in relation to the context within which reinforcement occurs constitutes a gain in stimulus control, and in this context is the process of *intimate partnership formation*. Given the opportunity, this intimacy process will continue to result in more and more frequent displays of vulnerable behavior in relation to the intimate partner. Thus, the reinforcement of interpersonally vulnerable behavior is the engine that drives the process of intimacy.

Thus, if a person has a history of being punished for being loud and exuberant and then meets someone who consistently reinforces exuberance, the theory would predict that the first person will come to feel particularly close to the second person and will engage in a wider variety of vulnerable behaviors with that person than with most others. In a sense, intimate events release behavior that is at strength but that has been previously suppressed by others. That release is a fundamental aspect of the process of intimacy, leading to the frequent statement that people feel they can be "more themselves" with intimate others.

The downside of the intimacy process is that as vulnerable behavior becomes more and more frequent in the presence of the intimate partner, the probability of punishment also increases. In other words, more and more opportunities for the reinforcement of vulnerable behavior are also more and more opportunities for the punishment of interpersonally vulnerable behavior. We refer to the punishment of interpersonally vulnerable behavior as the occurrence of a *suppressive event*, because such sequences continue to suppress the occurrence of that vulnerable behavior. For example, the same partner who reinforces loud exuberance, may also contingently punish loud displays of anger. Suppressive events become inevitable given the process set in motion by intimate events. As the intimacy process unfolds, the individual will eventually engage in some form of vulnerable behavior that is actually aversive to the other person. In response, that other person will respond punitively and thus, the behavior will be contingently punished. These are thought of as interpersonal boundary conditions and are posited to be part and parcel of all developing partnerships. Over time, partners learn to effectively discriminate between those vulnerable behaviors that will be reinforced by the partner and those that will be punished. They also learn to effectively discriminate between those *times* when the partner is more and less likely to reinforce vulnerable behavior. In addition to the contingent punishment of vulnerable behavior, increased frequencies of vulnerable behavior also increase the probability of non-contingent punishment. In other words, suppressive events are also likely to occur by accident. For example, an intimate partner might inadvertently punish a vulnerable attempt to talk about a touchy subject by being distracted or by responding with irritation spilling over from work stress. In short, the process of intimate partnership development necessarily includes both intimate and suppressive events, and thus, theoretically, all developing intimate partnerships can at any point be characterized by their accumulated ratio of intimate to suppressive events.

If the ratio of intimate to suppressive events favors intimate events, then people will develop a sense that they are generally safe behaving vulnerably with that partner. We refer



to this developing feeling of safety behaving vulnerably as a person's experienced level of *intimate safety*. The more the ratio favors intimate events, the more intimately safe the person will feel. The more the ratio favors suppressive events, the less intimately safe the person will feel. It is this feeling of intimate safety that I posit is the principal feeling emerging from the intimacy process.

In summary, intimacy theory posits that intimate events necessarily set in motion a process that, given the opportunity, becomes the process of intimate partnership formation and generates feelings of intimate safety that reflect the ratio of intimate to suppressive events accumulated over the course of the partnership. A behavioral conceptualization of intimacy also throws light on the emotional and social complexity of intimacy. For example, it highlights that the process of intimate partnership development necessarily involves the emotional pain associated with the occasional punishment of vulnerable behavior. One simply cannot engage in a genuine intimate partnership without accepting one's own vulnerability in that relationship. Vulnerability is a necessary component of intimacy, and the frequency of vulnerable behavior will be highest (and therefore most susceptible to punishment) within intimate partnerships. Many other conceptualizations describe intimacy in wholly positive terms and specifically exclude the negative products of the process (e.g., Prager, 1995). Such exclusions blind us to aspects of the intimacy process that are vital to our understanding of the phenomenon. In addition, a behavioral conceptualization allows that intimate partnerships can develop that reinforce topographically destructive behavior, such as drug usage or other criminal activity (e.g., gang membership). A behavioral conceptualization implies that some types of destructive behavior may be maintained through the same processes that develop within and maintain other, more socially accepted forms of intimacy.

### **Behavior Analysis and Couples Therapy for Depression**

Behavior analysis has contributed to thinking about the etiology and treatment of depression in general (e.g., Ferster, 1973), and more specifically, to addressing depressive

symptoms within the context of an intimate relationship (Cordova & Gee, 2001; Cordova & Jacobson, 1997). Research has repeatedly demonstrated that depression both affects and is affected by intimate relationships (e.g., Beach, Whisman, & O'Leary, 1994). A substantial body of evidence suggests that relationship difficulties often set the stage for depressive symptoms (e.g., Beach & Cassidy, 1991). In addition, a great deal of research suggests that the onset and presence of depressive symptoms has predictable negative effects on relationship quality (e.g., Billings, Cronkite, & Moos, 1983), because most depressed people will experience symptoms within the context of the primary intimate relationship. Behavior analysts present a unique way of thinking about depression, emphasizing both the *context* in which depressive symptoms emerge and the *function* of the symptoms (or the associated lack of reinforced behavior) in those contexts. For example, according to Martell, Addis, and Jacobson (2001), a contextualist conceptualization of depression does not posit a "defect model," but instead conceptualizes depression as "a set of behaviors in context" that are "understandable and predictable given a person's life history and current context (p. xxv)." In addition, Ferster (1973) noted that the most striking thing about depression is what the person is *not* doing rather than what the positive symptoms look like. In fact, depression can be conceptualized as a marked deterioration in the active pursuit of positive consequences (Cordova & Jacobson, 1997). Ferster also noted that most of the behavior that depressed people actually do engage in primarily serves primitive escape and avoidance functions (i.e., aversion).

Ferster (1973) identified three characteristics of a person's repertoire that might predispose him or her to depression. The first is a rigid repertoire that does not adapt well to changing circumstances. Although such a repertoire may function well within appropriate domains, it predisposes a person toward depression because, as the Buddhists put it, the nature of life is change, so successful living requires adaptability. The second is a repertoire that ineffectively avoids aversive situations. It is simply the case that some means of addressing aversive circumstances are more effective than others at removing those aversive circumstances. A person with an aggressive or avoidant

repertoire for coping with aversive circumstances may be more prone to depression because efforts to cope with aversive situations are more likely to result in either greater negative consequences or diminished positive engagement. Finally, the third depression-prone repertoire is one that is minimally exploratory or that inhibits the normal exploration of the environment. The less exploratory a person is, (1) the less he or she learns how to behave effectively in the world, (2) the smaller their effective repertoire, and (3) the more aversive circumstances he or she accumulates. In short, behavior analysis contributes to the study and treatment of depression by providing a useful conceptualization of depression that is contextualized and pragmatic. Couples therapy for depression (Cordova & Gee, 2001; Cordova & Jacobson, 1997) is informed by behavior analysis in that its goal is to address the depression-prone repertoire as a deficit in effective behavior.

For example, rigid repertoires are particularly problematic in intimate relationships because such relationships continually change as they develop. Those who have difficulty adapting to changing circumstances may be particularly prone to relationship deterioration and depression. The key to addressing a rigid repertoire is to promote flexibility by helping partners accept a degree of unpredictability in the intimate relationship while promoting more effective ways of adapting to changing interpersonal circumstances.

For example, consider Steve and Tina's relationship. Steve reported experiencing a return of his depression following the birth of their one-year-old son. Over the course of therapy, it became increasingly clear to both Steve and Tina that they did not spend as much time together as they use to because of their new focus on parenting. Although they both reported feeling the strain on their relationship, Steve found himself feeling more and more depressed about the loss of intimacy with Tina. He was stuck without a viable repertoire for maintaining emotional closeness with her. Essentially, they had failed to develop new ways of attending to the quality of their relationship. Targeting this aspect of the depression involved coaching them toward a new, shared repertoire for maintaining intimacy, including strengthening their social

support network, scheduling regular time alone together, and checking in with each other throughout the day to maintain their sense of connectedness. In short, the therapist helped them develop a more flexible repertoire to address that aspect of the depression stemming from their failure to adapt together in the transition to parenthood.

The second repertoire, characterized by avoidance or aggression, can be depressogenic because of the resentment that builds when a partner copes with problems through avoidance or emotional withdrawal. The depressive symptoms develop as the relationship deteriorates and intimacy decreases. Couples therapy for depression within such a relationship helps partners learn how to cope both with the class of problems that lend themselves to instrumental problem solving and with the problems that lend themselves more to acceptance. For the solvable problems, partners can be taught how to break them down into manageable units and to work together toward a solution. For unsolvable problems, partners can be guided toward a healthy acceptance, opening up an entire category of effective strategies for managing relationship difficulties.

For example, Michelle and Robert sought couple therapy, in part, because their frequent disagreements about family finances resulted in a chronic state of tension and emotional withdrawal. Robert worked as an independent contractor and, as a result, his monthly income varied considerably and was often less than they needed to stay out of serious debt. Robert managed his own finances and did not like to include Michelle because he felt criticized by her and because he felt that including her would not help improve their financial situation. Michelle, for her part, was anxious about their financial situation and wanted Robert either to find another line of work with more regular income or to become involved in the bookkeeping so she could try to improve the financial management of the business. Robert had developed depressive symptoms that he attributed to financial stress, marital stress, the failure of the business to thrive, and a general sense of being stuck in a situation with no way out. From the current perspective, Robert's repertoire was ineffectively avoidant in that he made frequent

contact with several sources of aversive stimulation for which he had no adequate response. His depressive symptoms had emerged as a result of that chronic, inescapable aversiveness. Therapy, therefore, focused on helping Robert and Michelle develop a greater degree of compassion for the pain that they both experienced. This served two relevant purposes. One was to improve the quality of their emotional relationship and thus to remove one source of chronic aversiveness (the tension between them). The second purpose was to facilitate their willingness to work together to confront their financial situation. As a result, Robert became more willing to include Michelle in the day-to-day finances of the business and Michelle became more accepting of the unpredictable nature of the work. In addition, as their willingness and ability to talk about their financial concerns without withdrawing improved, they were able to brainstorm viable and creative ways to resolve their debt load. Thus, through a combination of acceptance and change techniques, Michelle and Robert were both able to develop more effectively avoidant repertoires, which in turn helped to alleviate both their relationship distress and Robert's depressive symptoms.

The third depression-prone repertoire, limited exploratory, creates a vulnerability to relationship distress and depression because it stunts a couple's capacity for shared positive experiences, creating stagnation in the relationship. Couple therapy for depression addresses a limited exploratory repertoire by educating partners about the patterns that may be interfering with their exploration of the environment, and encourages them to view their surroundings together, within the context of a mutually satisfying relationship.

For example, Pamela's depression was embedded in her relationship with Phil and they had become almost completely withdrawn from each other after a series of misunderstandings and emotionally damaging arguments. In addition to a great deal of work in therapy to repair the couple's intimacy, the therapist also worked with them to discover new ways of finding time together and developing active curiosity about each other. After several months of therapy, Phil and Pamela started meeting for lunch once or twice a week to be alone and to

explore the shops and galleries in the neighborhood. This new context for their relationship had dramatically positive effects on the quality of their affection for each other, which appeared to contribute greatly to improvements in both their relationship and Pamela's depressive symptoms. Activating the couple to become more exploratory of their shared world increased the size and flexibility of their repertoires, in a sense displacing depressive symptoms with more effective behavior.

## CONCLUSION

In summary, I have provided a brief overview of how the principles of behavior analysis have influenced some of the current work in the study and treatment of couples. These theoretical and conceptual contributions have in turn inspired a good deal of empirical research. For example, work has been done evaluating the efficacy of ICT as intervention for relationship distress (Jacobson, Christensen, Prince, Cordova, & Eldridge, 2000) and studying the theoretical mechanisms of change, including increases in partner acceptance (Cordova, Jacobson, & Christensen, 1998). In addition, we are currently developing a system for studying the process of acceptance development over the course of couples therapy. We are also developing both observational (Dorian & Cordova, in press) and paper-and-pencil measures (Cordova, Gee, Warren, & McDonald, 2002) inspired by the behavioral conceptualization of intimacy, and preliminary studies have found these to be useful and informative. Finally, we are also beginning to study the efficacy of couple therapy for depression and continue to develop its applications (e.g., Cordova & Gee, 2001).

In conclusion, the study of couples has a great deal to gain from greater attention to the principals of behavior analysis. The most positive outcome of this interaction would be the benefits that behavior analysis brings to the scientific study of couples and the opportunity this work has to demonstrate the vitality of behavior analysis to mainstream clinical researchers.

## REFERENCES

- Abramowitz, J. S. (1997). Effectiveness of psychological and pharmacological treatments for obsessive-compulsive disorder: A quantitative review. *Journal of Consulting and Clinical Psychology, 65*, 44-52.
- Beach, S. R., & Cassidy, J. F. (1991). The marital discord model of depression. *Comprehensive Mental Health Care, 1*, 119-136.
- Beach, S. R. H., Whisman, M. A., & O'Leary, K. D. (1994). Marital therapy for depression: Theoretical foundation, current status, and future directions. *Behavior Therapy, 25*, 345-371.
- Billings, A. G., Cronkite, R. C. & Moos, R. H. (1983). Social environmental factors in unipolar depression: Comparisons of depressed patients and controls. *Journal of Abnormal Psychology, 92*, 119-133.
- Christensen, A., & Jacobson, N. S. (1991). *Integrative behavioral couples therapy*. Unpublished treatment manual.
- Cordova, J. V. (2001). Acceptance in behavior therapy: Understanding the process of change. *The Behavior Analyst, 24*, 213-226.
- Cordova, J. V., & Gee, C. B. (2001). Couple therapy for depression: Using healthy relationships to treat depression. In S. R. H. Beach (Ed.), *Marital and Family Processes in Depression* (pp.185-204). Washington, DC: American Psychological Association.
- Cordova, J. V., Gee, C. G., Warren, L.Z., & McDonald, R. P. (2002). *Intimate safety: Measuring the private experience of intimacy in men and women*. Manuscript submitted for publication.
- Cordova, J. V., & Scott, R. L. (2001). Intimacy: A behavioral interpretation. *The Behavior Analyst, 24*, 75-86.
- Cordova, J. V., & Jacobson, N. S. (1997). Acceptance in couples therapy: Implications for the treatment and prevention of depression. In R. J. Stenberg & M. Hojjat (Eds.), *Satisfaction in close relationships* (pp.307-334). New York: Guilford Press.
- Cordova, J. V., Jacobson, N. S., & Christensen, A. (1998). Acceptance versus change interventions in behavioral couple therapy: Impact on couples' in-session communication. *Journal of Marital and Family Therapy, 24*, 437-455.
- Dorian, M., & Cordova, J. V. (in press). Coding intimacy in couples' interaction. In P. Kerig & D. Baucom (Eds.), *Couple observational codings systems*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Ferster, C. B. (1973). A functional analysis of depression. *American Psychologist, 28*, 857-869.
- Foa, E. B., Rothbaum, B. O., Riggs, D., & Murdock, T. (1991). Treatment of post-traumatic stress disorder in rape victims: A comparison between cognitive-behavioral procedures and counseling. *Journal of Consulting and Clinical Psychology, 59*, 715-723.
- Hayes, s. C., Jacobson, N. s., Follette, V. M., & Dougher, M. J. (1994). *Acceptance and change: Content and context in psychotherapy*. Reno, NV: Context Press.
- Jacobson, N. S., & Christensen, A. (1998). *Acceptance and change in couple therapy: A therapist's guide to transforming relationships*. New York: Guilford Press.
- Jacobson, N. S., Christensen, A., Prince, S. E., Cordova, J. V., & Eldridge, K. (2000). Integrative behavioral couple therapy: An acceptance-based, promising new treatment for marital discord. *Journal of Consulting and Clinical Psychology, 68*, 351-355.
- Jacobson, N. S., & Follette, W. C. (1985). Clinical significance of improvement resulting from two behavioral marital therapy components. *Behavior Therapy, 16*, 249-262.
- Jacobson, N. S., Follette, W. C., & Pagel, M. (1986). Predicting who will benefit from behavioral marital therapy. *Journal of Consulting and Clinical Psychology, 54*, 518-522.
- Jacobson, N. S., & Margolin, G. (1979). *Marital therapy: Strategies based on social learning and behavior exchange principles*. New York: Brunner/Mazel.
- Jacobson, N.S., Schmaling, K. B. & Holtzworth-Munroe, A. (1987). Component analysis of behavioral marital therapy: Two-year follow-up and prediction of relapse. *Journal of Marital and Family Therapy, 13*, 187-195.
- Kohlenberg, R. J., & Tsai, M. (1991). *Functional analytic psychotherapy: Creating intense and curative therapeutic relationships*. New York: Plenum.
- Martell, C. R., Addis, M. E., & Jacobson, N. S. (2001). *Depression in context: Strategies for guided action*. New York: Norton.
- Prager, K. (1995). *The psychology of intimacy*. New York: Guilford Press.

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## AN INTRODUCTION TO RELATIONAL FRAME THEORY: BASICS AND APPLICATIONS

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Relational Frame Theory (RFT) has made a very respectable empirical and theoretical showing in the psychological literature during the past decade, but the theory still remains unknown or unappreciated by most cognitive and behavioral psychologists. This article highlights why this might be the case, and presents RFT in a simplified, systematic manner, in part by comparing it to a well-known cognitive model. Finally, the article outlines RFT's relatively unique contributions to psychological accounts of language and cognition, and addresses some of RFT's scientific and applied implications.

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Relational Frame Theory (RFT) has had a notable presence in the psychology literature since its development over a decade ago. Well over 30 empirical RFT studies have been published in peer-reviewed psychology journals in the past 10 years, and an even larger number of theoretical and descriptive treatments of it have been published as well. Recently, a book length treatment of RFT has been made available (Hayes, Barnes-Holmes, & Roche, 2001), summarizing supporting data and extending RFT analyses to a variety of psychological phenomena. In addition, RFT principles form the theoretical background of Acceptance and Commitment Therapy (ACT; see, for example, Hayes, Strosahl, & Wilson, 1999).

Given the relatively frequent appearances of Relational Frame Theory in psychological literature, it is perhaps surprising that the theory remains virtually unknown outside behavioral circles, and even unrecognized or misunderstood by many academic behavioral psychologists. RFT has largely escaped notice and comprehension for at least three reasons. First, RFT intentionally makes use of technical, non-colloquial language to allow a scientific treatment of cognition. As such, published descriptions of RFT are undeniably technical, and not readily accessible to those who have not spent a considerable amount of time trying to understand the theory. Second, its significance and relevance to human psychopathology and language in general do not immediately seem obvious due to its non-traditional account of these phenomena. Finally, non-behavioral psychologists have long assumed that behaviorism has little or nothing to offer to the understanding of human language and cognition. Theories of these fundamentally

important human processes that arise from the behavioral tradition are thus easy to ignore.

The first purpose of this article is to convey the principles of Relational Frame Theory in relatively easy to understand fashion. In doing so, it is hoped that what RFT has to do with language, cognition, and psychopathology will become apparent. Since a vast amount of cognitive literature regarding these topic areas currently exists, RFT's relatively unique and important contributions to this literature will be outlined as well. To accomplish these goals, a popular and widely-known cognitive model of a "fear network" (Lang, 1985) will first be presented and briefly described. Lang's model contains some cosmetic similarities to RFT that will hopefully orient the reader to the analysis that follows. Following the description of this model, an RFT account of the same information presented in the model will be advanced, allowing a systematic introduction to the reader of the defining features of RFT. Finally, several reasons why RFT offers a unique and important approach to language, cognition, and human suffering will be described. Empirical evidence and more extensive arguments of technical points about RFT made throughout the article can be found, for example, in Hayes et al. (2001).

### RELATIONAL FRAME THEORY: BASICS AND APPLICATIONS

#### **Lang's Fear Network**

Lang's (1985) exemplary model of a fear network is presented succinctly in Figure 1. Stimulus propositions (indicated in ovals in Figure 1) involve "information about prompting external stimuli and the context in which they occur," and response propositions refer to

“information about responding in this context, including expressive verbal behavior, overt acts, and the visceral and somatic events that mediate arousal and actions” (p. 194). Meaning propositions (shown in rectangles) refer to “information that defines the meaning of the stimulus and response data” (p. 194). Lang maintains that the network of stimuli shown in the figure exists as a schema in long-term memory, and states that the entire network is activated when any component stimulus is encountered. The model indicates that simply walking in a wooded area and seeing quick movement out of the corner of one’s eyes, for example, could be enough to accelerate one’s heart rate, feel afraid, and subsequently run away. The stimulus propositions provide the initial input, the implications of these stimuli are altered by the meaning propositions present in the network (e.g., seeing movement in a wooded

area implies danger and other unpredictable consequences). Responses like an accelerated heart rate, saying “I’m afraid,” and running away are the almost inevitable outcome of the cognitive processing specified by the model. The components of the network can be learned through direct experience (e.g., by being bitten by a snake), through instruction (learning about what snakes are, where they live, and how dangerous they can be), and through modeling (watching others respond in fear to snakes, or hearing others describe how afraid they are of snakes). As stated earlier, only a few of the stimuli specified in the model need be present for the entire network to be activated.

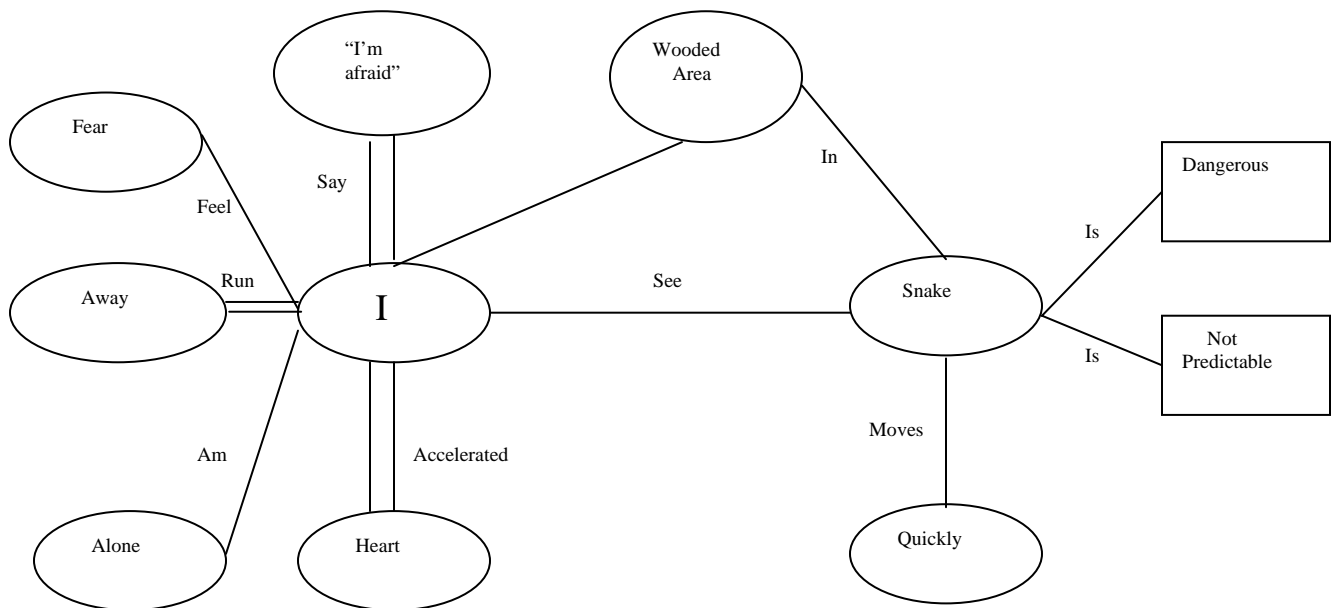


Figure 1. A modified version of Lang’s (1984) fear network. Stimulus propositions are designated in ovals, meaning propositions in rectangles, and response propositions by ovals connected with double lines.

### An RFT Account of Lang’s Model

Three observations about Lang’s model will help prepare the reader for the discussion of RFT that follows. First, note that the schema in Figure 1 includes examples of thoughts, emotions, physiological sensations, and overt behaviors. As with Lang’s model, RFT incorporates all these classes of stimuli. Second, note that the figure specifies a number of

explicit and implicit *relationships* between its component stimuli. For example, the feeling of “fear” and the thought “I’m afraid” can be considered as *causes* for “running away,” a “snake” is considered *equivalent* to “danger” and “unpredictability,” and both the “snake” and “Me” are *in* a “wooded area.” In these examples, then, we can say that there are causal relationships between stimuli (such that the thought and feeling of fear are viewed as causes

for running), relationships of coordination or rough equivalence between stimuli (such that a “snake” is considered to be roughly the same thing as “danger,” for example), and hierarchical relationships between stimuli (where a “snake” is considered to be part of something larger—in this case, a “wooded area”). Third, notice that the different stimuli pictured in Figure 1 share some of the functions of the other stimuli in the network by virtue of their association. For example, being in a wooded area might lead to the same fear, accelerated heart rate, running away that seeing a snake slither toward me would. The wooded area thus can be said to serve some of the same functions as a snake simply because I know that snakes can be found *in* wooded areas. Similarly, quick movement in the underbrush seen peripherally might also have some of the same stimulus functions that actually seeing a snake would provide.

The notion of relationships between stimuli is one of the critical hallmarks of Relational Frame Theory. Look at the RFT version of Lang’s fear network pictured in Figure 2. As a starting point, notice that this relational frame specifies that a hierarchical relationship exists between “I/me” and “wooded area,” such that “I” am *in* a “wooded area” (and the wooded area correspondingly contains me).

A similar relationship exists between “snake” and “wooded area.” Note also that “snake” is related coordinately (i.e., as roughly equivalent) to “danger,” “not predictable,” and “quick movement,” and that these three stimuli are further related coordinately to “fear.” The presence of any one of these five stimuli, in this context, could thus ‘carry’ some important stimulus functions of the other stimuli by virtue of this relationship of coordination. Further, as many people do, “I” frame the experience of “fear” and thoughts like “I’m afraid” as causes for things like “running away.” Finally, “fear” is framed in coordination with an “accelerated heart rate,” being “alone,” and thinking things like “I’m afraid.” Any one of these stimuli, if experienced, could thus deliver some stimulus functions of their coordinated stimuli. For example, an accelerated heart rate could lead me to think that I am afraid, with a feeling of fear occurring simultaneously. Basically, then, the specified relationships between stimuli provide “me” with more information about those stimuli, and actually result in changing the stimulus functions of the stimuli involved.

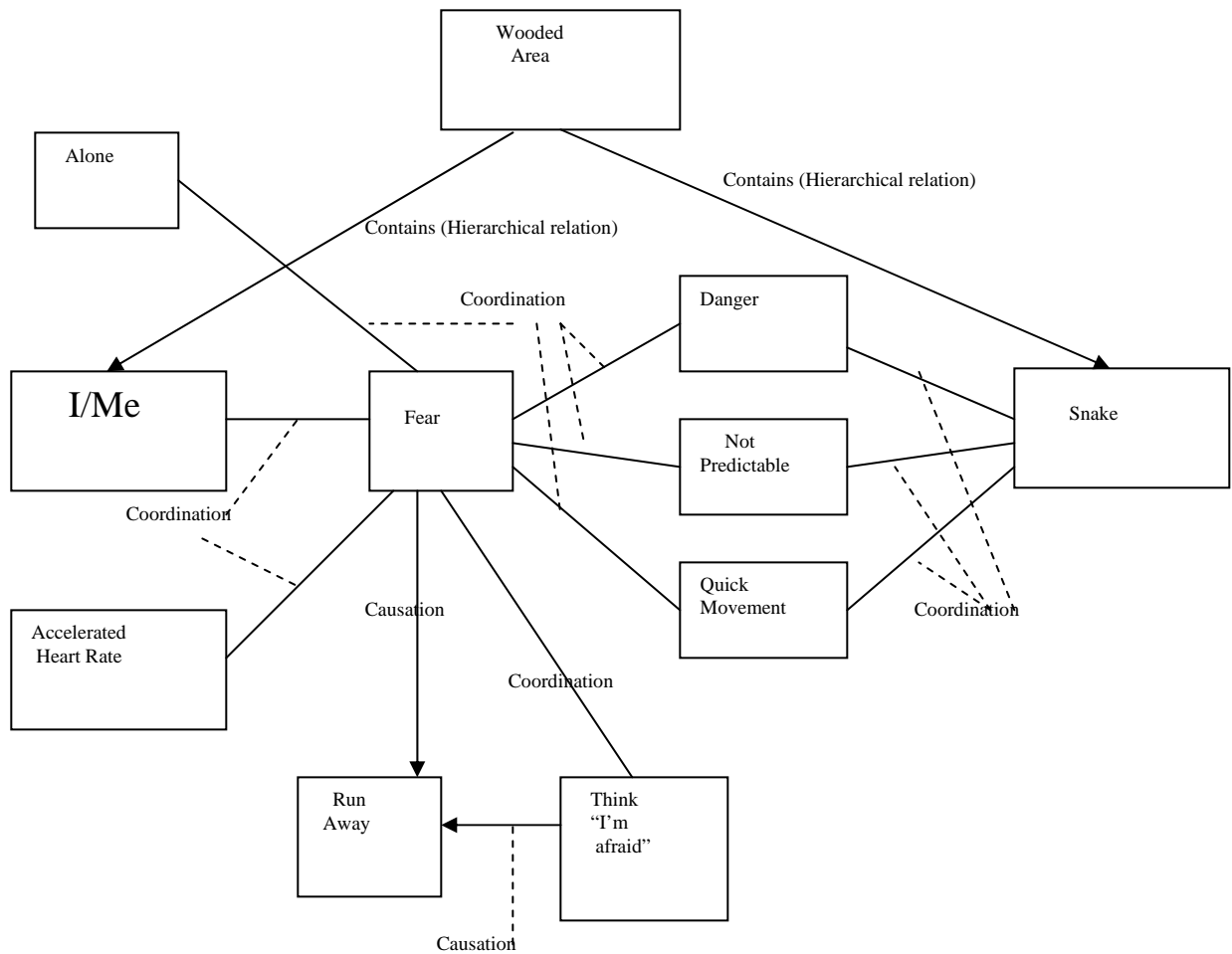


Figure 2. An RFT adaptation of Lang’s (1985) fear network.

### Relational Responding

In behavioral circles, it is very common to talk about discriminating (i.e., detecting and responding to) specific stimuli. The RFT principle of *relational responding* refers to the process of discriminating relationships *between stimuli* such as those designated in Figure 2. The idea of discriminating relationships between stimuli is important, in part, because it allows more information to be gleaned from sets of stimuli than discrimination of each individual member of the set would allow. For example, being able to discriminate a wooded area, and being able to discriminate a snake, tells me nothing about the relationship between snakes and wooded areas. If I also knew that snakes are often in wooded areas because a friend told me, I would then know to be more careful when walking in the woods even if I had never once encountered a snake in the woods (and thus

never had the opportunity for wooded areas to become classically conditioned to snakes). If I was also told that “snakes are dangerous, unpredictable, and move quickly,” and I already knew that dangerous unpredictability and sudden movement were things to be justifiably afraid of, I would then know to be afraid of snakes even if I had never encountered one before. Knowing the relationships between wooded areas teeming with dangerous snakes that are a deadly threat to me by virtue of the fear they engender when I think about them could also engender other, even more complex behavior. For example, if I knew I was going on a camping trip to the woods, the relational frame depicted in Figure 2 might also cause me to pack a snake bite kit and wear tall leather boots, and to make sure my tent flap is tightly zipped at all times, all to avoid problems from a creature I have never even seen. While there are some obvious benefits to the ability to relate information like this, it is



also clearly obvious that this process can get out of control and lead to psychological problems like the snake phobia pictured in Figure 2.

It is possible that the stimuli shown in Figure 2 could all easily have come to be “related” according to standard behavioral principles like respondent conditioning, operant conditioning, and stimulus generalization. However, it should be remembered that traditional behavioral accounts of respondents and operants (with the exception of stimulus generalization) exclusively involve direct contingencies that have actually been encountered at some point(s) in one’s learning history. The principle of stimulus generalization requires that I have a history with respect to stimuli that are formally similar to the object of the generalization. Formal properties of stimuli are those properties that can be seen, heard, smelled, touched, or tasted. Assuming that I have never seen a snake, and did not regularly look at pictures of snakes while I learned second hand all the things about snakes designated in Figure 2, stimulus generalization could similarly not be responsible for my snake phobia. Carefully controlled empirical studies on RFT have consistently demonstrated that relational responses like the ones shown in Figure 2 can and do occur in manner consistent with RFT principles and inconsistent with direct contingency respondent, operant, and generalization processes (see Hayes et al., 2001, for a review of these studies and an elaboration on this argument).

### Derived Relational Responding

The empirically demonstrated fact that specific types of relational responding occur even in specific situations where they have not been directly taught requires that such instances be referred to as *derived relational responding*. Derived relational responding involves the ability to relate stimuli in a variety of ways even though one has never been reinforced (i.e., directly trained) for relating those stimuli in those specific ways. Look at the relationships between “fear,” “danger,” “not predictable,” “quick movement,” and “snake” in Figure 2, for example. Assume that no one has ever directly told me that I should be afraid of snakes, or reinforced my fear in the presence of a snake. Assume also that I learned from someone that

snakes can be dangerous, unpredictable, and often move quickly, and that I had learned previously that danger, unpredictability, and quick movement were fearsome events. Even though no one had ever told me that I should be afraid of snakes, I would then know that they are indeed something to be afraid of. Note that these exact relationships between these stimuli are specified in the model. “Snake” is related coordinately with “danger,” “not predictable” and “quick movement,” and these last three stimuli are coordinately related to “fear.” A connection between “fear” and “snake” has thus never been directly learned. Rather, the relationship between “fear” and “snake” has been derived.

There are two specific types of derived relational responding, and both are given technical names so that they can be used with precision. The first type of derived relational responding is called *mutual entailment*. Mutual entailment simply means that if stimulus A is related in a specific way to stimulus B, then B is related in a complementary way to A. Look at the bottom two rectangles in Figure 2. If I have been taught that the cognition “I’m afraid” is a *cause* for “running away,” I would be able to derive that “running away” is an *effect* of thinking “I’m afraid.” Similarly, if I have been taught that “wooded areas” *contain* “snakes,” I would be able to derive that snakes *are contained in* wooded areas. As a final example, if I know that “snakes” “move quickly,” I am able to derive that “quick movement” (in certain contexts) is indicative of “snakes.” Such simple derivations may appear so obvious to the reader that they seem not to warrant any attention. To those first learning language, however, mutual entailment is anything but simple. A study by Lipkens, Hayes, & Hayes (1993) provided evidence that very young children (about 1 ½ years) do not derive mutually entailed relations. Also, a study currently under way with autistic children (Blackledge, Blackledge, Cummings, & Hayes, in progress) has indicated that autistic children must be directly trained to mutually entail relations before they can do so with spontaneity. Additionally, with the possible exception of a single sea lion (Schusterman & Kastak, 1998), no non-human animal has ever demonstrated mutual entailment when relating stimuli on non-formal dimensions. Deriving mutually entailed relations seems simple to us

because we have been doing it extensively for almost our entire lives.

The second type of derived relational responding is called *combinatorial entailment*. To understand this principle, the relationship between at least three stimuli must be considered. Look again at Figure 2, and consider again the relation it describes between “fear” and “snake.” Mutual entailment is demonstrated in the reciprocal relationships that exist between “fear” and “danger,” “not predictable,” and “quick movement,” and also in the reciprocal relationships between “snake” and “danger,” “not predictable,” and “quick movement.” “Fear” and “snake” have never been directly related to one another in the figure, and thus any relations between them cannot be accounted for by the process of mutual entailment. The relationship between “fear” and “snake” requires that the relationship between “fear” and the three intermediary stimuli shown in Figure 2, and the relationship between those three intermediary stimuli and “snake,” be combined to form a small network of interrelated stimuli. Thus, the derived relationship between “snake” and “fear” in this case is called *combinatorial entailment*. Combinatorial entailment refers to the reciprocal relationships that exist between two stimuli by virtue of how those stimuli are related to other, intermediary stimuli. Combinatorially entailed relations, by definition, occur between two stimuli that have not been directly related to one another. In this example, the nature of the reciprocal relations between the combinatorially entailed stimuli “fear” and “snake” are rather simple, because only relationships of coordination exist between all elements of their five-stimulus network. Thus, “snake” is combinatorially coordinated with “fear” just as “fear” is combinatorially coordinated with “snake”.

Figure 2 provides other examples that better illustrate the reciprocal nature of combinatorially entailed relations. Look at the relationship between “I/Me,” “Wooded area,” and “Snake,” for example, and suppose that I am currently standing in a wooded area. The figure specifies that there is no direct relationship between “me” and the “snake” by virtue of the fact that “I/Me” and “Snake” are not directly connected to one another. Given this

information alone, I would not be able to know that there may be a snake somewhere around me. But since both stimuli are related to “Wooded area,” I am able to derive a combinatorial relation between them. In this case, I know that snakes are contained in wooded areas, and I also know that I am currently contained in a wooded area. When I combine these two relations, I derive that there is a snake somewhere in the wooded area I am now in.

A different example will more clearly describe the reciprocal nature of combinatorial entailment. Look at the relationships between “accelerated heart rate,” “fear,” and “run away” in Figure 2. “Accelerated heart rate” is related coordinately to “fear,” and “fear” stands in a causal relation with “run away.” No direct relation is specified between “accelerated heart rate” and “run away,” but combinatorial entailment tells us that a causal relationship between “accelerated heart rate” and “run away” may be derived because increased heart rate is coordinated with fear, and fear is framed as a cause for running away. Thus, I may “run away” in a wooded area after I notice my “accelerated heart rate,” perhaps even before I actually interpret that physical sensation as being indicative of fear. The combinatorially entailed causal relationship between “accelerated heart rate” and “run away” is reciprocal in nature. “Running away” is an *effect* of “accelerated heart rate,” which is a *cause* of “running away”. The reciprocal nature of the relationship is further circumscribed by the context designated by Figure 2, such that “accelerated heart rate” is not framed as an *effect* of “running away” from a dangerous and feared situation, but rather part of the cause. Of course, once out of the wooded area, a new context would likely support framing “accelerated heart rate” as a direct effect of “running.” As with mutual entailment, empirical evidence indicates that combinatorial entailment does not occur automatically when learning language, but rather develops as a function of learning language (Blackledge et al., in progress; Lipkens et al., 1993).

#### **Coordination: A Common Relation**

Before continuing to describe the primary features of RFT, a brief digression is

warranted to explain a specific type of relation that is often confusing to readers (perhaps because of its unusual name). Probably the most basic and widespread relational response occurring to stimuli involves coordinative relations. If two stimuli are related coordinately, then that means that they are the same or nearly the same. The term coordination is used because it accounts both for things that are identical to one another, and things that are similar in many respects. As with perhaps every relational response, young children first learn how to coordinately relate stimuli based on formal stimulus properties. For example, a child first learning language may quickly learn that ‘this Coke’ is the same as ‘that Coke,’ or that ‘this hot dog’ is the same as the hot dog she ate last week. With a little more practice, she learns that in an important sense, the spoken word “Coke” is the same as actual Coke, and that the written word “Coke” is roughly the same as actual Coke and the spoken word Coke. Here is an example of how this might occur. Suppose a child who has learned that the spoken word “Coke” refers to actual Coke is told that Pepsi is the same as Coke, and that she will receive a glass of Pepsi if she puts away her toys. Even though the child has never tasted or seen Pepsi, relating it coordinately with Coke may make pertinent stimulus functions of actual Coke (e.g., its taste and refreshing quality) psychologically present. Given that the child enjoys Coke and will do almost anything to get some, framing it coordinately to Pepsi leads the child to put away her toys. Even though the stimulus properties of Pepsi have never been directly contacted, framing it coordinately with a familiar stimulus allows the child to ‘understand’ what Pepsi is.

### Transformation of Stimulus Functions

This discussion alludes to another defining characteristic of RFT that has now been alluded to several times. Making relational responses between stimuli results in *transformation of stimulus functions* for all of the stimuli involved. Said more simply, when two stimuli are related, some of the functions of each stimulus change according to what stimulus it is related to, and how it is related to that stimulus. Suppose mom is drinking a 7-Up, and the increasingly verbally sophisticated child (expecting it to be good because she usually likes what mom is drinking) asks for a drink.

Unfortunately, mom doesn’t want to share her last 7-Up, so she says, “7-Up is bad. RC is better. RC is just like Coke. Wouldn’t you rather have some RC?” The child has never had 7-Up or RC, but the comparative and coordinative relations the mother specified between them and Coke transform the previously neutral stimulus functions of 7-Up and RC. RC now becomes “good” because it’s the “same” as Coke, and 7-Up becomes “bad” because it’s worse than Coke. The child would now be expected to want RC rather than 7-Up, and evaluate the former as “good” and the latter as “bad”, even though she had never tried either one.

Refer again to Figure 2. Suppose the same girl, later in life, is told that “These woods contain snakes.” She has had enough experience with snakes, either directly or indirectly, to know that she is afraid of them, although she has never encountered one in the woods. Prior to being told that wooded areas contain snakes, she liked playing in the woods, and found the woods to be very pleasant. The hierarchical relationship just established between wooded areas and snakes, however, results in a transformation of the wooded area’s functions. Where before, the woods were “beautiful,” “relaxing,” and “fun,” they are now “dangerous,” “unpredictable,” and an object of “fear” by virtue of their relationship to snakes and the events and experiences she usually frames in coordination to snakes.

With a vast amount of training, using multiple relations across many, many stimuli, words come to share the functions of a wide variety of experiences and events. At first, this occurs through direct training, and along formal stimulus dimensions. After repeated experiences of doing so across multiple exemplars, we learn to bring relational responding to bear on non-formal, or arbitrary, relations between stimuli. Once we do so, our verbally constructed worlds become increasingly complex as we derive more and more relations between virtually every stimulus we discriminate. To conduct a thought experiment that illustrates the degree to which we can relate any two stimuli, try the following: Randomly pick any two nouns (and make an effort to pick two apparently unrelated nouns), and ask yourself, “How is X like Y?” You might end up

with a question like “How is a dog like a hat?” It is most likely that you have never been directly taught how a dog is like a hat. In short order, however, you could come up with several derived relational responses (they would be *derived* if you had never been directly taught to relate dogs and hats before). For example, you might quickly decide that both dogs and hats are “always there when you need them,” “both keep you warm,” are “both a regular part of your day,” and are both “a little dirty.” As a result of this specific question, you might now be a little more fond of your hat, be more likely to think of your dog when you go to put your hat on, and be more likely to wash it. By simply relating your hat coordinately to your dog, you have actually transformed the stimulus functions of the hat. You have done so, in part, by deriving relationships between your hat and stimuli that previously were only framed coordinately to your dog. In fact, by comparing your dog to your hat for the first time, you have brought aspects of an entire network of stimulus relations regarding your dog into a frame of coordination with the network of stimulus relations about your hat.

### **Arbitrarily Applicable Derived Relational Responding**

It is not just the ability to derive relational responses between stimuli that is the hallmark of RFT, but rather the ability to do so using arbitrary (or non-formal) properties of stimuli. An animal such as a seal can be taught, for example, to always pick the physically larger object when directed to “pick the bigger one,” even when presented with objects of varying size that it has never seen before. Derived relational responding can thus occur in response to formal stimulus dimensions such as size in organisms that don’t ‘speak a language’ in the colloquial sense. The same seal would not be able to correctly respond, however, to the directive “pick the bigger one” when presented with the President of the United States, a retail clerk, and a hobo. The seal would pick the physically largest of the three men, but a highly verbal person would likely discriminate that “bigger,” in this context, refers to the importance of the man, not his physical size. Importance is not a formal stimulus property that can be directly seen, tasted, smelled, touched, or tasted, but is rather a stimulus property that has been

given arbitrary significance by the socio-verbal community. Given its arbitrary (or non-formal) nature, a seal could not discriminate the relational dimension of importance. A somewhat verbally sophisticated person, however, would pick the President given the directive, “pick the bigger one.”

Thus, the essence of RFT is *arbitrarily applicable derived relational responding that is non-arbitrarily applied*. The term appears difficult and is definitely technical, but most of the components of the term have already been described. *Relational responding* refers to the ability to respond to relations between stimuli rather than just responding to each stimulus separately. Relations between stimuli can be *derived* (from the processes of mutual and combinatorial entailment), meaning that relations between stimuli need not be directly learned. And the process of *derived relational responding* can occur with respect to *arbitrary* (as opposed to just formal) stimulus properties. The process of *arbitrarily applicable derived relational responding* results in the *transformation of stimulus functions* of the stimuli that are correspondingly related (such that the specific relations between the stimuli, and the broader context they are encountered in, determine precisely how the stimulus functions of each stimulus are transformed). Finally, *arbitrarily applicable derived relational responding* is said to be *non-arbitrarily applied*, meaning that the socio-verbal community only reinforces relational responses to certain arbitrary stimulus properties in given contexts, but not others. For example, the socio-verbal community would support the arbitrarily applicable derived relational response that one driver is *smarter than* a second driver, but would not support the response that the first car is *smarter than* the second car. The second relational response just doesn’t ‘make sense,’ but the first one does. When a relational response does ‘make sense,’ it usually means that it has been *non-arbitrarily applied*—that the language community ‘approves’ of that way of relating specific things.

### **The Operant Nature of RFT’s Component Processes**

All the examples provided in this section point to a key feature of derived relational responding. Such responding is

actually operant behavior. That is, RFT specifies that language-able organisms learn to respond to specific relations between stimuli through differential reinforcement much as they are shaped to respond to individual stimuli in specific ways. After an extensive history of reinforcement for relating a variety of stimuli in a variety of different ways, it then becomes possible to relate other, novel stimuli in a variety of ways even though relating those specific stimuli in those specific ways has never been directly taught.

The process begins when relationships between stimuli along formal dimensions are taught. For instance, comparative relations between stimuli might be initially taught along a formal dimension of size. Over a period of time, a very young child might be reinforced for bringing the physically larger ball (but not a smaller ball) when asked to bring the “big ball,” for referring to his physically larger, older sister as his “big sister” (rather than his little sister), and referring to his toy car as his “little car,” as opposed to the “big car” that dad drives. After using the comparative relation of big—little numerous times across numerous formally related stimuli, he is then taught to comparatively relate stimuli according to non-formal properties. He might then be able to refer to his friend Tim’s older sister as “Tim’s big sister” even though Tim is physically larger than his sister. The temporal relation of older—younger between Tim and his sister is based on *arbitrary* properties of the stimuli (Tim and his sister) because the passage of time is not a stimulus that can be tasted, touched, smelled, heard, or seen, and is thus not a formal stimulus property.

In fact, all of the four cornerstones of RFT are considered to arise according to operant processes. Responding to relations between stimuli rather than simply to separate stimuli might be one of the first pieces learned by verbal children. Learning to mutually entail relations between stimuli (i.e., derive a reciprocal relationship given a directly trained relationship) is likely also directly shaped through differential reinforcement, as is combinatorial entailment. Transformation of stimulus functions is also likely an operant process. People learning language are essentially reinforced for responding to specific verbal stimuli as though

they had the stimulus functions of other, related stimuli. The operant process of transformation of function is shaped along with the processes of relational responding, mutual entailment, and combinatorial entailment, until all four processes come under increasingly complex and specific contextual control.

Even though language may not usually be *explicitly* taught and thought about in relational terms, it has been argued elsewhere that empirical data and subsequent theoretical implications indicate that thinking about language in this way has important consequences for predicting human behavior and changing it for the better (see, for example, Hayes et al., 2001; see also Hayes et al., 1999). Language defined as arbitrarily derived relational responding has important practical implications for clinical psychologists, and even psychologists from other sub-disciplines (see, for example, Hayes et al., 2001).

#### Relational Framing as Process, Not Structure

*Relational framing* is a short-hand term for the process of *arbitrarily applicable derived relational responding that is non-arbitrarily applied*. The term *relational frame* is often used instead of *relational framing* because the former term is less awkward to use, and because it is sometimes useful to ‘freeze frame’ the process of relational framing (as has been done with the relational frame in Figure 2) so that it can be more easily analyzed and talked about. Referring to *relational framing* as *relational frames* and using the kind of images shown in Figure 2 may likely give the impression that relational frames exist, somewhere, as static structures. In fact, the act of relational framing is thought of as a process, an ongoing way of responding to stimuli as they are presented. People *frame events relationally* in the moment as an active process that is a function of their extensive learning history and stimulation in the present environment. “Storage” of these frames as structures is not implied and not required. The processes of mutual entailment, combinatorial entailment, and transformation of stimulus function can be directly observed (and has been in over 30 empirical studies) without any inference required. The ongoing process of relational framing can be directly observed outside the laboratory as well, albeit with an

inevitable sacrifice in reliability due to lack of experimental control.

### Why RFT is Important: Theoretical Merits and Applications

Given that a vast empirical cognitive literature on language, cognition, and the role they play in psychopathology already exists, readers subscribing to cognitive theory may rightfully ask why a new theory of these phenomena is necessary. Similarly, given existing and long-standing behavioral accounts of verbal behavior (i.e., Sidman, 1994; Skinner, 1957), behaviorally-oriented readers may also question the necessity of yet another account. In this section, a brief outline of why an RFT account of language is an important addition to the psychological literature will be introduced. Some of the points made here are self-explanatory and thus require no elaboration. Elaboration of a few points is beyond the scope of this article, and the reader is thus referred elsewhere for evidence of the claim. The final point will be briefly elaborated to illustrate the utility of RFT in the stated domains.

1. RFT is parsimonious, requiring only the concepts of relational responding, mutual entailment, combinatorial entailment, and transformation of function to explain the process of *arbitrarily applicable derived relational responding that is non-arbitrarily applied* (the RFT definition for the colloquial term language).
2. RFT processes are directly observable, especially under laboratory conditions. Thus, no tenuous inferences about the existence of directly unobservable structures or processes are required.
3. RFT is firmly based on empirical research that has without exception supported its tenets. In addition to the over 30 published empirical treatments of RFT, the theory also accounts for the data observed in hundreds of empirical studies on the concept of stimulus equivalence that have been published since 1971.
4. RFT allows study of human language to be conducted with great precision, in accordance with the carefully specified definitions of its component processes.
5. RFT has broad scope. Theoretical extrapolations of the theory have given plausible explanations of a wide variety of human behavior (see, for example, Hayes et al., 2001, and Hayes et al., 1999, for detailed RFT accounts of psychopathology). RFT accounts exist, for example, for spirituality (Barnes-Holmes, Hayes, & Gregg, 2001), values (Hayes et al., 1999), and rule-governed behavior (Hayes & Hayes, 1989; Hayes et al., 2001).
6. RFT has depth, meaning that it allows analysis of varying degrees of complexity of its subject matter (language-based phenomena). For example, Hayes (1994) and Hayes et al. (1999), among others, have presented detailed cases regarding how RFT processes may be at the heart of human suffering in general. In addition, they play a role in more specific cases of human suffering such as anxiety (Friman, Hayes, & Wilson, 1998), sexual abuse (Pistorello, Follette, & Hayes, 2000), and trauma (Walser & Hayes, 1998)
7. RFT does not require the use of mentalistic terms or structures. It avoids problematic behavior-behavior relations (see, for example, Hayes & Brownstein, 1986). It properly casts verbal behavior as a dependant variable rather than an independent variable. That is, the theory does not violate the observation that thoughts cannot serve as independent variables by virtue of the fact that they cannot be directly manipulated (changes in the environment supporting different thoughts must first occur). This means that RFT specifies the kinds of environmental operations that must occur before changes in thinking and overt behavior will result.

8. RFT accounts for 30 years of empirical stimulus equivalence findings, and 10 years of empirical RFT findings, that Skinner's (1957) treatment of language clearly cannot predict or explain. In addition, RFT does so in a manner requiring only that the principle of operant responding be expanded to include the concepts of relational responding, derived responding, and relational responding to arbitrary stimulus dimensions (Hayes et al., 2001 have presented detailed accounts of how these concepts have ample precedents in the behavioral literature).
9. RFT has direct clinical implications that are not apparent in other psychological models of human psychopathology.

As an example of this final point, consider the cognitive defusion techniques designed to disrupt the context of literality in Acceptance and Commitment Therapy (Hayes et al., 1999). The context of literality refers to the ongoing support, in the form of differential reinforcement provided by the socio-verbal community, for transformations of stimulus functions occurring during arbitrarily applicable derived relational responding. In a non-technical sense, this context supports the "literal belief in one's thoughts" that active responding to transformed stimulus functions entails. The stimuli in the interrelated set of relational responding shown in Figure 2 can take on harmful stimulus functions by virtue of the stimulus transformations mediated by these relational responses. It follows logically, then, that disrupting this context of literality might be a useful way to treat the designated phobia. If treatment is structured such that the context supporting transformations of function within these relational responses (i.e., the "literal belief") is undermined, then the transformations of function in the pictured relationships would be expected to attenuate or fall away during these periods of disruption. Teaching the client to create similar contextual conditions outside of the therapy session could be expected to allow repetition of this contextual disruption. For example, I might no longer run away when I feel fear in a wooded area if the causal relationship between fear and running away is disrupted. I

might still have the thought that I 'should' run away, and definitely feel like doing so, but disruption of the context of literality will have shown me that such relationships between stimuli are 'just talk' rather than prescribed realities. Acceptance & Commitment Therapy (e.g., Hayes et al., 1999) is an example of an explicitly RFT-based treatment that essentially involves systematic efforts to dissolve the context of literality in problematic domains of clients' lives.

Other interventions are suggested by RFT, although they have not yet been developed and implemented. For example, some recent empirical RFT literature suggests that direct attempts to challenge cognitions (i.e., restructure existing relations between stimuli) may be ineffective or counterproductive (Pilgrim & Galizio, 1995; Wilson, 1998; Wilson & Hayes, 1996). Hayes et al. (2001) have suggested that adding more 'constructive' relations to problematic relational networks might thus be more effective than trying to eliminate existing relations. For example, Clayton (1995) found that employees who had remarked how chaotic their workplace was reacted more favorably when chaotic workplaces were framed as being more conducive to creativity. Those workers who were subjected to challenges of their appraisal of the workplace as chaotic did not develop more favorable attitudes toward the workplace. Another example of an intervention analyzed from an RFT perspective is presented in Blackledge & Hayes (in preparation). Briefly, that manuscript suggests that interpersonally focused brief psychodynamic treatments (e.g., Levenson, 1995) are in part effective because they make use of client relational frames newly emerging around the client-therapist relationship to effect change, rather than involving direct challenges of the presumably entrenched ways the client frames pre-existing relationships. Thus, the "corrective emotional experience" (Levenson, p. 42) referred to in such treatments may involve first, an in-vivo shaping of a more adaptive way of framing interpersonal interactions, and second, allowing the client to spontaneously bring this idiosyncratic frame to bear on other relationships once its components exist at sufficient operant strength.

## CONCLUSION

It is hoped that this treatment of Relational Frame Theory has not only made the theory itself more readily understood, but also that the reader now has a basic understanding of why the theory has important scientific and applied implications. It is openly acknowledged that even this treatment of RFT is perhaps unnecessarily complex. RFT essentially involves a very small and simple set of processes, but uses some complicated terminology to describe them. In addition, the processes themselves can seem foreign and even irrelevant to language because they (at first and even second glance) may not seem to match up well with the way we have been taught to think and talk about language. If we are to move beyond gross metaphorical analyses of language (where, for example, the brain is considered to be like a computer) to more precise technical accounts, however, we will have to abandon common sense for a sense that is a little less common (see, for example, Gentner & Jeziorski, 1993, for an account of the place of metaphor in science). Relational Frame Theory is an attempt to do just that. The extent to which it may correspondingly succeed in enhancing our ability to predict human behavior and change it for the better depends both on empirical data, and the degree to which the theory is utilized by the psychological community.

## REFERENCES

- Bames-Holmes, D., Hayes, S. C., & Dymond, S. (2001). Self and self-directed rules. In S. Hayes, D. Bames-Holmes, & B. Roche (Eds.), *Relational frame theory: A post-Skinnerian account of human language and cognition* (pp. 119-140). New York: Kluwer Academic/Plenum Publishers.
- Bames-Holmes, D., Hayes, S. C., & Gregg, J. (2001). Religion, spirituality, and transcendence. In S. Hayes, D. Bames-Holmes, & B. Roche (Eds.), *Relational frame theory: A post-Skinnerian account of human language and cognition* (pp. 3-20). New York: Kluwer Academic/Plenum Publishers.
- Blackledge, J. T., & Hayes, S. C. (In preparation). Adding relational responses to existing relational networks: An example of an intervention grounded in Relational Frame Theory. Manuscript in preparation.
- Blackledge, J. T., Reinbold, C. A., Adams, M., Adams, A., Cummings, A., & Hayes, S. C. (In progress). Teaching arbitrary better-worse relational responses to children diagnosed with autism. Study in progress.
- Clayton, T. M. (1995). *Changing organizational culture through relational framing*. Master's thesis available from the library of the University of Nevada, Reno.
- Friman, P. C., Hayes, S. C., and Wilson, K. G. (1998). Why behavior analysts should study emotion: The example of anxiety. *Journal of Applied Behavior Analysis, 31*, 137-156.
- Gentner, D., & Jeziorski, M. (1993). The shift from metaphor to analogy in Western science. In A. Ortony (Ed.), *Metaphor and thought, second edition* (pp. 447-480). New York: Cambridge University Press.
- Hayes, S. C. (1994). Content, context, and the types of psychological acceptance. In S. Hayes, N. Jacobson, V. Follette, & M. Dougher (Eds.), *Acceptance and change: Content and context in psychotherapy* (pp. 13-32). Reno, NV: Context Press.
- Hayes, S. C., Bames-Holmes, D., & Roche, B. (2001). *Relational frame theory: A post-Skinnerian account of human language and cognition*. New York: Kluwer Academic/Plenum Publishers.
- Hayes, S. C., & Brownstein, A. J. (1986). Mentalism, behavior-behavior relations, and a behavior-analytic view of the purposes of science. *Behavior Analyst, 9*(2), 175-190.
- Hayes, S. C., & Hayes, L. J. (1989). The verbal action of the listener as a basis for rule governance. In S. Hayes (Ed.), *Rule-governed behavior: Cognition, contingencies, and instructional control* (pp. 153-190). New York: Plenum.
- Hayes, S. C., Strosahl, K., & Wilson, K. G. (1999). *Acceptance and commitment therapy: An experiential approach to behavior change*. New York: Guilford Press.
- Lang, P. J. (1985). Cognition in emotion: Concept and action. In C. Izard & J. Kagan (Eds.), *Emotions, cognition, and behavior* (pp. 192-226). New York: Cambridge University Press.
- Levenson, H. (1995). *Time-limited dynamic psychotherapy: A guide to clinical practice*. New York: Basic Books.
- Lipkens, G., Hayes, S. C., and Hayes, L. J. (1993). Longitudinal study of derived stimulus relations in an infant. *Journal of Experimental Child Psychology, 56*, 201-239.
- Pilgrim, C., and Galizio, M. (1995). Reversal of baseline relations and stimulus equivalence: I. Adults. *Journal of the Experimental Analysis of Behavior, 63*, 225-238.
- Pistorello, J., Follette, V. M., & Hayes, S. C. (2000). Long-term correlates of childhood sexual abuse: A behavior analytic perspective. In M. Dougher (Ed.), *Clinical behavior analysis* (pp. 75-98). Reno, NV: Context Press.
- Schusterman, R. J., & Kastak, D. (1998). Functional equivalence in a California sea lion: Relevance to animal social and communicative interactions. *Animal Behaviour, 55*(5), 1087-1095.
- Skinner, B. F. (1957). *Verbal behavior*. New York: Appleton-Century-Crofts.
- Walser, R. D., & Hayes, S. C. (1998). Acceptance and trauma survivors: Applied issues and problems. In V. Follette & J. Ruzek (Eds.), *Cognitive-behavioral therapies for trauma* (pp. 256-277). New York: The Guilford Press.
- Wilson, K. G. (1998). Relational acquisition of stimulus function in substance dependence: A preliminary examination of drug versus non-drug related equivalence classes. Unpublished doctoral dissertation at the University of Nevada, Reno.



Wilson, K. G., and Hayes, S. C. (1996). Resurgence of derived stimulus relations. *Journal of the Experimental Analysis of Behavior*, 66, 267-281.

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## CRISIS AND REVOLUTION IN DEVELOPMENTAL DISABILITIES: THE DILEMMA OF COMMUNITY BASED SERVICES

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A state of crisis exists in the community-based system that serves individuals with a developmental disability and accompanying behavioral or psychiatric disorders (i.e. a "dual diagnosis"). Staff and parental competence, morale and quality of life issues for consumers who present with the most serious symptomatology are all variables that have contributed to the current state of affairs. The mechanism for paradigm change is one that relies on crisis and systemic pressure to confront and ultimately alter long standing scientific theories. The current essay examines the challenges to change and offers recommendations for better serving those individuals who present with the most daunting behavioral profiles in community residential environments.

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There is a crisis in the system that provides services for persons with developmental disabilities and severe behavioral disorders and/or psychiatric diagnoses. People with such a "dual diagnosis" (Reiss, 1982, 1985) are joining communities at an ever increasing pace, placing unrelenting stress on a community based services system originally designed to serve a very different population. The crisis is chronic, debilitating and one that has been intervention refractory for a very long time. The emergence of scientific discoveries is known as the process of paradigm shift. Kuhn (1970) states, "Discovery commences with the awareness of an anomaly, i.e., the recognition that nature has somehow violated the paradigm-induced expectations that govern normal science. It continues with a more or less extended exploration of the area of the anomaly. And it closes only when the paradigm theory has been adjusted so that the anomalous has become the expected. The new fact, then causes scientists to see nature in a different way." (p.53).

This process would seem to make a change in paradigm, if not an easy task, at least one governed by specific guidelines. Kuhn goes on to point out that crisis is a necessary precondition for change and must include a scenario in which anomalies to accepted paradigms become frequent and challenge the very foundation of existing structures. Nirje's (1969) treatise on "normalization" introduced so eloquently to us by Wolfensberger (1972) and later transformed into his social role valorization theory (Wolfensberger, 1983), was one of the earliest descriptions of this crisis in the field of developmental disabilities. Normalization's biggest challenge involves the struggle to

effectively serve some of the most fragile individuals that the system has to offer in typical community settings. Individuals who may present with socially unacceptable and even dangerous behaviors and who are living, working and attending school with non-disabled community members. This state of affairs seems to clearly meet the criteria set forth by Kuhn in which anomalies to an accepted paradigm become frequent enough to force change. Scientists, however, have not typically been ready to renounce comfortable paradigms that have operated "successfully" for some time and neither have developmental disability professionals. Paradigm shift is a major undertaking that occurs only when a changing professional zeitgeist operates as the driving force behind ideological change.

Holburn (2001) provides us with a nice lineage of the development of such a zeitgeist in the field of developmental disabilities that has been labeled in many ways, but ultimately rests with the dilemma of how to promote a sense of inclusion for these individuals with complex clinical profiles. Braddock, Hemp, Parrish, and Westrich (1998) and Bruininks, Meyers, Sigford, and Lakin (1981) present a historical look at issues that are related to successful integration of individuals with developmental disabilities into community residential programs. They list variables such as quality of supervision; supportive family, friends and neighbors; acceptance of individuals' behaviors by staff and community; and the level of competence demonstrated by staff charged with their care as critical in the development of the integration process. Adults with developmental disabilities face challenges when attempting to develop social relationships with non-disabled

community members. These relationships seem to be a key to inclusion, but often represent a hurdle that is difficult to overcome for most consumers. Kennedy & Itkonen (1996) identified proximity, mutually reinforcing events, reciprocity and choice as some of the issues, that impact on both the number and quality of social relationships that individuals with developmental disabilities can expect to develop. Programs attempting to serve individuals with dual diagnoses and provide the kinds of socially relevant experiences described above face a variety of barriers. Community misconceptions, biased attitudes and fear of property value reduction are but a few of the enduring hurdles that community based programs must overcome (Koegel & Koegel, 1996; Yunker, 1986).

### **Challenges to Community Support Models**

Persons with a dual diagnosis present the community residential system with a daunting challenge. Although the symptoms of these individuals may not easily fit into DSM-IV categories (APA, 2000), nor be considered to constitute behavioral disorders alone, they clearly present family members or staff members with significant challenges in providing daily support. Behavioral manifestations such as aggression and self-injury often place the referred individual and others entrusted with his/her care in significant personal jeopardy. Many of these individuals have spent a lifetime in institutions, which were likely able to provide a degree of environmental and programmatic structure that can tolerate severe behavior, even if they couldn't ameliorate it (Kormann & Petronko, 2002; Maguire & Persel, 1992, Manifold & Mulick, 1990). Transitioning these individuals into community-based, inclusive environments poses the service delivery system with complex societal, sociopolitical, as well as clinical challenges (Kormann, 1997). Community residential providers have not typically been asked to provide services for individuals with the kinds of medical, psychiatric and behavior challenges that many of the former residents of institutions possess. Preparing for their arrival involves much more than securing a bed and a day program. Inadequate training and planning can have devastating effects, as many individuals who could be very successful in their new

homes, instead experience significant struggles and untold emotional trauma as they attempt to "fit into" a system clearly not ready for them. Instances in which staff members in new residences are not prepared for the kinds of behaviors new residents present are common. Without adequate support, staff members are unable to effectively assist consumers in the social accommodation process necessary when moving into a new neighborhood. Helping individuals develop social adaptation skills is difficult if staff are not competent in the training process and/or are mired in a constant state of anxiety regarding their ability to manage residents' behavior. If staff must be overly concerned about the safety of their residents and other community members (i.e. neighbors), direct training and habilitative support to consumers will suffer. The resulting behavioral instability may lead to some residents being unable to remain in their new environment. This requires them to handle multiple transitions when their behaviors cause them to face either a short-term crisis placement or a return to a longer term, institutional setting.

### **Meeting the Needs of the Dually Diagnosed in the Educational System**

The Individuals with Disabilities Education Act (IDEA) provides the systemic model for supporting the behavioral needs of students with dual diagnoses in the classroom. It states: "In the case of a child whose behavior impedes his or her learning or that of others the child's IEP (Individualized Education Program) must consider, when appropriate, strategies, including positive behavioral intervention strategies and supports, to address that behavior" (IDEA, PL 105-17; Turnbull, Wilcox, Stowe, & Turnbull, 2001). IDEA defines inclusion as "the right to regular class placements, with reasonable accommodations, for all students with disabilities." This right is made available to all students, regardless of behavioral presentation and IDEA outlines very specific criteria that schools must meet in order to exclude students with severe behaviors from the school environment (i.e., section 614 of P.L. 105-17). Positive behavioral support (PBS) necessarily includes functional behavioral assessment and an intervention that allows for "appropriate accommodations" (Kincaid, Knoster, Harrower, Shannon, & Bustamante,

2002; Sugai et al., 2000). Much like the process of assimilating individuals with dual diagnoses into community residences, academic inclusion is difficult and fraught with programmatic and training challenges as well as litigious pitfalls. IDEA guidelines are designed to ensure those children with disabilities who present staff members with behavioral challenges are treated fairly and that every professional resource is made available to them, prior to their segregation from the general student population. Academic staff, therefore, are faced with a similar challenge as are their community based colleagues: manage severe behavioral challenges in a natural setting while providing adequate and effective academic services to the remaining non-disabled student population. Issues such as lack of resources, inadequate behavioral training, poor communication among professionals, burnout and inadequate motivation which affect teachers' ability to support students with behavioral concerns (Hagopian et al, 2002; Kaufman, 1997; Sugai et al.). Ecologically valid behavioral interventions, which address the multitude of teacher responsibilities and stressors, environmental complexities and school-wide support needs are necessary to meet the standard of "appropriate accommodations." Hieneman and Dunlap (2000) identified a wide variety of factors that affect the outcomes of PBS, including characteristics of the student and staff, behavioral history of the student, intervention "buy-in" of behavior managers, behavior plan design and implementation integrity, and the responsiveness of the system to the student's needs.

### **Supporting Individuals in Community Settings**

Developing an ongoing training and support mechanism for direct support staff persons who are faced with the frequent occurrences of challenging behaviors is critical. Such support must address the idiosyncratic needs of the individual, the staff, the environment and the socio-political system in which the behaviors are displayed (Colond & Weisler, 1995; Kormann & Petronko, 2002; Petronko, Harris, & Kormann, 1994). These multi-faceted variables must be reflected in any intervention approach as they represent the "natural setting" in which the identified individual exists. These needs can best be met

by an on-site behavioral training model, which does not necessarily view the person with the developmental disability as "the target client" and therefore does not direct its only attention to that person. A service that focuses on the natural setting and earmarks the direct support professional as the designated consumer of the training and the initial vehicle for change seems the most appropriate option (Carr et al, 1999; Felce, deKock, & Repp, 1986; Feldman, Condillac, Tough, Hunt, & Griffiths, 2002; Kormann & Petronko, 2002; Petronko, Anesko, Nezu & Pos, 1988; Petronko et al., 1994;). Multifactor assessment, treatment and collaboration with the indigenous personnel (i.e., residential staff, teachers, parents) has been identified as "best practice" by many in the field of applied behavior analysis (Carr et al.; Feldman et al.; O'Neil et al., 1997). A critical goal must be achieved in any naturally based support system: behavioral competence. If the level of competence that a staff member possesses can be increased through training, he/she can function as a natural support for the individual's behavior without necessarily contaminating the environment with the observing behavioral consultant. Natural supports are frequently discussed as very attractive when building service plans that are "person centered" (Holburn, 2001; Mount, 1994). It seems clear that a service system that provides for the delivery of behavioral support from the people that are already a part of an individual's life epitomizes the concept of "person centeredness."

Several challenges face treatment models that utilize direct service professionals (i.e., staff, teachers or parents) as agents of change. The stress associated with providing services to individuals with developmental disabilities and behavioral challenges in both community residences and classroom environments is well documented. The literature is replete with discussions of the burden of ongoing crisis management, burnout and turnover (Bersani & Heifitz, 1985; Blumenthal, Lavender & Hewson, 1998; Hagopian et al., 2002; Hastings & Brown, 2002; Mitchell & Hastings, 2001). Low pay, long hours, inadequate training in behavior management, and the potential for personal injury are all obstacles that the disability community must overcome in its attempt to provide effective and

consistent behavioral support to individuals with dual diagnoses. A consultation model that views direct support personnel as “the experts” who are a required component to any effective treatment model seems to address several challenges at once. First, burnout is often linked to a reduction of “self efficacy” (Bandura, 1977; 1986), the perception of one’s skills and one’s ability to have a positive impact on life’s outcomes. The effect of stress on parent’s sense of efficacy is described in reviews by Coleman and Karraker, (1998), Dyson, (1997) and Taylor (1983) and identifies one of the goals of behavioral consultation as the development of coping skills. The improvement in such skills is hypothesized to improve one’s perception of effectiveness and therefore one’s sense of self-efficacy. Moreover, burnout has been linked to the presence of chronic challenging behaviors, ineffective behavior management skills and negative emotional reactions generated in staff because of the targeted behavior (Hastings & Brown, 2002; Mitchell & Hastings, 2002). A behavioral consultation model that promotes self efficacy through the development of management skills and an intervention plan specifically tailored to the needs of the individual, caregiver(s) and environment, would engender a sense of control in not only the caregiver, but also in the identified consumer. Second, behavioral competence increases the likelihood of mutually rewarding interpersonal experiences between caregivers and the referred individual. The easier it is for an individual with a dual diagnosis to obtain valued reinforcers through his/her behavior, the more likely it is that caregivers will be in a position to deliver those rewards. It is quite likely that interactions in which caregivers are frequently delivering reinforcers would be viewed as pleasant and ones in which they would like to engage more often. As the frequency of such instances increases, it stands to reason that quality of life variables for all involved would be enhanced. Campo, Sharpton, Thompson, and Sexton, (1997), Schalock (1994), and Stancliffe, Abery and Smith, (2000), agree that a model that simultaneously promotes personal control and independence in the referred individual and self efficacy and the reduction in burnout in caregivers is critical for the enhancement of quality of life. Finally, the improvement in behavioral challenges increases the likelihood that the referred individual can be maintained in

more inclusive settings. Inclusion implies not only a presence, but an active participation in naturally occurring environments (residential or academic) for individuals *regardless* of developmental, psychiatric or behavioral challenges (Holburn, 2001). Bridging the gap between the philosophy and reality of inclusion seems to rest with the dilemma of developing appropriate accommodations (IDEA, PL 105-17), and/or naturally based supports.

### **Project: Natural Setting Therapeutic Management (NSTM)**

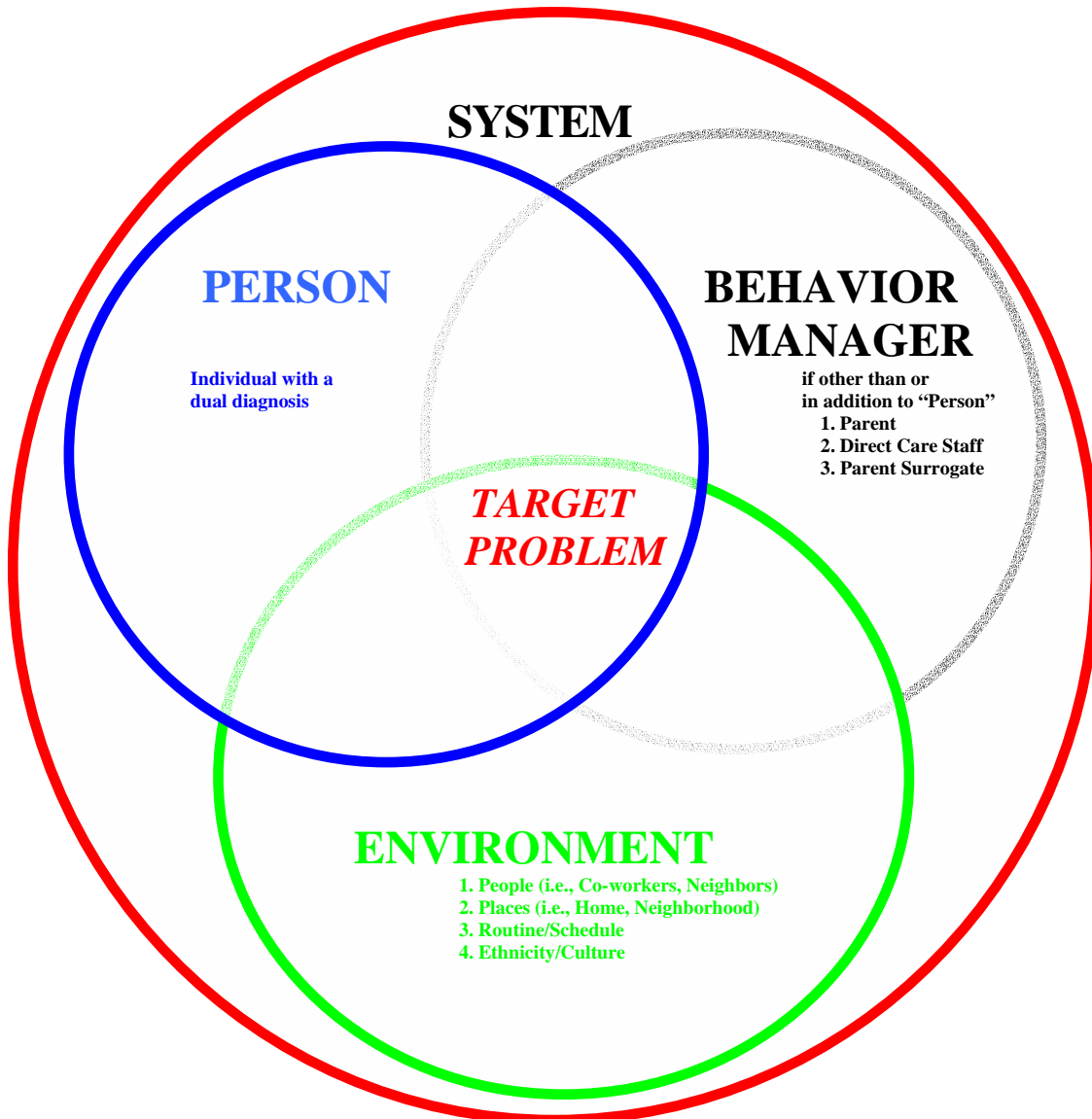
Project: Natural Setting Therapeutic Management (NSTM), conceived by Dr. Michael R. Petronko in 1980 as an alternative to institutional services for people with dual diagnosis residing in New Jersey, directly address these issues. NSTM is a behavioral consultation and training program designed to enrich the therapeutic capacity of a referred person's natural environment by increasing the behavioral competence of the caretakers in that setting (Petronko et al. 1988; Petronko et al. 1994; Petronko & Nezu, 1982). Competence is achieved by training parents or staff members in the relevant tenets of applied behavior analysis, by the collection of functional behavioral assessment (FBA) data and in the execution of behavioral strategies designed to ameliorate severe behaviors. Parents or staff are viewed as the primary agents of change, who must be able to not only understand the behavioral techniques presented in training sessions, but also to successfully implement them in the natural environment in which the referred individual lives/works. Behavioral knowledge has not been shown to correlate highly with programmatic change, so it is imperative that a measure of process be used that is consistent with the expected outcome (Nezu, 1987). It does not appear to be sufficient for family members to simply understand and define behavior management concepts. It does appear critical that they be able to execute behavioral techniques in a situation that closely resembles ones with which they struggle daily. To that end, Project staff use role-play, modeling, and in-vivo coaching extensively in combination with traditional, didactic training in the development of behavioral expertise. The use of role-play has been demonstrated to be a highly effective method for both assessing behavioral

competence, and also for teaching behavioral skills (Jahr, 1998; Nezu).

The goal of the NSTM model, then, is to transform the natural setting into a therapeutic milieu that can support behavioral change. Petronko (1987) developed such a milieu model that encompasses four factors: (1) The person with a dual diagnosis; (2) The staff or family members who are responsible for implementing program components, designated as the *behavior*

*managers*; (3) The environment, including people, places, routines, and other aspects that define the immediate environment of the person served, and (4) The larger system within which the first three factors are embedded. The system is seen as a philosophical, cultural, administrative, and financial environment that has impact on how the first three factors interact. Figure 1 presents this model graphically.

## FOUR FACTOR MODEL



**SYSTEM = the global climate in which the other three factors exist.**

i.e., Federal (i.e., IDEA, HCBS Waiver), State (Licensing Regulations & Budgets), County (Zoning Laws), Prevailing Treatment Philosophies.

This multi-factor approach does not assume that the individual with the disability has the problem per se, but rather that the “target” behavior is likely to be complex and reflect dysfunction in one or more of the above four areas. Therefore, the NSTM four-factor model yields intervention strategies which address not only the short-term goal of remediating the presenting problem, but the more important long range purpose of maintaining change over time. The acquisition of management skills by family members (i.e., behavior managers) is central to the success of the Project, and is accomplished through the mastery of social problem solving skills (Nezu & Nezu, 1989, 1991; Petronko & Nezu, 1985). That is, the goal of intervention is to achieve lasting change by transferring ownership of the entire therapeutic process to those who are directly affected by it, the person originally referred and those who are responsible for his or her behavioral well being.

### CONCLUSION

The process of developing a community-based, behavioral support model for people with developmental disabilities and accompanying emotional or behavioral disorders seems to represent a paradigm shift fraught with the types of anomalies and crises that Kuhn (1970) would view as necessary for change. The chronicity of crisis in the field of dual diagnosis, however, suggests that many of us have struggled with the anomalies that our current service paradigm presents without consistent success. There seems to be little question as to whether a shift is required, and many have proposed models to address the need. It seems clear that the required “marriage” between the theory and reality of community-based inclusion has been very difficult to attain. The intensity of the struggle seems warranted as the stakes for individuals with dual diagnoses and their caregivers are high. There are many aspects of community-based supports for individual that present with developmental disabilities and severe behaviors that must be considered in order for a comprehensive and effective system to take shape. Issues of training, competence, self determination and psychological well being *must* all be addressed in any support model that purports to adequately meet the needs of at-risk individuals and those entrusted with their care. As the movement toward full community

inclusion progresses, it is clear that people residing, working and attending school in community settings will present increasingly diverse clinical profiles. The burden has fallen upon the traditional service delivery system to provide family and staff members with the skills necessary to become competent behavior managers. The crises will keep coming at alarming rates. Will the paradigms shift quickly enough to meet the need? Lives may depend upon it.

### REFERENCES

- American Psychiatric Association (2000). *Diagnostic and statistical manual* (4th edition). Washington, DC: Author.
- Bandura, A. (1977). Self efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191-215.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bersani, H.A., & Hefitz, L.J. (1985). Perceived stress and satisfaction of direct care staff members in community residences for mentally retarded adults. *American Journal of Mental Deficiency*, 90, 289-295.
- Blumenthal, S., Lavender, T., & Hewson, S. (1998). Role clarity, perception of the organization and burnout amongst support workers in residential homes for people with an intellectual disability: A comparison between a National Health Service trust and a charitable company. *Journal of Intellectual Disability Research*, 42, 409-417.
- Braddock, D., Hemp, R., Parrish, S., & Westrich, J. (1998). *The state of the states in developmental disabilities*. Washington, DC: American Association on Mental Retardation.
- Bruininks, R.H., Meyers, C.E., Sigford, B.B., & Lakin, K.C. (1981). *Deinstitutionalization and community adjustment of mentally retarded people*. Washington, DC: American Association on Mental Deficiency.
- Campo, S.F., Sharpton, W.R., Thompson, B., & Sexton, D. (1997). Correlates of the quality of life of adults with severe or profound mental retardation. *Mental Retardation*, 35, 329-337.
- Carr, E.G., Homer, R.H., Turnbull, A.P., Marquis, J.G., McLaughlin, D.M., McAtee, M.L., Smith, C.E., Ryan, K.A., Ruef, M.B., & Doolabh, A. (1999). *Positive behavior support for people with developmental disabilities: A research synthesis*. Washington, DC: American Association on Mental Retardation.
- Coleman, P.K., & Karraker, K.H. (1998). Self efficacy and parenting quality: Findings and future applications. *Developmental Review*, 18, 47-85.
- Colond, J. S., & Weisler, N. A. (1995). Preventing restrictive placement through community support services. *American Journal on Mental Retardation*, 100, 201-206.
- Dyson, L. L. (1997). Fathers and mothers of school aged children with developmental disabilities: Parental stress, family functioning and social support. *American Journal on Mental Retardation*, 102, 267-280.

- Felce, D., deKock, U., & Repp, A.C. (1986). An ecobehavioral comparison of small, community based houses and traditional large hospitals for severely and profoundly mentally handicapped adults. *Applied Research in Mental Retardation*, 7, 393-408.
- Feldman, M.A., Condillac, R.A., Tough, S., Hunt, S., & Griffiths, D. (2002). Effectiveness of community positive behavioral intervention for persons with developmental disabilities and severe behavior disorders. *Behavior Therapy*, 33, 377-398.
- Hagopian, L.P., Rush, K.S., Richman, D.M., Kirtz, P.F., Contrucci, S.A. & Crosland, K. (2002). The development and application of individualized levels systems for the treatment of severe problem behavior. *Behavior Therapy*, 33, 65-86.
- Hastings, R. P., & Brown, T. (2002). Behavior problems of children with autism, parental self-efficacy, and mental health. *American Journal on Mental Retardation*, 107, 222-232.
- Hieneman, M., & Dunlap, G. (2000). Factors affecting the outcome of community based behavioral support: I. Identification and description of factor categories. *Journal of Positive Behavior Interventions*, 2, 161-170.
- Holburn, S. (2001). Compatibility of person-centered planning and applied behavior analysis. *The Behavior Analyst*, 24, 271-281.
- Jahr, E. (1998). Current issues in staff training. *Research in Developmental Disabilities*, 19, 73-87.
- Kauffman, J. (1997). *Characteristic of emotional and behavioral disorders of children and youth*. (6<sup>th</sup> ed.). Columbus, OH: Merrill.
- Kennedy, C.H., & Itkonen, T. (1996). Social relationships, influential variables, and changes across the lifespan. In L.K. Koegel, R.L. Koegel, & G. Dunlap (Eds.), *Positive behavioral support: Including people with difficult behaviors in the community*. Baltimore: Paul H. Brookes.
- Kincaid, D, Knoster, T, Harrower, J.K., Shannon, P., & Bustamante, S. (2002). Measuring the impact of positive behavior support. *Journal of Positive Behavior Interventions*, 4, 109-117.
- Koegel, L.K., Koegel, R.L., & Dunlap, G. (Eds.). (1996). *Positive behavioral support: Including people with difficult behaviors in the community*. Baltimore: Paul H. Brookes.
- Kormann, R. J. (1997). Behavioral support in the community: How will managed care address it? *News 'n Notes*, (Newsletter of the American Association on Mental Retardation), 10, (2),4.
- Kormann, R.J., & Petronko, M.R. (2002). Community-based behavioral, therapeutic training programs. In J.A. Mulick & C.S. Holburn (Eds.), *Dual diagnosis program models*. Schenectady, NY: National Association on Dual Diagnosis.
- Kuhn, T.S. (1970). *The structure of scientific revolutions*. Chicago: University of Chicago Press.
- Lakin, K. C., Hill, B. K., & Bruininks, R. H. (1988). Trends and issues in the growth of community residential services. In M. P. Janicki, M. W. Krauss, & M. M. Seltzer (Eds.), *Community residences for persons with developmental disabilities* (pp.25-45). Baltimore: Paul H. Brookes.
- Maguire, K. B., & Piersel, W. C. (1992). Specialized treatment for behavior problems of institutionalized persons with mental retardation. *Mental Retardation*, 30, 227-232.
- Meinhold, P. M., & Mulick, J.A. (1990). Counter-habilitative contingencies in institutions for people with mental retardation: Ecological and regulatory influences. *Mental Retardation*, 28, 67-77.
- Mitchell, G., & Hastings, R.P. (2001). Coping, burnout, and emotion in staff working in community services for people with challenging behaviors. *American Journal on Mental Retardation*, 106, 448-459.
- Mount, B. (1994). Benefits and limitations of personal futures planning. In V.J. Bradley, J.W. Ashbaugh, & B.C. Blaney (Eds.), *Creating individual supports for people with developmental disabilities: A mandate for change at many levels* (pp. 97-108). Baltimore: Paul H. Brookes.
- Nezu, C.M. (1987). *Development of the behavioral role play activities test (BRAT): An empirically based observational measurement of behavioral child management skills*. Unpublished doctoral dissertation, Teaneck, NJ: Fairleigh Dickinson University.
- Nezu, A. M., & Nezu, C. M. (1989). (Eds.) *Clinical decision making in behavior therapy: A problem solving perspective*. Champaign, IL: Research Press.
- Nezu, A. M., & Nezu, C. M. (1991). Problem solving skills training. In V.E. Caballo (Ed.), *Handbook of behavior modification and behavior therapy techniques*. Madrid, SP: Siglo Veintiuno de Espana Editores, S. A.
- Nirje, B. (1969). The normalization principle and its human management implications. In R.B. Kugel, & W. Wolfensberger (Eds.), *Changing patterns in residential services for the mentally retarded* (pp. 179-195). Washington, DC: President's Committee on Mental Retardation.
- O'Neill, R. E., Homer, R. H., Albin, R. W., Sprague, J. R., Storey, K., & Newton, J. S. (1997). *Functional assessment and program development for problem behavior: A practical handbook*. Pacific Grove, CA: Brookes/Cole Publishing.
- Parson, M. B., & Reid, D. H. (1995). Training residential supervisors to provide feedback for maintaining staff teaching skills with people who have severe disabilities. *Journal of Applied Behavior Analysis*, 28, 317-322.
- Petronko, M. R. (1987, April). *Natural setting therapeutic management (NSTM), who is the client? Invited workshop presented at the 8th Annual National Conference of the Young Adult Institute, New York, NY.*
- Petronko, M. R., Anesko, K. M. Nezu, A., & Pos, A. (1988). *Natural setting therapeutic management (NSTM): Training in the natural environment*. In J. M., Levy, P. H. Levy, & B. Nivin (Eds.), *Strengthening families* (pp 185-193). New York: Young Adult Institute Press.
- Petronko, M. R., Harris, S. L., & Kormann, R. J. (1994). *Community-based training approaches for people with mental retardation and mental illness*. *Journal of Consulting and Clinical Psychology*, 62, 49-54.
- Petronko, M. R., & Nezu, A. M. (1982, November). *Natural setting therapeutic management for the severely developmentally disabled*. Workshop presented at the 16th Annual Convention of the Association for Advancement of Behavior Therapy, Los Angeles, CA.
- Petronko, M. R., & Nezu, A.M. (1985, May). *Clinical decision making in program planning: A nuts and bolts approach using a problem solving framework*. A special course presented at the 109th Annual Conference of the American Association on Mental Retardation. Philadelphia, PA.



- Reiss, S. (1982) Psychopathology and mental retardation: Survey of a developmental disabilities mental health program. *Mental Retardation*, 20, 28-132.
- Reiss, S. (1985). The mentally retarded, emotionally disturbed adult. In M. Sigman (Ed.), *Children with dual diagnosis: Mental retardation and mental illness*. New York: Grune & Stratton.
- Schalock, R.L. (1994). The concept of quality of life and its current application in the field of mental retardation/developmental disabilities. In D. Goode (Ed.), *Quality of life for persons with developmental disabilities: International perspectives and issues*. (pp. 266-284). Cambridge, MA: Brookline Books.
- Stancliffe, R.J., Abery, B.H., & Smith, J. (2000). Personal control and the ecology of community living settings: Beyond living-unit size and type. *American Journal on Mental Retardation*, 105, 431-454.
- Sugai, G.S., Horner, R.H., Dunlap, G., Hieneman, M., Lewis, T.J., Nelson, C.M., Scott, T., Liaupsin, C., Sailor, W., Turnbull, A., Turnbull, H.R., Wickham, D., Wilcox, B., & Ruef, M. (2000). Applying positive behavior support and functional behavioral assessment in schools. *Journal of Positive Behavior Interventions*, 2, 131-144.
- Taylor, S.E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist*, 38, 1161-1173.
- Turnbull, H.R., Wilcox, B.L., Stowe, M., & Turnbull, A.P. (2001). IDEA requirements for use of PBS: Guidelines for responsible agencies. *Journal of Positive Behavior Interventions*, 3, 11-19.
- Wolfensberger, W. (1972). *The principle of normalization*. Toronto, CN: National Institute on Mental Retardation.
- Wolfensberger, W. (1983). Social role valorization: A proposed new term for the principle of normalization. *Mental Retardation*, 21, 234-239
- Yuker, H. E. (1986). *Attitudes toward persons with disabilities*. New York: Springer.
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## MOTHER-CHILD LINGUISTIC INTERACTIONS AND BEHAVIORAL DEVELOPMENT: A MULTIDIMENSIONAL OBSERVATIONAL

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Child development is a crucial field for understanding the origins and functions of processes related to complex human behavior. However, in spite of the fact that development, although not due to the passage of time per se, takes place along time, behavior analysis has paid little attention to longitudinal studies of behavior development in infants and children (Bijou, 1989; Ribes, 1996). Behavior analytic efforts have rather been directed to transversal experimental or to applied studies, in which particular settings and behaviors have been selected out of the stream of development as a continuous and irreversible process (Gewirtz & Pelaez-Nogueras, 1991; Poulson & Kymissis, 1996; Rosales-Ruiz & Baer, 1996).

In most developmental studies, language behavior has been normally considered a special area in its own right, apart of the rest of behavioral processes or phenomena involved in development. Other putative areas of development include affection, cognition, attention and perception, motor behavior, and social and moral behavior (Bijou, 1975; Farah & Kosslyn, 1982; Malcuitt, Pomerleau & Lamarre, 1988; Parke, 1989; Riegler & Baer, 1989; Zimmerman & Whitehurst, 1979). Behavior analytic research on language development has rather focused on two aspects: a) training-acquisition procedures related to some of the responses classes proposed by Skinner (1957), such as manding and tacting (Partington, Sundberg, Newhouse, & Spengler, 1994; Ribes, Gomar-Ruiz, & Rivas, 1975; Simic & Bucher, 1980; Yamamoto & Mochizuki, 1988), and b) the identification and demonstration of reinforcement control over so-called generalized operant classes, such as imitation, grammatical or syntactic responses, instruction following, and verbal-non verbal correspondence (Deacon & Konarski, 1987; García, Guess, & Byrnes, 1973; Hart & Risley, 1980; Hester & Hendrickson, 1977; Ribes, 1986; Stokes, Osner, & Guevremont, 1987), all classes which are assumed to underlie the emergence of new, non-directly trained linguistic responses.

There are few studies focusing on the actual behavioral interactions of the child (as a language learner) and the mother, a caregiver, or a trained teacher (Bijou, Umbreit, Guezzi & Chao, 1986; Moerk, 1983, 1990; Rondal, 1981; Snow, 1989), and only some of them have dealt with language acquisition and development from its beginnings. These studies show the decisive effect of the mother in promoting the acquisition and extension of speech in children. On the one hand, Rondal studied how the adaptations of maternal language to child language in terms of prosody, phonology, lexicon, semantic content and pragmatic aspects of speech, facilitated the acquisition of speech by the child. On the other hand, Moerk (1983, 1990) analyzed how maternal speech and feedback temporally and structurally adapt themselves to the child's speech, in such a way that it is possible to identify systematic teaching strategies related to the acquisition and extension of locutionary and syntactic features of speech by the child. Although these studies show the importance of the mother's behavior in the child's acquisition and development of language, they do not take into account the intermingling of language development with the overall development and socialization that necessarily take place as an effect of mother-child linguistic interactions.

### **The articulation of development through language**

Wittgenstein (1953) advanced the notion that "to imagine a language means to imagine a form of life" (p.19). Language as a form of life is a notion that involves individual practices with objects and people as an integrated totality, to the extent that language is present and articulates every kind of imaginable social activity. The human environment, in the form of culture and social relations, is built through language, and no human behavioral practice could be understood apart from language. We usually describe human behavior as verbal or non-verbal. But this is a misleading distinction, since language behavior (which is not necessarily reducible to speech) never occurs

isolated from the overall behavior or activity of the individual. Even more, language behavior is learned and becomes functional through its integration and correlation with motor, visceral and sensory forms of activity, and its occurrence in different modes always consists in some kind of activity such as reading, writing, speaking, pointing, gesturing, or listening. The socialization and adjustment of individual behavior is promoted, taught, and regulated by language behavior from the significant others in the culture and social environment. The development of language behavior allows the individual to fully adjust to, modify, and participate in the social environment.

Some researchers in developmental science and pragmatics have stressed the need to conceive language acquisition within the scope of general development and socialization, pointing to the outstanding role initially played by the mother-child interaction. Schaffer (1984) suggested that early sociability and early language development were closely related. Schaffer presented a conceptual framework for the analysis of what he called early socio-communicative development, based on the claim that the child's integration into the social world is a joint process involving the mother (or its social surrogate) and the child. Therefore, the mother-child interaction should be considered the minimal functional unit for the analysis of linguistic and social development, a functional unit that can be analyzed metaphorically in terms of the mother as the mentor and the child as the apprentice. Schaffer identified five successive interactive tasks considered to be critical for the child's socio-communicative development:

- 1) The first mother-child interactions, from the birth to around two months of life, center on the regulation of the infant's basic physiological processes such as feeding, sleeping, and hygienic care.
- 2) During the following months (2 to 5 months of age) most interactions deal with maintaining the infant's attentiveness and positive affect in face to face exchanges.

- 3) From this point, during the first two years, joint attention is extended to objects and events beyond the mother and the child.

- 4) Beginning at 8 months of age, the child becomes a competent partner of the mother, participating in intentional interactions and showing reciprocity.

- 5) Later, after 12 months of age, mother-child interactions progressively integrate the child's utterances and speech into the existing nonverbal modes of effective communication.

Schaffer considers that these five interactive stages are sequentially organized and depend both on the teaching strategies of the mother and on the progressive achievements of the infant, that functions as a pacer of the speed and the quality of the socio-communicative episodes.

From a pragmatic approach, Snow (1989) has examined the acquisition of language in terms of the social context in which the child learns to speak. The child's utterances and expressions are preceded and followed by social events that provide meaning and relevance in relation to the whole conventional system of the language being acquired. Only a limited portion of the actual interactions between adults and children are explicitly designed to promote linguistic development. The child is usually treated as an able participant in conversational interactions before he/she becomes actually a full participant.

Snow has examined the changes in the extension, complexity, and integrity in the production of phrases and sentences by the child as a function of certain facilitating events taking place in social and conversational interactions during the first years of the child's life. Four aspects of adult-child interactions are highlighted:

- 1) "Fine tuning" of the mother's child-directed speech in accordance with the complexity of the child's utterances and understanding. This is related to mother's language, as a way of progressively adjusting the complexity

and accuracy of the child's speech to social conventions and circumstances.

2) "Joint attention" by the mother to the child's orientation and activities, in such a way that the mother's continuous monitoring provides speech appropriate to different specific conditions.

3) "Feedback" (especially negative or corrective feedback) on morphological and syntactic mistakes is not frequent, but the demands for clarification by adults may help to provide negative feedback to children when their utterances or expressions are initially inadequate.

4) "Recasting", in the form of an expanded or changed overlapping utterance by the adult may work as an additional negative feedback source for the child's incorrect utterances.

Snow (1977) claims that language acquisition is the result of a process of interaction between mother and child that begins early in infancy. In this process the contributions of the child and the mother are equally important. Even more, it seems that the simplicity and redundancy of maternal speech may be the effects of very specific adjustments to the child, cued by what the child says and tries to say as much by his/her attentiveness and comprehension. This should shift the emphasis of research on language acquisition from descriptions of large samples of maternal speech or child's utterances to the analysis of what can be and is actually learned in specific mother-child interactions.

### **An observational system**

Focusing on the measurement of speech units, related to grammatical criteria and correlations with "language input" or "cognitive competence," does not seem to be a plausible strategy for the study of language development. A fresh approach to the issue requires observational and experimental studies based on the following assumptions:

1) Language development is not independent of behavioral (or

psychological) development. For language to emerge, diverse non-verbal skills and competencies must develop, and once the most elementary forms of speech appear, they become functionally integrated to overall behavior.

2) Language development takes place through the interactions of the mother (or caregiver) with the infant or child, from very early stages of the child's life.

3) Early language learning consists in the informal training of the child as a listener and observer of the mother's actions and verbalizations.

4) Language development largely consists in promoting the child's adjustment to social criteria regulating daily life in a given culture and in a given group.

5) Language development can be seen as a continuous process, in which the child is initially regulated by linguistic properties of the environment, the behaviors of others, and later shifts to a progressive active role of the child with respect to his/her own behavior towards the environment and the behavior of others.

6) Language development has to be studied in its initial stages through the real-time, actual mother (or caregiver)-child interactions and, later, through the diversified interactions of the child with other social actors as demanded and promoted by the cultural environment in specific settings.

7) Changes in mother-child interactions are the basic units for the analysis of developmental processes. These interactions must be seen as a continuous flow of events, in which both participants are equally instrumental in affecting each other, under the influence of the setting factors represented by the situation in which interactions take place and the particular course of different types of previous interactions. This molar analysis of language development

considers the search for linear causes consisting of environmental "inputs" behavioral "outputs" to be misleading. A better understanding may be obtained by identifying continuous changes in the organizational patterns of interactions according to their historical and situational contexts.

We shall describe an observational system designed to analyze the development of language according to the previous assumptions. This system is conceived to measure the interaction of the child with the mother (or with any other relevant social individual) in real time, and in general settings or more specific situations. The system covers different dimensions of mother-child interaction such as the integration of verbal and nonverbal actions and their effectiveness, cognitive achievements, the spatial proximity of participants in the episode, play/teaching interactions, episode length and rhythm modulators, teaching strategies used by the parent or caregiver, and the linguist modes in which the interactions occur. All these interactions may take place in different adjustment settings or situations. Initial observations are related to four basic adjustment situations at home: feeding, playing, taking a bath, and cleaning/changing clothes. Two additional general adjustment settings are also considered: training settings (at home, school, playgrounds, etc.), and non-structured social meetings (inside or outside home).

The observational system distinguishes among characteristics and outcomes of the

interactions, the fulfillment of achievement criteria, the spatial properties of interactions, the variety of learning-structured interactions, the length and rhythm of interactive episodes, the linguistic mode in which the interaction occurs, and the teaching strategies developed by the adult. Each of these aspects describes different parameters, properties, and dimensions of linguistic interactions, which vary along morphological, functional, patterning, dynamic, and goal-related features of each episode. We will briefly describe each of these aspects.

#### **Integration of linguistic interactions.**

We previously stressed that all mother-child interactions are linguistic to the extent that the criteria that promote, regulate, and modify them derive from social conventions and cultural practices. Although language is identified as a particular morphology of behavior (articulated sounds, production of graphic symbols, indications, gestures and signs), it always occurs integrated with the overall actions of the individual. We assume that language development initially involves the progressive integration of linguistic morphologies with non-conventional motor and orientation behaviors and that, depending upon the mastery achieved by the child through the active teaching strategies of adults, linguistic morphologies should become dominant over non-conventional morphologies of behavior.

**Table 1. LINGUISTIC INTERACTIONS**

| <b>MORPHOLOGY</b> | <b>EFFECTIVENESS</b> | <b>DIRECTION OF BEHAVIORAL EFFECT</b> | <b>DEFINITION AND EXAMPLES</b>   |
|-------------------|----------------------|---------------------------------------|--|
| I. Non linguistic | I.1 Effective        | I.1.1 On objects                      | Motor actions producing a mechanical effect on objects. Ex. Drawing, painting, manipulating, walking, running.   |
|                   |                      | I.1.2 On other persons                | Motor actions producing a mechanical effect on other subjects. Ex. Instigating somebody to accomplish an action, moving the arms toward other person, changing another person's clothes.   |
|                   |                      | I.1.3 On objects and persons          | Motor actions producing a mechanical effect on objects and a mechanical and/or linguistic effect on other persons. Ex. The child is drawing, the mother takes a pencil and gives it to him/her (mechanical effect).<br>The child is drawing and the mother comments (linguistic effect) on the drawing or the activity of drawing. |

|  |                   |                                |  |
|--|-------------------|--------------------------------|--|
|  | I.2 Ineffective   |                                | Motor actions or movements without mechanical effects (orienting or attentive reactions). Ex. orienting gaze toward an object signaled by another person.  |
| II. Non linguistic with correlated verbal responding     | II.1 Effective    | II.1.1 On objects              | Actions producing a mechanical effect on objects correlated with verbalizations (doing something while talking about objects, persons or events in the situation ) Ex. Drawing while talking about the drawing, walking while talking about the game or the purpose of the action  |
|  |                   | II.1.2 On other persons        | Actions producing a mechanical effect on another person correlated with verbalizations about the action itself. Ex. The mother moves the arms of the child as if they were wings while saying he/she is a beautiful butterfly.   |
|  |                   | II.1.3 On objects and persons  | Actions producing a mechanical effect on objects accompanied by verbalizations; these actions induce mechanical and/or linguistic responding in other persons. Ex. The child aligns cubes while saying they are a train; the mother takes other cubes and place them along the same line.  |
|  | II.2 Ineffective  |                                | Actions without mechanical effects on objects accompanied by verbalizations about persons or events involved in the action. Ex. The child extends his/her arms and balances himself/herself while saying he/she is a plane.  |
| III Non linguistic with non-correlated verbal responding | III.1 Effective   | III.1.1 On objects             | Actions producing a mechanical effect on objects accompanied by verbalizations about objects, persons or events uncorrelated with the situation (doing something while talking of something different). Ex. Drawing a cat while talking about the weather.   |
|  |                   | III.1.2 On other persons       | Actions producing a mechanical effect on other persons accompanied by verbalizations uncorrelated with the action itself. Ex. The mother is dressing the child while talking to him/her about his/her father.  |
|  |                   | III.1.3 On objects and persons | Actions producing a mechanical effect on objects accompanied by verbalizations about objects, persons or events uncorrelated with the situation. These actions induce mechanical and/or linguistic effects on other persons. Ex. The child is dressing a doll while saying he/she learnt a new song at school; the mother gives him/her a shoe for the doll while asking what song he/she learned. |
|  | III.2 Ineffective |                                | Actions without mechanical effects on objects accompanied by verbalizations about persons or events not present in the action. Ex. The child extends his/her arms and balances him/herself while talking about how much he/she likes his/her teacher.  |
| IV Linguistic without gross corporal changes             | IV.1 Effective    | IV.1.1 On other persons        | Verbalizations producing a mechanical and/or linguistic effect on other persons (commands, questions, etc.) Ex. Asking to another person to open the door or asking what he/she is doing or saying.  |

|  |                  |  |   |
|--|------------------|--|---|
|  |                  | IV.1.2 On the subject himself/herself              | Verbalizations producing a mechanical or linguistic effect on the subject (anticipating a motor or verbal action, or correcting oneself verbally and acting in consequence). Ex. Saying where he/she is going and go there or saying what he/she is about to do and do it.                              |
|  |                  | IV.1.3 On other persons and oneself simultaneously | Verbalizations producing a mechanical or linguistic effect on another person and oneself simultaneously (anticipating a coordinated action or instructing and following the instructions). Ex. Specifying the game to play or the song to sing; both subjects actually play the game or sing the song.. |
|  | IV.2 Ineffective |  | Verbalizations with no apparent effects (an answer or a command without any response) Ex. One of the participants asks the other what is his/her name and there is no response  |

Three properties are taken into account to identify sixteen different ways of integrating linguistic interactions: the morphology of behavior, the effectiveness of behavior, and the direction of the behavioral effect. Mother-child interactive episodes may involve different behavior segments by each of the participants: Nonlinguistic actions, nonlinguistic actions with correlated linguistic responding, nonlinguistic actions with non-correlated linguistic responding, and linguistic actions without gross corporal changes. These behavior segments may be ineffective, or have effects on objects, other persons, or the subject himself/herself. Table 1 shows the complete list of possible behavioral segments and examples of each one.

### Cognitive achievements

Cognitive functions are intimately related to behavioral development and language learning. Usually, cognitive functions are improperly identified with unobservable "behaviors" or "processes" determining the course of behavioral development and language acquisition. Nevertheless, most cognitive functions can be identified with behavioral *achievements* (Ryle, 1949). Cognition does not

consist in special kinds of behavior. Rather, cognition has to do either with the manner or circumstance in which behavior takes place or with the achievements and results of behavior. Cognitive achievements cannot be traced to specific behaviors, since they may be the result of a wide variety of activities, depending on the stimulus objects and functional context that are responded to. We have identified eighteen different cognitive achievements, some involving only orienting or motor responses (to attend, to compute, to discriminate, to follow instructions, to indicate, to choose, to manipulate, to orient toward an object), others involving verbal responses (naming, denoting, assigning, specifying, representing, stipulating), and others involving both verbal and nonverbal morphologies (to imagine, to remember, to reproduce, to transcribe). These cognitive achievements are conceived as generic results of behavior, and do not include those related to highly specialized fields of knowledge derived from formal education. Table 2 includes a description and example of each cognitive achievement.

**Table 2. COGNITIVE ACHIEVEMENTS**

| CATEGORY  | DEFINITION AND EXAMPLES  |
|---|--|
| 1. To attend  | Orienting one's gaze or responding to an object or an event when the participant is asked or instructed to do it. Ex. When the mother gets the child to respond toward a particular toy (a ball or a doll).  |
| 2. To compute   | Determining the number or calculating the amount of objects in a collection. Ex. Counting marbles in a box, figuring out if there are more or less fruits in a basket than in another one.   |
| 3. To discriminate  | Marking or differentiating the distinguishing features between two or more objects or events. Ex. Distinguishing between a red and a green ball.   |
| 4. To follow instructions   | Performing according to authoritative informations or commands. Ex. Opening a book or painting a tree when one is asked to do so   |
| 5. To identify<br>a. Non verbally<br>Indicating<br>Choosing<br>Manipulating<br>Orienting<br>b. Verbally<br>i. Designating<br>Naming (generic and proper names)<br>Denoting<br>Assigning<br>ii. Describing<br>Specifying<br>Representing<br>Estipulating | Distinguishing the quality or identity of a person, an object or an event.<br>Identification can be made <b>non verbally</b> :<br>i. <i>Indicating</i> or pointing at the required object (Ex. The child points in the direction of an object after an instruction or question of the mother)<br>ii. <i>Choosing</i> or selecting between two alternatives (Ex. The child picks up one card from a group of three when the mother asks for it)<br>iii. <i>Manipulating</i> or operating on an object by mechanical means (Ex. The child uses a toy phone to "call" his friends instead of banging it up)<br>iv. <i>Orienting</i> or directing attention toward a particular object. (Ex. The child looks at the dog when the mother talks about it)<br>Identification can be made <b>verbally</b> :<br>i. Designating<br><i>Naming</i> using generic and proper names (Ex. The child uses properly the names of different toys, marbles, balls, cards, puzzles, etc.)<br><i>Denoting</i> or setting a mark for an object, person or event (Ex. The child gives a different name to each one of his/her dolls)<br><i>Assigning</i> or ascribing an object or person to an existing class (Ex. Classifying puzzle pieces by form or color)<br>ii. Describing<br><i>Specifying</i> or establishing explicitly a characteristic or quality of an object, person or event (Ex. In a meal simulation the child specifies that glasses are for milk and cups for tea)<br><i>Representing</i> or putting an object, person or event in the place of another (Ex. The child uses black marbles to represent animals in a zoo game).<br><i>Stipulating</i> or specifying a condition or requirement to identify or use an object, a person or an event (form a class). Ex. In a simulation game the child stipulate that big dolls will be policemen and small dolls will be children. |
| 6. To imagine   | Doing "as if", simulating an event or situation. Ex. Playing to the grocery store.   |
| 7. To remember  | Bringing past objects, persons or events to the present situation. Ex. Remembering a song learned at school last week.   |
| 8. To reproduce   | To repeat or imitate verbalizations or vocal behaviors, graphic representations or gestures and movements. Ex. Playing the "Simon says" game.  |
| 9. To transcribe  | Making a copy of a linguistic or graphic representation of an object, a person, or an event made by another person. Ex. The child copies a sentence written by the mother.   |

### Spatial proximity gradient

Since linguistic episodes in child development take place as actual interactions between the child and his/her caregiver, spatial proximity is a fundamental dimension of the language acquisition process. We assume that to the extent that verbal effective forms of interaction become dominant, spatial proximity between the child and other persons will decrease. We have formulated twelve categories identifying different degrees of proximity and

contact between the mother, the child, and the objects in the situation. These categories necessarily involve orienting and touching behaviors that indicate and regulate the degree of spatial proximity between the mother and child with respect to themselves and relevant objects in the situation. Spatial proximity is undoubtedly related to the development of different forms of attachment and socialization. Table 3 describes each of these categories.



**Table 3. SPATIAL PROXIMITY GRADIENT**

|     |  |
|-----|--|
| 1.  | Mother and child together, touching each other or touching the same object, looking at each other.   |
| 2.  | Mother and child together, touching each other or touching the same object, one participant looking at the other.  |
| 3.  | Mother and child together, touching each other or touching the same object, both persons looking at the same object or in the same direction.            |
| 4.  | Mother and child together, touching each other or touching the same object, looking at different objects or in different direction.                      |
| 5.  | Mother and child together, without touching each other, or touching different objects, looking at each other.  |
| 6.  | Mother and child together, without touching each other, or touching different objects, one person looking at the other.                                  |
| 7.  | Mother and child together, without touching each other, or touching different objects, both persons looking at the same object or in the same direction. |
| 8.  | Mother and child together, without touching each other, or touching different objects, looking at different objects or in different directions.          |
| 9.  | Mother and child separated, looking at each other.   |
| 10. | Mother and child separated, one person looking at the other  |
| 11. | Mother and child separated, both persons looking at the same object or in the same direction.  |
| 12. | Mother and child separated, looking at different objects or in different directions.   |

**Dynamic modulators of episode length and rhythm**

Mother-child linguistics interactions, as any language episode, consist of a continuous stream of verbal and nonverbal exchanges regarding sayings and actions with respect to present and absent objects or persons. The identification of an episode within this stream is an extremely difficult task. Traditional strategies based upon the identification of discriminative stimuli and reinforcers, or on the conversational or referential content of verbalizations do not seem satisfactory. On the one hand, in natural settings it is virtually impossible to identify discriminative and reinforcing stimuli during continuous, simultaneous exchanges. On the other hand, the content of utterances may be misleading since linguistic episodes are not linearly organized. We have instead adopted

situationally based behavioral criteria, that is, the identification of behaviors functionally related to a situational demand or task. An episode is characterized in terms of a change of exchange criteria between the mother and child regarding present or absent objects and persons. The episode concludes when the exchange criterion, viewed as a task demand to be satisfied, is achieved. However, the length of a given episode may depend on more than the mere occurrence of an outcome (criterion fulfillment). The length of the episode may also depend on dynamic factors that act as modulators of the rhythm (changes of speed) and intensity of the mother-child interaction. These episode modulators are described in Table 4.

**Table 4. DYNAMIC MODULATORS OF EPISODE LENGTH AND RHYTHM**

| CATEGORY  | EXAMPLES   |
|---|--|
| 1. Motor acts   | Jumping, running, standing up, sitting down, etc.  |
| 2. Affective behaviors (directed at objects or persons) | Getting the other's attention (by pointing, talking, etc.), showing or modeling an action to the other person.   |
| 3. Motor interaction                                    | Tickling, hugging, kissing, shaking hands, etc.  |
| 4. Verbal answer  | Saying "yes" or "no" in a serious tone of voice.   |
| 5. Crying   | Crying after being hit by a ball during a game.  |
| 6. Laughing   | One or both of the participants laughing about a joke or about one of them falling down in the middle of a game.   |
| 7. Screaming  | Screaming when being caught up by the mother or being punished for a bad behavior.   |
| 8. Gestures (active or reactive)                        | Big eyes indicating that the person figured something out or got an idea (active)<br>An expression of surprise as a result from a clown jumping out of a box (reactive). |
| 9. Non-corresponding actions                            | When playing some game, suddenly one of the participants stands up and runs all around the room.   |

All categories in this group will be recorded as:

- a. Changing the episode rhythm or intensity
- b. Finishing the episode, **OR**
- c. No change at all

The dynamic factors that modulate the extent and intensity of the mother-child interaction may consist in motor acts not foreseen in the situation, specific behaviors towards objects or persons, motor-affective interactions (answering, crying, laughing, screaming), particular gestures or expressions, and actions not corresponding to the situation. These events may change the rhythm or intensity of the episode, may interrupt the episode, or may not change the occurrence of the interaction at all, depending on the criteria regulating the episode. Modulation factors are intimately related to the social regulation of affection and emotion.

behavior also occurs in other modes. Linguistic actions can be identified in writing and in gesturing or indicating. Speaking, writing and indicating affect the behavior of others, who can react appropriately only in linguistic ways. Other modes of linguistic behavior, responding or reacting to linguistic actions, consist in listening, reading and observing. Thus, language can occur in six different modes of behavior, three active modes (speaking, writing, and gesturing/indicating) and three reactive modes (listening, reading, and observing), a distinction that is related to the traditional, but nonspecific, dichotomy between expressive and receptive language (Guess, 1969).

### Linguistic modes

Linguistic behavior does not consist only in verbal behavior or speech. Language as

**Table 5. EPISODE MODE**

|   |  |
|---|--|
| A. Active mode  |  |
| 1.  | To gesticulate and indicate              |
| 2.  | To talk                                  |
| 3.  | To write                                 |
| B. Reactive mode  |  |
| 4.  | To observe                               |
| 5.  | To listen                                |
| 6.  | To read                                  |
| C. Multiple episodes (two categories in the active <b>OR</b> reactive mode)           |  |
| 7.  | To gesticulate and indicate / to talk    |
| 8.  | To write / to talk                       |
| 9.  | To observe / to listen                   |
| 10.   | To write/ to indicate                    |
| 11.   | To observe/ to read                      |
| 12.   | To listen/ to read                       |
| D. Combined episodes (two categories in both the active <b>AND</b> the reactive mode) |  |
| 13.   | To gesticulate and indicate / to observe |
| 14.   | To gesticulate and indicate / to listen  |
| 15.   | To gesticulate and indicate / to read    |
| 16.   | To talk / to observe                     |
| 17.   | To talk / to read                        |
| 18.   | To write / to read                       |
| 19.   | To listen/ to write                      |

Table 5 enumerates the six basic modes of behavior in which a linguistic episode may occur, as well as the possible joint occurrence of two active *or* reactive modes, or the joint occurrence of two or more active *and* reactive modes. These categories should allow us to

observe the differentiation and functions of each mode of linguistic behavior, to determine the effects of gesturing/indicating on the acquisition of speech, and to determine the effects of reading and writing on the complexity and

evolution of the interactions involving the child's behavior.

### Play/teaching interactions and teaching strategies

During the early years of life, adults introduce special playing and teaching situations in order to promote and diversify language learning (Moerk, 1980). The design of these situations is not necessarily planned, and they emerge as the natural result of cultural practices. Our observational system includes the following playing/teaching interactions: nonverbal riddles, imitation, repetition, verbal riddles, word games,

songs, tales, and simulation. During these interactions as well as in regular adjustment episodes, the parent or caregiver may deploy a number of teaching strategies. Although Moerk (1985) elaborated a detailed list of teaching strategies dealing with special grammatical and pragmatic forms of language in the child, we have limited ourselves to sixteen general behavioral strategies, which are listed in Table 6. Most of these teaching strategies consist in special verbal and nonverbal behaviors of the adult with respect to the child.

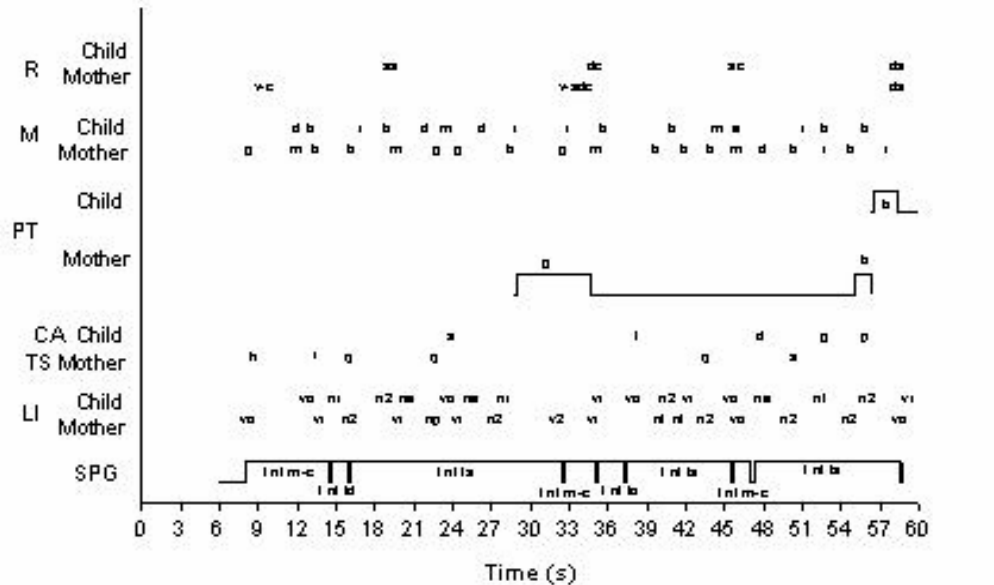
**Table 6. TEACHING STRATEGIES PLAY/TEACHING INTERACTIONS**

| CATEGORY                        | DEFINITION AND EXAMPLES   | CATEGORY              |
|---------------------------------|---|-----------------------|
| 1. To expand / to elaborate     | Reformulating a verbalization of the child by adding new elements   | 1. Verbal riddles     |
| 2. To substitute / to transform | Reformulating a verbalization of the child by replacing incorrect elements with correct ones  |                       |
| 3. To complete                  | Giving an end to a verbalization or an action not completed by the child  | 2. Songs              |
| 4. To provide feedback          | Returning information to the child about his/her performance in a particular task or during a particular utterance. This could be made by:<br>a. Repeating or reproducing<br>b. Correcting<br>c. Rewarding<br>d. Praising<br>e. Approving<br>f. Encouraging to go on<br>g. Punishing<br>h. Interrupting | 3. Tales (stories)    |
| a. To repeat                    |   | 4. Word games         |
| b. To correct                   |   | 5. Non-verbal riddles |
| c. To reward                    |   | 6. Imitation          |
| d. To praise                    |   | 7. Simulation         |
| e. To approve                   |   | 8. Repetition         |
| f. To encourage to go on        |   |                       |
| g. To punish                    |   |                       |
| h. To interrupt                 |   |                       |
| 5. To adapt                     | Modifying characteristics of the maternal speech to fit the infant's level of skill by reducing the length and the complexity of utterances, using "baby talk" prosodic elements, speaking louder, gesticulating etc.   |                       |
| 6. To incorporate               | Combining elements of a verbalization of the child into maternal speech   |                       |
| 7. To chain                     | Adding a sentence of the child to an utterance of the mother  |                       |
| 8. To model                     | Exemplifying or demonstrating to the child how to say something or how to accomplish a task properly.   |                       |
| 9. To instigate                 | Moving or inciting the child to action by saying something ("let's go") or by assisting him/her in the movements to accomplish (guiding his/her hand into the proper position to write)   |                       |
| 10. To ask questions            | Asking questions about an actual action or verbalization of the child. Introducing a new topic or a new pattern of action by asking questions.  |                       |
| 11. To order                    | Commanding to say or do something. Putting in proper order the elements of a sentence uttered imperfectly by the child  |                       |
| 12. To instruct                 | Providing knowledge or training about a task.   |                       |
| 13. To exemplify                | Showing or illustrating by analogy or by stating an example   |                       |
| 14. To point out                | Directing the child's attention toward an object, a person, or any other important element by indicating its direction or position.   |                       |
| 15. To prime                    | Preparing the child to do something by supplying a starting element (an utterance, or the first step in a pattern)  |                       |

**The analysis of mother-child interaction: An example**

Figure 1 depicts a one-minute episode sample involving a university-trained, middle-class, 30-year-old mother (G) and her three-year

old daughter (V). This episode was filmed at home while the mother and the girl were playing together, and was coded through the Observer Video-Pro 4.0.



SPG (Spatial Proximity Gradient)  
 t nt m-c = Mother and child together, without touching each other, mother looking at the child  
 t nt ld = Mother and child together, without touching each other, looking at different objects in different or direction  
 t nt lo = Mother and child together, without touching each other, looking at each other  
 t nt ls = Mother and child together, with out touching each other, looking at the same object or in the same direction

LI (Linguistic interactions)  
 ne= Non-linguistic actions effective upon objects  
 ni= Non-linguistic ineffective actions  
 nl= Non-linguistic actions with correlated linguistic responding effective on objects  
 np= Non-linguistic actions with correlated linguistic responding effective on persons  
 n2= Non-linguistic actions with correlated linguistic responding effective on objects and persons  
 vo= Linguistic actions effective upon persons  
 v2= Linguistic actions effective simultaneously on other persons and the subject himself/herself  
 vi= Linguistic ineffective actions

|   |  |  |
|---|--|--|
| TS (Teaching Strategies)<br>f = To repeat<br>h = To praise<br>q = To ask questions<br>s = To instruct | CA (Cognitive achievements)<br>a = To attend<br>d = To follow instructions<br>g = To identify -non verbally -Manipulating<br>i = To identify - verbally - Specifying<br>p = To reproduce | PT (Play/Teaching Interactions)<br>b = Songs<br>g = Simulation |
|---|--|--|

M (Episode Mode)  
 b = To talk  
 d = To observe  
 e = To listen  
 g = To gesticulate and indicate / To talk  
 i = To observe / To listen  
 m = To talk / To observe

R (Episode length and rhythm modulators)  
 ac = Motor acts (Change)  
 as = Motor acts (Maintain)  
 dc = Laughing (Change)  
 ds = Laughing (Maintain)  
 wc = Affective behaviors directed at objects or persons (Change)  
 ws = Affective behaviors directed at objects or persons (Maintain)

The figure comprises vertical and horizontal components of the interactive episode. A vertical analysis consists in evaluating the simultaneous changes in each of the dimensions in a particular time sample. A horizontal analysis consists in evaluating the successive changes taking place across time in a

given dimension. This analysis provides punctuated information in real time about successive and simultaneous changes in the different dimensions assessed by the observational system, enabling us to locate transitional segments in development. However, the fine-grain analysis illustrated here does not

preclude a molar analysis involving the total and relative frequencies and durations of each type of episode, assessing larger segments within observational sessions or overall changes between sessions or blocks of sessions.

We will examine the temporal sample from the 8th to the 14th second in the record depicted in Figure 1.

A vertical analysis of this sample shows that, regarding the spatial proximity gradient, the mother and the child are together without touching each other while the mother looks at the child (t nt m-c). In relation to reactive integration, the mother behaves linguistically towards the child (vo), the child responds linguistically to the mother (vo), and the mother makes a linguistic response without apparent effects (vi). The mother uses teaching strategies: praising (i), and repeating something said by the child (f). There are no cognitive achievements or playing/teaching episodes. The episodes involve different linguistic modes: the mother makes an indication while speaking (g), the child looks (d), the mother speaks while observing (m), and the child speaks (b). Finally, the mother shows affective behavior towards objects or persons (wc), which changes the rhythm of the interaction (dynamic modulator).

An horizontal analysis of two of the dimensions in Figure 1 shows that from seconds 14 to 16 the mother and child are together without touching each other while looking in different directions; from seconds 16<sup>th</sup> to 32 the mother and child remain together, without touching each other, and looking at the same object or in the same direction. In regard to reactive integration, the child behaves without effect (ni, s 15), the mother behaves non linguistically with correlated linguistic behavior with effects on the child and various objects (n2, s 17), the child behaves in a similar way (n2, s 19), the mother emits an ineffective linguistic response (vi, s 20), the child acts non linguistically with effects on various objects (ne, s 21) and so on.

This example shows how different events recorded in a limited time sample are analyzed. Given that the categories are content-free, the observational system described here can be employed with dyads from different cultures,

different social classes, and different educational backgrounds. If necessary, the film allows the development of grammatically or anthropologically oriented coding systems, correlating general behavioral categories with particular morphological changes in language or social patterns.

## REFERENCES

- Bijou, S.W. (1975). Moral development in the preschool years: A functional analysis. *Mexican Journal of Behavior Analysis, 1*, 11-29.
- Bijou, S.W. (1989). Psychological linguistics: Implications for a theory of initial development and a method for research. In H.W. Reese (Ed.), *Advances in child development and behavior* (vol. 21, pp. 221-241). San Diego, CA: Academic Press.
- Bijou, S.W., Umbreit, J., Ghezzi, P.M., & Chao, C.C. (1986). Manual of instructions for identifying and analyzing referential interactions. *Psychological Record, 36*, 401-414.
- Deacon, J.R., & Konarski, E.A., Jr. (1987). Correspondence training: An example of rule-governed behavior? *Journal of Applied Behavior Analysis, 20*, 391-400.
- Farah, M.J., & Kosslyn, S.M. (1982). Concept development. In H.W. Reese & L.P. Lipsitt (Eds.), *Advances in child development and behavior*, Vol. 16 (pp. 125-167). New York: Academic Press.
- García, E., Guess, D., & Byrnes, J. (1973). Development of syntax in a retarded girl using procedures of imitation reinforcement, and modelling. *Journal of Applied Behavior Analysis, 6*, 299-310.
- Gewirtz, J.L., & Peláez-Noguera, M. (1991). The attachment metaphor and the conditioning of infant separation protests. In J.L. Gewirtz & W.M. Kurtines (eds.), *Intersections with attachment* (pp. 123-146). Hillsdale, NJ: Lawrence Erlbaum.
- Guess, D.A. (1969). A functional analysis of receptive language and productive speech: Acquisition of the plural morpheme. *Journal of Applied Behavior Analysis, 2*, 55-64.
- Hart, B., & Risley, T.R. (1980). In vivo language intervention: Unanticipated general effects. *Journal of Applied Behavior Analysis, 13*, 407-432.
- Hester, P., & Hendrickson, J. (1977). Training functional expressive language: the acquisition and generalization of five-element syntactic responses. *Journal of Applied Behavior Analysis, 10*, 316.
- Malcuit, G., Pomerleau, A., & Lamerre, G. (1988). La recherche sur l'apprentissage opérant chez le nourrisson: un parallèle avec l'état général de la question chez l'humain. *L'Année Psychologique, 88*, 257-282.
- Moerk, E.L. (1980). Relationships between parental input frequencies and children's language acquisition: A reanalysis of Brown's data. *Journal of Child's language, 7*, 105-118.
- Moerk, E.L. (1983). *The mother of Eve-As a first language teacher*. Norwood, NJ: Ablex.
- Moerk, E.L. (1985). Analytic, synthetic, abstracting, and word-class-defining aspects of verbal mother-child interactions. *Journal of Psycholinguistic Research, 14*, 263-287.

- Moerk, E.L. (1990). Three-term contingency patterns in mother-child verbal interactions during first-language acquisition. *Journal of the Experimental Analysis of Behavior*, *54*, 293-305.
- Parke, R.D. (1989). Social development in infancy: A 25-year perspective. In H.W. Reese (Ed.), *Advances in child development and behavior*, Vol. 21 (pp. 1-48). San Diego, CA: Lawrence Erlbaum.
- Partington, J.W., Sundberg, M.L., Newhouse, L., & Spengler, S.M. (1994). Overcoming an autistic child's failure to acquire a tact repertoire. *Journal of Applied Behavior Analysis*, *27*, 733-734.
- Poulson, C., & Kyriassis, E. (1996). The operant language-acquisition paradigm and its empirical support. In S.W. Bijou & E. Ribes (Eds.), *New directions in behavior development* (pp. 73-89). Reno, NV: Context Press.
- Ribes, E. (1986). Language as behavior: Functional mediation versus morphological description. In H.W. Reese & L.J. Parrott (Eds.), *Behavior science: Philosophical, methodological, and empirical advances* (pp. 115-138). Hillsdale, NJ: Lawrence Erlbaum.
- Ribes, E. (1993). Behavior as the functional content of language games. In S.C. Hayes, L.J. Hayes, H.W. Reese & T.R. Sarbin (Eds.), *Varieties of scientific contextualism* (pp. 283-297). Reno, NV: Context Press.
- Ribes, E. (1996). Some thoughts on the nature of a theory of behavior development and its application. In S.W. Bijou & E. Ribes (Eds.), *New directions in behavior development* (pp. 35-46). Reno, NV: Context Press.
- Ribes, E., Gomar-Ruiz, S., & Rivas, L. (1975). Verbal development in preschool children. In T. Thompson & W.S. Dockens, III (Eds.), *Applications of behavior modification* (pp. 221-236). New York: Academic Press.
- Riegler, H.C., & Baer, D.M. (1989). A developmental analysis of rule-following. In H.W. Reese (Ed.), *Advances in child development and behavior*, Vol. 21, (pp. 191-219). San Diego, CA: Academic Press.
- Rondal, J.P. (1981). On the nature of linguistic input to language learning children. *International Journal of Psycholinguistics*, *8*, 75-107.
- Ruiz Rosales, J., & Baer, D.M. (1996). A behavior-analytic view of development. In S.W. Bijou & E. Ribes (Eds.), *New directions in behavior development* (pp. 155-180). Reno, NV: Context Press.
- Ryle, G. (1949). *The concept of mind*. New York: Barnes & Noble.
- Schaffer, H.R. (1984). *The child's entry into a social world*. London: Academic Press.
- Simic, J., & Bucher, B. (1980). Development of spontaneous manding in language deficient children. *Journal of Applied Behavior Analysis*, *13*, 523-528.
- Skinner, B.F. (1957). *Verbal behavior*. New York: Appleton Century Crofts.
- Snow, C.E. (1977). Mothers' speech research: from input to interaction. In C.E. Snow & C.A. Ferguson (Eds.), *Talking to children: Language input and acquisition* (pp. 31-49). Cambridge: Cambridge University Press.
- Snow, C.E. (1989). Understanding social interaction and language acquisition: Sentences are not enough. In M.H. Bornstein & J.S. Bruner (Eds.), *Interaction in human development* (pp. 83-103). Hillsdale, NJ: Lawrence Erlbaum.
- Stokes, T.F., Osnes, P.G., & Guevremont, D.C. (1987). Saying and doing: A commentary on a contingency-space analysis. *Journal of Applied Behavior Analysis*, *20*, 161-164.
- Wittgenstein, L. (1953). *Philosophical investigations*. Oxford: Basil Blackwell.
- Yamamoto, J., & Mochizuki, A. (1988). Acquisition and functional analysis of manding with autistic children. *Journal of Applied Behavior Analysis*, *21*, 57-64.
- Zimmerman, B.J., & Whitehurst, G.J. (1979). Structure and function: A comparison of two views of the development of language and cognition. In G.J. Whitehurst & B.J. Zimmerman (Eds.), *The functions of language and cognition* (pp. 1-22). New York: Academic Press.

## MODE DEACTIVATION: A FUNCTIONALLY BASED TREATMENT, THEORETICAL CONSTRUCTS

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The theoretical constructs of Mode Deactivation Therapy (MDT) are based on the Mode Model (Beck, 1996), 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 reformation of the structural components. MDT is an empirically based methodology that systematically assesses and restructures dysfunctional compound core beliefs. By restructuring these beliefs, MDT addresses underlying perceptions that may be applicable to setting in motion the mode related charge of aberrant schemas, that enable the behavior integration of Dialectic Behavioral Therapy (DBT) principles (Linehan, 1993) of treating of sex offending or aggressive behavior (Kohlenberg & Tsai, 1993). The Mode Deactivation framework also utilizes the case conceptualization methodology and emphasizes a team approach in working with clients; particularly those with reactive emotional dysregulation, which includes parasuicidal acts and aggression. The case conceptualization is systematically designed to provide functionally based treatment to complex emotional, thought, and behavior disorders. The following article demonstrates this comprehensive process and delineates the procedures used to develop the case within the mode deactivation theoretical perspective.

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The development of Mode Deactivation Therapy (MDT) has been a challenge both theoretically and clinically. 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 (Alford and Beck, 1997; Beck, 1996).

Functional analytic psychotherapy (FAP) (Kohlenberg & Tsai, 1993) theory states that 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 schemas 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 individuals have long histories of sexual, physical, and/or emotional abuse. Often they 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, it was necessary to address this typology of youngsters from a more “global” methodology. MDT incorporates the model of individual schemas with Beck’s notion of modes as integrated sub-organizations 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.

Part of the design of the MDT curriculum is intended to create a functional team based on Mode Deactivation Therapy. The team operates within the implementation guidelines, focusing all efforts in a concerted manner; one tape, one chapter and one group at a time. All energies are directed toward assisting the client to master and implement the curriculum. The goal is to help one youngster change at a time.

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.

The theoretical underpinnings of Mode Deactivation Therapy are based on the Mode Model. Specifically, this model suggests 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 is built on the mastery system for youngsters. They move through the workbook and audiotapes 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. Initially, the individual needs to be aware of his/her negative verbalizations and negative thoughts, and record them in his/her workbook. Through the Case Conceptualization, workbook, and audiotapes, 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 sub-organizations 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. These consistent coordinated acts are controlled by genetically and environmentally determined processes 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 (1987). 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 forms 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 help 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 themselves.

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. It appears that Reactive Conduct Disorder adolescents emotionally dysregulate and many of their aberrant responses are results of their emotional dysregulation.

Koenigsberg, et al. (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.

### REFERENCES

- Alford, B.A., & Beck, A.T. (1997). *The integrative power of cognitive therapy*. New York: Guilford Press.

- Beck, A.T. (1996). Beyond belief: A theory of modes, personality, and psychopathology. In P.M. Salkovskis (Ed.), *Frontiers of Cognitive Therapy* (pp. 1-25). New York: Guilford Press.
- Beck, A.T., Freeman, A., & Associates (1990). *Cognitive therapy of personality disorders*. New York: Guilford Press.
- Beck, A.T., Wright, F.D., Newman, C.F., & Liese, B.S. (1993). *Cognitive therapy of substance abuse*. New York: Guilford Press.
- Dodge, K.A., Lochman, J.E., Hamish, J.D., Bates, J.E., & Petti, G.S. (1997). Reactive and proactive aggression in school children and psychiatrically impaired chronically assaultive youth. *Journal of Abnormal Psychology*, 106 (1), 37-51.
- Johnson, J.G., Cohen, P., Brown, J., Smailes, E.M., & Bernstein, D.P. (1999). Childhood maltreatment increases the risk for personality disorders during early adulthood. *Archives of General Psychiatry*, 56, 600-608.
- Koenigsberg, H.W., Harvey, P.D., Mitropoulou, V., Antonia, N.S., Goodman, M., Silverman, J., Serby, M., Schopick, F., & Siever, L. (2001). Are the interpersonal and identity disturbances in the borderline personality disorder criteria linked to the traits of affective instability and impulsivity? *Journal of Personality*, 15 (4), 358-370.
- Kohlenberg, R.J., & Tsai, M. (1993). Functional Analytic Psychotherapy: A behavioral approach to intensive treatment. In W. O'Donohue & L. Krasner (Ed.), *Theories of behavior therapy: exploring behavior change* (pp. 638-640). Washington, DC: American Psychological Association.
- Linehan, M.M. (1995). *Treating borderline personality disorder: The dialectical approach*. New York: Guilford Press.
- Nezu, A.M., Nezu, C.M., Friedman, S.H., & Haynes, S.N. (1998). Case formulation in behavior therapy: Problem-solving and functional analytic strategies. In T.D. Eells (Ed.), *Handbook of Psychotherapy Case Formulation* (pp.368-401). New York: Guilford Press.
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**MODE DEACTIVATION THERAPY AND COGNITIVE BEHAVIORAL  
THERAPY:  
A DESCRIPTION OF TREATMENT RESULTS  
FOR ADOLESCENTS WITH PERSONALITY BELIEFS, SEXUAL OFFENDING  
AND AGGRESSIVE BEHAVIORS**

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This paper is a comparison of two groups of adolescent sexual offenders receiving different types of therapy; one group participated in Treatment As Usual (TAU), which is a Cognitive Behavioral Therapy (CBT) based approach, and the other group engaged in Mode Deactivation Therapy (MDT). The data presented is reflective of treatment comparisons not a research protocol. The results are descriptive and not necessarily comparison research.

MDT is an empirically based therapy, based on CBT, Dialectical Behavioral Therapy (DBT; Linehan, 1993), and Functional Analytic Psychotherapy (FAP; Kohlenberg & Tsai, 1993), recently implemented in the Behavioral Studies Program, existing in Portsmouth, Virginia. MDT is a methodology that systematically assesses and expands underlying compound core beliefs that are a product of their unconscious experience merging with their cognitive processing, acceptance, balance, and validation. By addressing these beliefs, MDT examines underlying perceptions that may be applicable to setting in motion the mode related charge of aberrant schemas, that enable the behavior integration of DBT principles (Beck, 1996; Nezu et al, 1998). The MDT system also implements the Case Conceptualization method based an adaptation of the Beck (1996) suggested methodology of mode deactivation. Results suggest that MDT may be more effective in this treatment research than TAU, evident by reduced internal distress, resulting from various psychological disorders, and reduced sex offending risk.

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The focus of MDT is based on the work of Aaron Beck, M.D., particularly his recent theoretical work, the system of modes (Beck, 1996, Alford & Beck, 1997). Other aspects of MDT have been included in the Behavior Analytic literature, such as Kohlenberg and Tsai (1993), Functional Analytic Psychotherapy (FAP), as well as, Dialectic Behavior Therapy (DBT) (Linehan, 1993). The specific application of MDT is delineated by Apsche, Ward, and Evile (2002) in an article, which specified the applied methodological implications for MDT with specific typologies. The article also provided a theoretical study case study that illustrates the MDT methodology.

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, it was necessary to address this typology of youngsters from a more "global" methodology, to address their impulse control and aggression.

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 (1996) 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.

### **Mode Deactivation Therapy and Cognitive Behavioral Therapy**

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. These consistent coordinated acts are controlled by genetically and environmentally determined processes, or structures termed as "schema." Schema are essentially 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.

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### **Mode Activation**

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Modes are important to the typology we serve in that they are particularly sensitive to danger and fear, serving to charge the modes. 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.

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.

Underlying the MDT methodology is the Case Conceptualization. MDT Case Conceptualization is a combination of Beck's (1996) case conceptualization and Nezu, Nezu, Friedman, and Haynes's (1998) problem solving model, with several new assessments and methodologies recently developed. 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 post traumatic 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 compound core beliefs associated with personality disorders. 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 empirically supported and counter-intuitive.

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 behaviors.

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.

The theoretical underpinnings of Mode Deactivation Therapy are based on the 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.

#### **Application of Validate, Clarify, and Redirect (VCR)**

MDT integrates with Linehan's (1993) basic premises for DBT. MDT, like DBT, uses behavior goals, problem solving goals, reflection and radical acceptance of the client. The mode-deactivation theory (Beck, 1996) clearly delineates the truth in the client's perceptions based in their cognitive unconscious and conscious information processing that developed their perception or world view.

An integral part of MDT is the concept of validation, clarification, and redirection (VCR). Validation was defined by Linehan (1993), as the therapist's ability to uncover the validity within the client's beliefs. The grain of truth reflects the client's perception of reality. The truth in this reality needs to be validated to clarify the content of his responses; and also clarify the beliefs that are activated. It is

important to understand and agree in the “grain of truth” in the clarification.

Redirect responses to others to other views or possibilities on his or her continuum of truths. There are numerous continuums implemented, as scales from 1 to 10 to evaluate areas such as truth, trust, fear, and beliefs. These continuums are essential to MDT in that they give both the client and the therapist an empirical measure of the client’s measured perception of truth.

Teaching a client who often engages in dichotomous thinking that their perception can fall within the range of a continuum, rather than only a 1 or a 10 (all or nothing), is extremely validating and it is the basis for a positive redirection to other possibilities for the client.

### Treatment As Usual

Treatment As Usual (TAU) was based on a manualized cognitive-behavioral therapy approach. The residents record negative thoughts and beliefs, and examine how cognition effects their beliefs, feelings, and behaviors. The TAU addressed sexual offending issues as well as underlying psychological distress, such as anxiety and depression.

## METHOD

### Participants

Fourteen male sexual offenders from the Behavioral Studies Program (BSP) at the Pines Residential Treatment Center (9 European-American, 3 African-American, 1 Native-American, and 1 Caribbean) between ages 12 and 19 years ( $M=16.62$ ) participated in treatment. All participants were first-time admissions to BSP and had never participated in a cognitive-behavioral or mode deactivation based sexual offending treatment program before. Informed consent including the tasks involved and participants’ rights reviewed. Both verbal and written consent was obtained from the participants. Their mean estimated length of stay is 16.36 ( $SD=1.73$ , range 12-19), mean number of reported victims is 3 ( $SD=3.16$ , range 1-13). Types of offenses included flashing, fondling, vaginal and anal penetration, or a combination.

### Measures

Four assessments were used to measure the behavior of the residents, which included the *Child Behavior Checklist* (CBCL; Achenbach, 1991), the *Devereux Scales of Mental Disorders* (DSMD; The Devereux Foundation, 1994), the *Juvenile Sex Offender Adolescent Protocol* (J-SOAP; Prentky, Harris, Frizzell, & Righthand, 2000), and the *Fear Assessment* (Apsche, 2000).

The CBCL is a multi-axial assessment designed to obtain reports regarding the behaviors and competencies of 11- to 18-year-olds’. The means and standards are divided into three categories: internalizing (which measures withdrawn behaviors, somatic complaints, anxiety and depression), externalizing (which measures delinquent behavior and aggressive behavior), and total problems (which represent the conglomerate of total problems and symptoms, both internal and external).

The DSMD illustrates level of functioning in comparison to a normal group, via behavioral ratings. T scores have a mean of 50 and a standard deviation of 10; a score of 60 or higher indicates an area of clinical concern.

The J-SOAP is an actuarial risk assessment protocol for juvenile sex offenders. The total score, which includes the sexual drive/preoccupation factor score, impulsive-antisocial personality factor score, clinical/treatment factor score, and community stability/adjustment score is calculated to determine the individual’s level of risk to the community.

The Fear Assessment is a 60-question assessment that measures fear and anxiety reactions that are related to or are associated with the symptoms of Posttraumatic Stress Disorder. Mean scores are divided into five sections, which include personal reactive/internal, personal reactive/external, environmental, physical, and abuse. Any mean score above 2 is considered significant.

### Procedures

The sixteen residents were assigned to caseloads based on availability in caseloads. All therapists carried a caseload of 10. Discharge or transfer of a resident created an opening that needed to be filled to maintain the caseload of

10. It is important to remember that this is a treatment facility and these data reflect the results of treatment comparisons not a research protocol. Residents were assigned to MDT and CBT groups. The treatment group engaged in Mode Deactivation Therapy and the control group participated in Treatment As Usual (TAU). After a mean number of 12 months in treatment, the assigned therapists (7 TAU and 2 MDT) were administered test packets, which included the CBCL, DSMD, J-SOAP, and Fear Assessment. The following were assessed: (a)

Behavioral and emotional problems, including psychopathology, (b) strengths and types of fear, (c) behaviors and ideation observed by clinical staff, and (d) level of risk to the community.

RESULTS

At the time of assessments, the two groups differed significantly. Residents who participated in MDT had lower scores on all measures than did residents who engaged in TAU.

**Table 1. T-scores, ranges, and standard deviations in all measures for both groups**

| <u>Measure</u>                                    | <u>Scale</u>       | <u>Treatment As Usual (TAU)</u> | <u>Mode Deactivation Therapy (MDT)</u> |
|---|--------------------|---------------------------------|--|
| Child Behavior Checklist (CBCL)                   | Internal           | 63.63 (Range=55-80, SD=10.04)   | 51.75 (Range=39-71, SD=11.88)          |
|   | External           | 65.63 (Range=52-82, SD=10.76)   | 50.88 (Range=37-69, SD=10.74)          |
|   | Total              | 66.63 (Range=55-80, SD=8.35)    | 50.00 (Range=36-69, SD=11.78)          |
| Devereux Scales of Mental Disorders (DSMD)        | Internal           | 64.25 (Range=52-84, SD=10.65)   | 51.00 (Range=40-61, SD=9.24)           |
|   | External           | 56.88 (Range=49-75, SD=9.09)    | 45.88 (Range=40-62, SD=7.30)           |
|   | Critical Pathology | 50.88 (Range=42-69, SD=8.49)    | 46.25 (Range=42-54, SD=5.01)           |
|   | Total              | 58.00 (Range=49-71, SD=8.85)    | 47.25 (Range=40-60, SD=6.90)           |
| Juvenile Sex Offender Assessment Protocol (JSOAP) | Treatment Factor   | 26.38 (Range=17-40, SD=7.87)    | 10.62 (Range=6-14, SD=3.20)            |
|   | Total              | 9.75 (Range=0-18, SD=6.20)      | 3.38 (Range=1-7, SD=2.45)              |

**Child Behavior Checklist**

The CBCL means and standards are divided into three categories: internalizing, externalizing, and total problems. In comparison to the TAU group, the MDT group

mean scores on all scales are at least one standard deviation less.



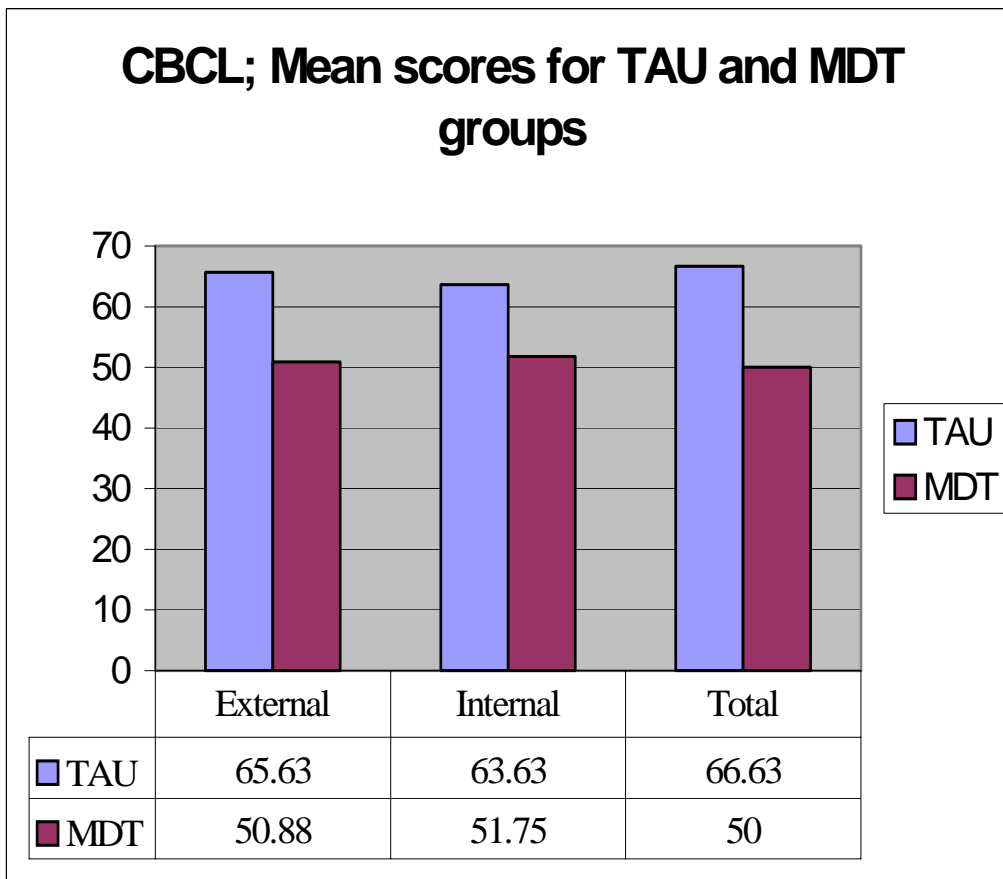


Figure 2. CBCL; mean scores for TAU and MDT groups

**Devereux Scales of Mental Disorders**

The DSMD uses *T* scores with a mean of 50 and a standard deviation of 10. Any *T* score over 60 is considered clinically significant. The following four scales were analyzed: (1) Externalizing, which indicates prevalence of negative overt behaviors or symptoms, (2) Internalizing, which measures negative internal mood, cognition, and attitudes, (3) Critical Pathology, which represents the severe and disturbed behavior in children and adolescents,

and (4) Total, which indicates a conglomerate of all scores including general Axis I pathology, delusions, psychotic symptoms, and hallucinations.

The results indicate that the mean scores the externalizing factor, internalizing factor, critical pathology, and total score for the MDT group is at or near one standard deviation below the TAU group.

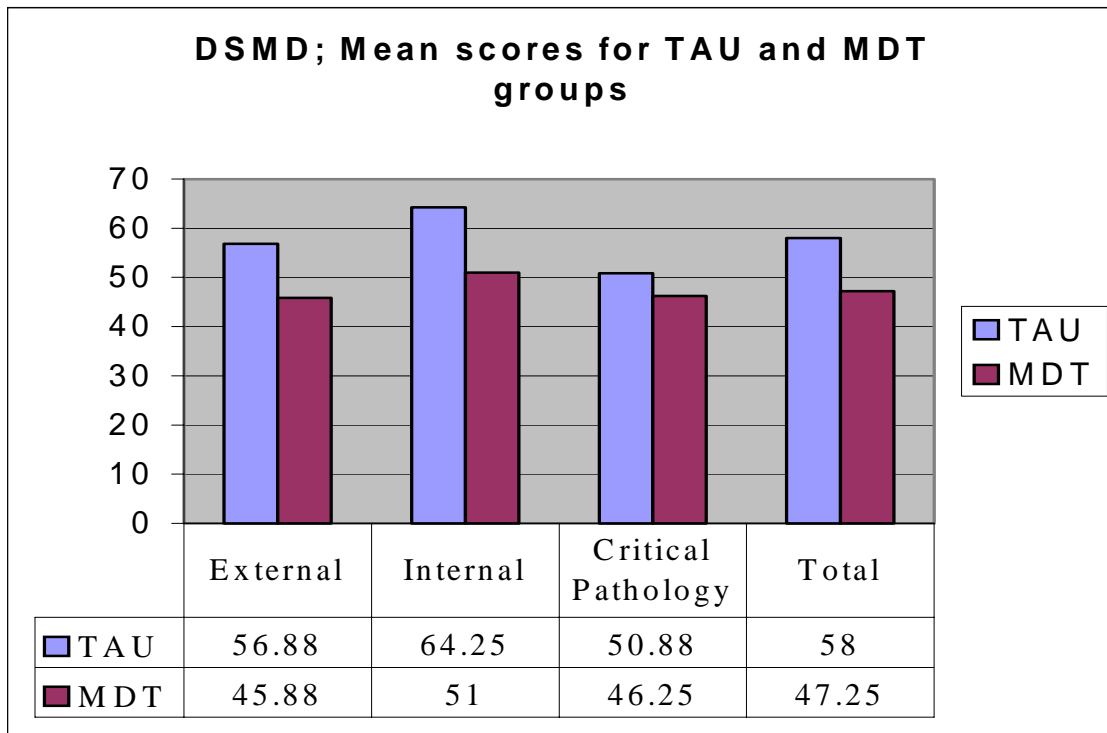


Figure 3. DSMD; mean scores for TAU and MDT groups

**Behavioral Consequences/ Restrictions and Monthly Points**

Behavioral consequences and restrictions are given when the resident(s) intentionally fail to follow guidelines and unit rules. Monthly points are rewarded for positive behavior. Minimum points possible is 0 and the highest attainable score is 100. These points are analyzed and reported on a monthly basis.

In comparison to the TAU group, the MDT group resulted in fewer restriction and special precautions due to aggressive and destructive behavior; TAU mean scores indicate M=6.75 (SD=12.92, Range=0-38) and MDT resulted in M=1.87 (SD=2.02, Range=0-6).

These results suggest that the MDT had significantly less aggressive and destructive behaviors than the TAU group.

Also, the MDT group reflected a higher monthly behavioral points average (TAU=87.41, MDT=91.29), signifying that the residents in this group were on task and participated appropriately in treatment at a higher average than residents in the TAU group. This also indicates that the overall performance and behavior of the MDT methodology have a significant effect in reducing aberrant behavior of this typology of adolescents.

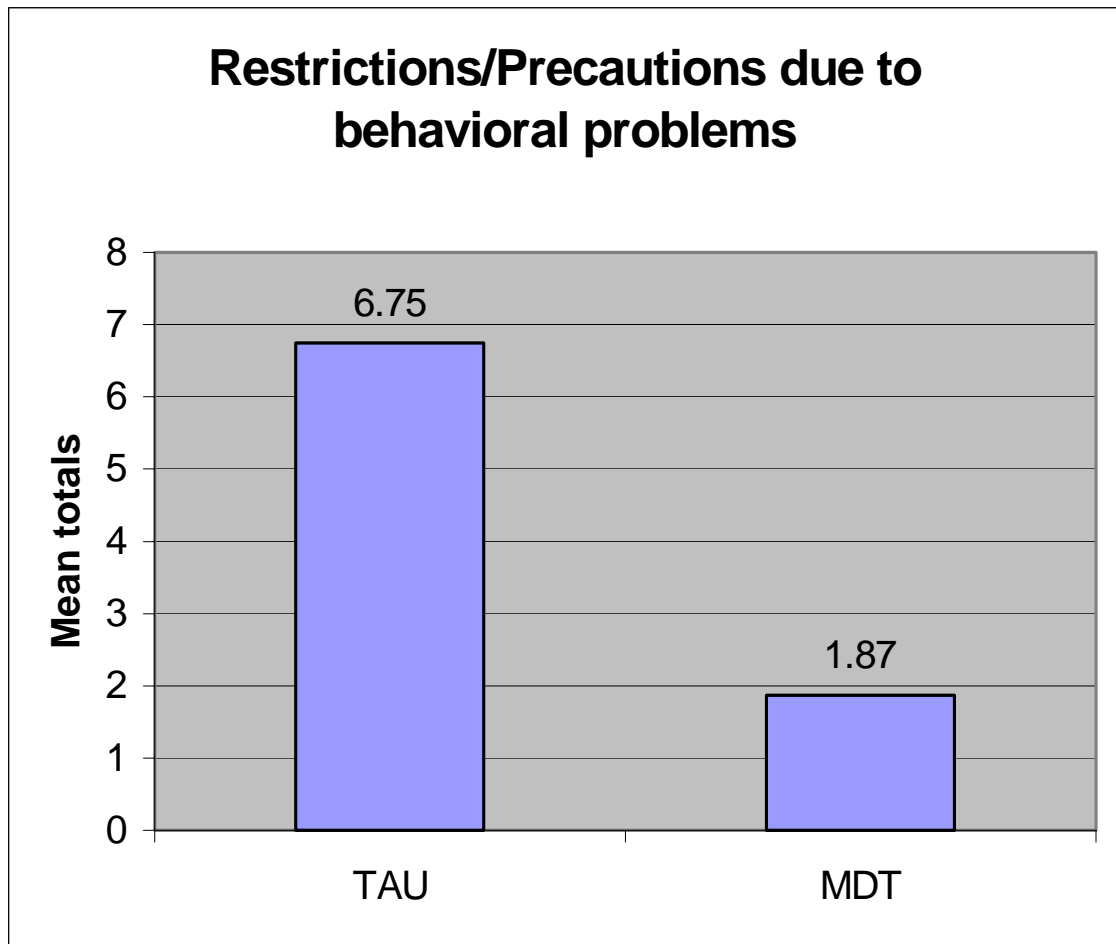


Figure 4. Restrictions/ precautions due to behavioral problems

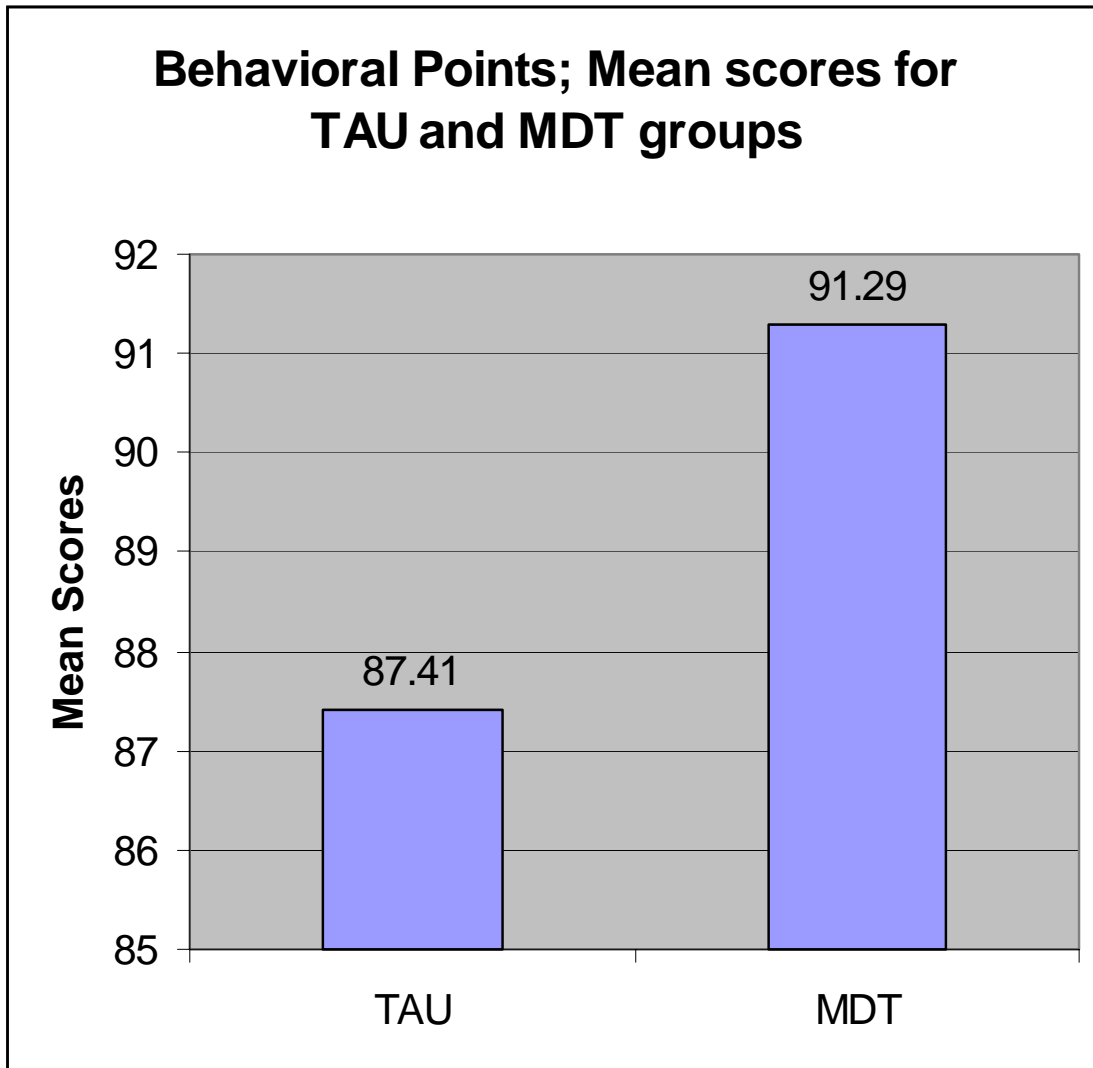


Figure 5. Behavioral Points; mean scores for TAU and MDT groups

**Juvenile Sex Offender Adolescent Protocol (J-SOAP)**

The total score representing level of risk to the community is significantly lower for the MDT group, than the TAU group. The mean score of the MDT group reflects a low level of risk to the community and the TAU mean score reflects a moderate/high level of risk to the community. According to the J-SOAP scores that range from 0-12 are low risk, 13-28 are moderate risk, and 28+ is high risk.

Another important aspect of the J-SOAP is the clinical/treatment factor score. This indicates the individual’s internal motivation, acceptance of responsibility, understanding of the sexual assault cycle, and level of empathy. Results indicate that mean score of the MDT group is significantly lower than the TAU group, as illustrated on the table.

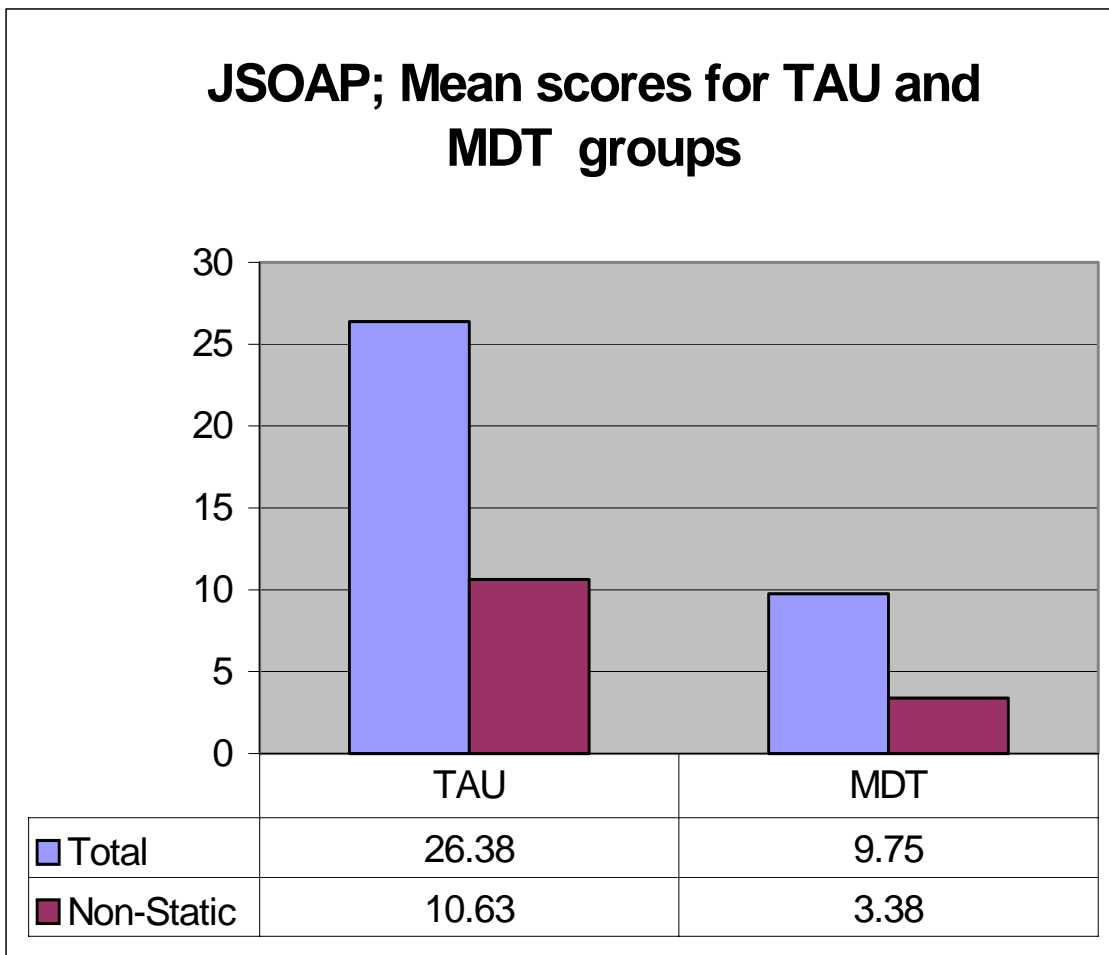


Figure 6. JSOAP; mean scores for TAU and MDT groups

#### Fear Assessment

The endorsement of fears, on all five scales, indicated no significant difference, however the symptomatology and overt behaviors of the residents from each group demonstrated better coping skills and techniques. This is evidenced by the total scores from the DSMD, CBCL, and the clinical treatment factor score in the JSOAP.

#### DISCUSSION

This was a description of treatment results of adolescent male sex offenders with a conglomerate of personality disorders and sexual offending issues. The results suggest that both MDT was more effective in treating this typology of adolescents, than CBT in these groups. It appeared that both CBT and MDT are effective treatments, although MDT

appeared significantly more effective with this particular typology of adolescents. All of the residents had prior unsuccessful treatment outcomes at either another facility or at an outpatient treatment center. The results of this study suggest that MDT methodology that addresses the underlying personality traits may be effective for severely disturbed, previous treatment failure, sexual offending adolescents.

The combination of results from the CBCL, DSMD, and JSOAP suggest that MDT is effective for these typologies in reducing internal distress as a result of varying psychological disorders present. As measures indicated, the critical pathology factor was reduced by more than one standard deviation. It also suggests that this particular MDT methodology has an effect on reducing externalizing aberrant behaviors. Despite the

sample size, the results still suggest that MDT may be more effective than CBT with this typology of residents. It is suggested that these results be tested in an empirically based research protocol for a true test of efficacy.

### CONCLUSION

The treatment results suggest that the implementation of MDT in the clinical curriculum reduced aberrant behaviors, as well as, internalizing, externalizing, and critical pathology measures across assessments; however the small sample size of the non-research comparison study may limit generalizability. It is important to note that the comparison of treatment results also suggests that sexual offending adolescents, in the described typology, have a conglomerate of personality beliefs. Treating sex offending behaviors without addressing the underlying personality beliefs appears to be related to recidivism.

### REFERENCES

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

Achenbach, T.M. (1991). *Child Behavior Checklist, Assessment*. Burlington, VT: University of Vermont Department of Psychiatry.

Alford, B.A., & Beck, A.T. (1997). *The integrative power of cognitive therapy*. New York: Guilford Press.

Apsche, J.A. (1999). *Thought change workbook*. Portsmouth, VA: Alternative Behavioral Services.

Apsche, J.A. (2000). *Fear assessment*. Unpublished manuscript.

Apsche, J.A., Ward, S.R., & Evile, M.M. (2002). *Mode deactivation: A functionally based treatment, theoretical constructs*. *Behavior Analyst Today*, 3(4).

Beck, A.T. (1996). *Beyond belief: A theory of modes, personality, and psychopathology*. In P.M. Salkovskis (Ed.), *Frontiers of cognitive therapy* (pp. 1-25). New York: Guilford Press.

Beck, A.T., Freeman, A., & Associates. (1990). *Cognitive therapy of personality disorders*. New York: Guilford Press.

Beck, A.T., Wright, F.D., Newman, C.F., & Liese, B.S. (1993). *Cognitive therapy of substance abuse*. New York: Guilford Press.

Dodge, K.A., Lochman, J.E., Hamish, J.D., Bates, J.E., and Petti, G.S. (1997). *Reactive and proactive aggression in school children and psychiatrically impaired chronically assaultive youth*. *Journal of Abnormal Psychology*, 106 (1), 37-51.

Johnson, J.G., Cohen, P., Brown, J., Smailes, E.M., & Bernstein, D.P. (1999). *Childhood maltreatment increases the risk for personality disorders during early adulthood*. *Archives of General Psychiatry*, 56, 600-608.

Koenigsberg, H.W., Harvey, P.D., Mitropoulou, V., Antonia, N.S., Goodman, M., Silverman, J., Serby, M., Schopick, F., & Siever, L. (2001). *Are the interpersonal and identity disturbances in the borderline personality disorder criteria linked to the traits of affective instability and impulsivity?* *Journal of Personality*, 15 (4), 358-370.

Kohlenberg, R.J. & Tsai, M. (1993). *Functional Analytic Psychotherapy: A behavioral approach to intensive treatment*. In W. O'Donohue & L. Krasner (Ed.), *Theories of behavior therapy: Exploring behavior change* (pp. 638-640). Washington, DC: American Psychological Association.

Linehan, M.M. (1993). *Treating borderline personality disorder: The dialectical approach*. New York: Guilford Press.

Naglieri, J.A., LeBuffe, P.A. & Pfeiffer, S.I. (1994). *Devereux scales of mental disorders*. San Antonio: The Devereux Foundation.

Naglieri, J.A., LeBuffe, P.A. & Pfeiffer, S.I. (1994). *Manual of the Devereux scales of mental disorders*. San Antonio: The Devereux Foundation.

Nezu, A.M., Nezu, C.M., Friedman, S.H., & Haynes, S.N. (1998). *Case formulation in behavior therapy: Problem-solving and functional analytic strategies*. In T.D. Eells (Ed.), *Handbook of psychotherapy case formulation* (pp.368-401). New York: Guilford Press.

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

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## ORGANIZATIONAL CULTURE PUTTING THE ORGANIZATIONAL CULTURE CONCEPT TO WORK

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The concept of organizational culture (OC) is a potential candidate for every organizational psychologist's conceptual toolbox. Organizational clients consider OC to be critical for recruiting and retaining employees, and academic literature on the topic implicates cultural variables as being highly relevant during organizational change initiatives. The notion that the shared learning experiences of organizational members may have beneficial or harmful effects on performance improvement or behavior change interventions should be intriguing to any professional who specializes in such technologies. In this regard, the OC concept may help a performance improvement specialist or behavioral specialist to consider important aspects of organizational complexity. However, traditional approaches to this topic tend to be descriptively focused, emphasize the power of private behavior, and do not necessarily point the organizational practitioner in fruitful directions. For these reasons, it may be useful to supplement the OC concept with the total performance system concept and the perspective of selection by consequences. This type of conceptual focus may help the specialized fields of applied behavior analysis, organizational behavior management, and human performance technology make better use of the OC concept when the goal is organizational, process, or individual and group performance improvement. Key Words: Organizational Culture, Organizational Change, Performance Improvement, Behavior Analysis, Systems Analysis, and Selectionism

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### PUTTING THE ORGANIZATIONAL CULTURE CONCEPT TO WORK

By the time we reach adulthood, chances are that we have developed preferences for the types of organizations we would like to join, work at, or patronize. These preferences are obviously influenced by convenient access to the organization and the type and quality of services, products, and other benefits available to members or patrons, but these preferences are also based on other things. One of those "other things" may be summarized by the concept of *organizational culture* (OC).

Beyond the argument that OC can promote loyal patronage and membership, it is sometimes implied that different types of cultures are associated with excellent or deficient organizational performance, with the type of performance depending upon the type and strength of the culture under scrutiny (Daft & Noe, 2001). This notion should be especially interesting to scientists and practitioners interested in organizational change and performance improvement, including people who would identify with the fields of applied behavior analysis (ABA), organizational behavior management (OBM), or human performance technology (HPT). However, rather than adding a useful concept to the organizational practitioner's tool box, the OC concept runs the risk of functioning only as a post hoc explanatory fiction when things go

really well or really bad for a company. To accomplish something more than this, the OC concept must be used in a selective and measured fashion when change or improvement is the goal.

### Is Organizational Culture Worthy of Your Conceptual Toolbox?

OC is an important concept within the broad fields of industrial and organizational (I/O) psychology and organizational behavior (OB), with introductory I/O and OB textbooks dedicating sections or entire chapters to the topic (e.g., Daft & Noe, 2001; Muchinsky, 2003; Robbins, 2003). Daft and Noe (2001) reported that a sample of CEOs from fortune 500 companies believed "...organizational culture to be the most important variable for attracting and retaining talented employees, which is an important contributing variable to overall organizational excellence" (p. 585). Surveys like this one, conducted by *Fortune* magazine, illustrate high corporate interest in organizational culture, with this particular group of CEOs ranking the concept at the top of their list of variables affecting recruitment and retention success. Applied organizational scientists and practitioners from every tradition are obligated to address the concerns of society and/or their clients, and OC is certainly a salient concern.

From a different but equally important vantage point, alluded to earlier, OC is sometimes presented as a variable that can help or hinder organizational change efforts, organizational adaptation to changing markets, and acculturation after mergers or acquisitions (Daft & Noe, 2001; Larsson & Lubatkin, 2001; Muchinsky, 2003). These propositions implicate cultural variables as agents of behavior and/or performance change at the individual and group levels of analysis. How does culture achieve these benevolent or malevolent effects during organizational change efforts? How does the OC concept translate into changes in organizational, process, and individual and group performance? Anyone who has contacted the fields of ABA, OBM, or HPT will immediately recognize some potential answers to these questions. However, the difficulty in arriving at specific conceptual strategies lies in the process of using complex information about OC, as it is traditionally conceived and measured, to direct social and technical environmental interventions that directly affect measurable behaviors and results at the individual/group level. Regardless of any conceptual difficulties, competent organizational practitioners should be interested in *any* variable that might interfere with or facilitate organizational change. Therefore, the general audience for this paper is likely to find a conceptual analysis of this topic to be a worthy investment. The following section is a brief review of the traditional OC concept, followed by a discussion of several arguments for supplementing the OC concept with environmentally oriented strategies for changing behavior and improving performance.

### **Traditional Definitions of the Organizational Culture Concept**

Muchinsky (2003) defined culture as “the languages, values, attitudes, beliefs, and customs of an organization” (p. 261). This definition is a good starting point because it highlights variables common to many definitions of OC. However, the OC literature is broad, with each author adopting a slightly different emphasis on the topic. For example, Robbins (2003) wrote, “There seems to be wide agreement that organizational culture refers to a system of *shared meaning* [italics added] held by members that distinguishes the organization

from other organizations. The system of shared meaning is, on closer examination, a set of key characteristics that the organization values” (p.231). While the extent to which there is wide agreement among scholars on this topic is not clear, the notion that relevant private and public organizational behaviors are *shared* across individual members of cultures is common to many definitions. Another quotation illustrates additional scholarly and practical concerns related to the OC concept. Schein (1990) wrote: “Culture can now be defined as (a) a pattern of basic assumptions, (b) invented, discovered, or developed by a given group, (c) as it learns to cope with its problems of external adaptation and internal integration, (d) that has worked well enough to be considered valid and, therefore (e) is to be taught to new members as the (f) correct way to perceive, think, and feel in relation to those problems” (p. 111). While the primary focus of the OC literature seems to be the description of organizational cultures, scholars like Schein are also interested in investigating the function, evolution, and transmission of cultures.

Descriptions of cultural variables within the OC literature often utilize the language of cultural anthropology, with researchers detailing the rites, rituals, celebrations, artifacts, and symbols of OCs (Bajdo & Dickson, 2002; Daft & Noe, 2000; Larsson & Lubatkin, 2001). When data are collected, OC has been measured through surveys, interviews or interactions with clients, and naturalistic or “ethnographic” observations, although there has been some debate about the relative value or appropriateness of different data collection strategies (Eubanks & Lloyd, 1992; Schein, 1990). Regardless of the particular approach adopted by researchers, in general terms, the OC concept addresses the unique ways people behave privately and publicly within a particular organization, and the processes by which language, values, etc. come to be shared across individual organizational members. This notion causes an organizational practitioner to consider the shared learning experiences of a group that might help or hinder particular types of interventions.

Once data have been collected from a sample of organizational members, OCs are sometimes classified in a way that is similar to



labeling a person with different personality characteristics. Robbins (2003) reported that research in the OC area had suggested seven primary characteristics of OCs. These were 1) innovation and risk taking, 2) attention to detail, 3) outcome orientation, 4) people orientation, 5) team orientation, 6) aggressiveness, and 7) stability (Robbins cited the following articles as the empirical basis for his argument: O'Reilly, Chatman, & Caldwell, 1991; Chatman & Jehn, 1994). While this is only one approach to profiling the "personalities" of OCs, it does represent a general strategy or research perspective where investigators can look for correlational relationships between different OC types and organizational level performance or outcomes. In addition to casting OCs by *type*, the *strength* of an OC can also be assessed by the extent to which measures collected across individuals are intensely expressed, similar, or shared.

#### DIFFICULTIES IN APPLICATION

##### **Describing Cultures does not Necessarily Lead to Technologies of Change**

The descriptive nature of much OC scholarship ultimately emphasizes the form or type of cultural variables over the function, transmission, and evolution of cultural variables. This type of focus may be useful in its own right. For example, it may be important to investigate relationships between traditional measures of culture and important organizational outcomes as a sort of diagnostic approach to profiling cultures that would be predicted to do well versus those that would be predicted to have trouble under certain market conditions. If an organization scored low on the "innovation and risk taking" scale, and competitors are beginning to market creative new products and capture greater portions of the market share, efforts to improve work processes related to research and development may be necessary for the survival of the organization.

In addition to the diagnostic approach discussed above, it may also be important to document and describe cultures, including *organizational* cultures, as a practice of natural history. This approach provides documentation of various cultural variables within human organizations in the 21<sup>st</sup> century. However,

descriptive efforts by themselves do not necessarily lead to techniques that are capable of changing or shaping existing cultures to make them better or more adaptive. For example, knowing that organizational members do not value innovation and risk taking from a survey does not help an organizational practitioner design effective interventions that encourage people to take more risks and produce more innovative work.

##### **Emphasizing Private Behavior Weakens Leverage for Change**

Another factor impeding the functionality of the OC concept is the tendency of scholars to grant special powers to private behavior. For example, after defining the concept of culture, Schein (1990) wrote "Extrapolating further from a functionalist anthropological view, *the deepest level of culture will be the cognitive* [italics added] in that the perceptions, language, and thought processes that a group comes to share will be the *ultimate causal determinant* [italics added] of feelings, attitudes, espoused values, and overt behavior" (p. 111). This type of philosophical orientation places the ultimate causes of culture within people rather than the environment, and encourages organizational change strategies that focus on changing thoughts, values, and beliefs of organizational members, which are difficult performance targets. In this light, environmentally oriented approaches to organizational theory have much to offer in terms of developing organizational or cultural change strategies with greater leverage and a more practical focus. Rather than trying to change people, an environmental approach focuses on the effects of the socio-technical environment on overt behavior, including verbal behavior. The guiding logic behind this approach is that private beliefs, values, and attitudes will follow the path blazed by environmental contingencies in the workplace, with the path of causation placing contingencies first, public behavior second, and private behavior last. If behavior is a function of the interaction between environmental and personal variables, why not start from the outside in rather than the inside out? This philosophical perspective is not new and has been argued elsewhere, however, it is especially relevant when considering the prospects of changing or

improving OCs (Bem, 1972; Krause, 1997; McSween, 1995). For some, this may sound like a sort of “chicken or the egg” debate; which comes first, behaviors or attitudes; public or private behavior? In response, this question is much easier to answer than the chicken and the egg debate.

### **Entertainment Value of the OC Concept May Provide Power without Direction**

The OC concept has what I call high *entertainment value*, meaning it is fun and seems important to read and talk about. The generally descriptive nature of this type of research may be partly responsible for the intrigue, where descriptions of organizational cultures are alluring in the same way we are attracted to a documentary film about an exotic tribe’s marriage ceremonies or a magazine article about a particular group’s method for initiating adolescents into the rights and privileges of adulthood. Such cultural variables are especially interesting when they are *unusual or different*. As an example of this type of appeal, a television segment was broadcast several years ago about a company that allowed employees to do *anything* they wanted with their office space as an effort to promote individuality and creativity (the station and program are now forgotten). The segment highlighted a person who had created a miniature sandy beach in his office with accompanying beach related decorations. Both the employee and his manager seemed to agree that this practice had a liberating effect on their creativity and productivity. In other words, both parties felt that the “freedom to create the beach” in the office and the beach itself as an array of environmental stimuli improved both the quantity and quality of the products and services the employee rendered for the company. From the traditional OC perspective, one might say that cultural values of “independence” and “creativity” (private behavior) caused managers to implement this office space practice (public behavior and contingencies), which then caused the employee to feel independent and creative (private behavior), which finally caused the employee to improve his performance (public behavior). The ultimate conclusion from stories like this one is that organizational leadership should change people first, and then improved performance and culture will follow.

The claim that this “anything goes in your office” management practice affected performance is a key issue. It replaces an empirical approach to choosing performance enhancement or improvement strategies with an approach based on drama and the power of the anecdote. Left on its own, the OC concept may encourage this type of approach to improving performance or creating change, where interesting cultural practices and beliefs are promoted as potential interventions and agents of change simply because they are convincing as dramatic stories. The entertainment value of OC, coupled with a focus on private behavior, places the OC concept in a role as a potentially powerful yet haphazard guide to organizational change strategies.

### **Despite Difficulties, OC May be Worthy of Your Conceptual Toolbox**

As one can see from the brief introduction above, the scope of the OC concept is both broad and fascinating, with implications for the process of organizational change. However, given the potential pitfalls with applying the concept, those affiliated with more environmentally oriented approaches to organizational psychology might wonder if the OC concept is worthy of any serious attention. At least three reasons to utilize the OC concept were discussed in previous sections of this paper: 1) the OC concept is important to corporate clients, 2) the OC concept is important to colleagues within the broader fields of I/O psychology and organizational behavior, and 3) in general, the OC concept can focus a scientist’s or practitioner’s attention on *learning experiences shared by members of an organization* that may help or hinder organizational change efforts. Moreover, it may be good for consultants to generally be aware of the unique traditions, language, practices, etc. of an organization in order to maximize effective communication and match behaviorally informed interventions to specific situations and contexts. In short, the OC concept can potentially direct attention to important aspects of organizational complexity when designing performance improvement interventions. Smart working organizational practitioners can direct the power of the OC concept toward practical goals through the use of other more environmentally oriented concepts relevant to

the cultural and/or organizational levels of analysis.

### **Environmental Approaches to Organizational and Cultural Levels of Analysis**

Environmentally oriented psychologists have not ignored the organizational and/or cultural level of analysis. My choice to pursue a career in organizational psychology was influenced by reading Skinner's (1948) book titled *Walden II*, which explored a fictional community that had applied behavioral principles to shape and maintain an ideal culture. More recent behavior analytic writing on the topic of culture includes a special issue of the *Journal of Organizational Behavior Management* (volume 12, number 2) that was later published as the edited book *Organizational Culture, Rule-Governed Behavior, and Organizational Behavior Management* (Mawhinney, 1992). Other interesting papers on culture include Mattaini (1996), which proposed an approach to diagramming cultural practices based on the three-term contingency model of behavior, and Glenn (1988), which explored a potential synthesis between behavior analysis and cultural materialism. A notable publication in the area of cultural materialism that is often cited in behaviorally oriented papers is Harris' (1979) *Cultural Materialism: The Struggle for a Science of Culture*. While these papers may help a person develop an understanding of a behavioral approach to understanding culture, they only represent a small sample of the literature. In this light, the following sections are not an attempt to summarize all aspects of a behavioral or environmental approach to OC, but rather highlight two key concepts that have the potential for directing the traditional OC concept in more profitable directions.

### **The Total Performance System Concept**

Those who associate with the fields of ABA, OBM, or HPT may be generally familiar with a systems analysis approach to organizational performance improvement. Behavior improvement or performance improvement projects usually occur within a greater organizational context. If change initiatives are implemented without concern for the greater organizational context, the overall

health and adaptability of the organization may not benefit and might actually be harmed. While I was a student at Western Michigan University, I remember Dale Brethower labeled this type of narrowly focused organizational intervention as "the helping hand strikes again" phenomenon (D. Brethower, personal communication, 1998). A systems approach to organizational development enables a strategic focus on the overall health and long-term viability of organizations during change or improvement efforts through a conceptual awareness of necessary interactions between parts of the whole organization, and the relationship of the whole organization to its greater environmental context.

In order to generate a concern for the "big picture" and coordinate individual/group performance improvement efforts with organizational goals and organizational adaptability to changing markets, a method for organizing this kind of complexity is needed. The concept of the total performance system (TPS), developed by Brethower (1972; 1982; 1995), is well suited for this purpose. Brethower has argued that the TPS concept identifies subparts or functions that must be healthy or well developed for an organization to be managed intelligently (Brethower, 1995). The number of parts included in a "systems analysis" can and does vary, but the TPS approach as presented by Brethower (1995) includes: (1) a mission or niche, (2) inputs, (3) processes that transform or utilize the inputs, (4) outputs, (5) individuals, organizations, and environments that receive the outputs (including waste outputs), (6) internal and feedback loops that provide information about how efficiently organizational processes are working from an internal perspective, and finally, (7) external feedback loops that provide information about how good or bad outputs are from the perspective of those who receive them.

Information about each aspect of the TPS can be collected through interviews with clients and through inspection of various types of performance data. If any one of the parts is weak or neglected, the organization's health and/or survival may be at risk. It may be possible to make use of traditional OC data, when they are collected, to look for information about the health of system components. In other

words, the TPS concept could direct an organizational practitioner to investigate and analyze *the right kinds of cultural data*. When pursuing this type of narrowed cultural focus, traditional cultural language can be translated into more behaviorally explicit terms. Table 1

represents a short exercise of this type. Table 2 represents an example of cultural questions directed toward the TPS component of “mission.”

**Table 1. A TRANSLATION OF TRADITIONAL CULTURAL VARIABLES**

| Cultural Variable                                     | General Description  | Behavioral Description   |
|---|--|--|
| Beliefs   | What people say about how things should be done (the style of behavior) and what is appropriate and inappropriate behavior                       | If/then rule statements about relationships between practices, values, and organizational and individual level consequences  |
| Practices   | How people actually get things done. How people talk, work, play, etc.   | The form, rate, and strength of a type of behavior and/or the form and rate of a type of work process across a class of people in an organization  |
| Values  | The most important or most valued accomplishments in the organization  | Conditioned reinforcers and punishers; Learned desired and undesired outcomes  |
| Explicit Rites, Rituals, Artifacts, and Socialization | How beliefs and values are formally strengthened. Models, symbols, and training experiences that teach how to do things and what to accomplish   | The formal organizational stimuli and contingencies that shape and maintain the form, frequency, and strength of public and private organizational behaviors and their related accomplishments |
| Implicit Rites, Rituals, Artifacts, and Socialization | How beliefs and values are informally strengthened. Models, symbols, and learning experiences that teach how to do things and what to accomplish | Informal organizational stimuli and contingencies that shape and maintain the form, frequency, and strength of public and private organizational behaviors and their related accomplishments   |

**Table 2. INVESTIGATING AN ORGANIZATIONAL MISSION THROUGH CULTURAL VARIABLES**

| Variable  | Mission Questions   | Implications  |
|---|---|---|
| Beliefs   | Can people state the purpose of the organization? What people say the purpose of the organization is? Do people believe there is a match between the stated purpose of the organization and what people really think is the purpose of the organization? What are the appropriate and inappropriate methods for achieving the purposes of the organization? | Weaknesses here suggest the incorporation of communication processes. Misalignment between beliefs and the stated purpose of an organization may indicate inconsistency between formal and informal consequences regarding talk about organizational purpose.   |
| Practices   | Are there any shared behaviors or processes related to reviewing the purpose of the organization and keeping it relevant? Are there any shared behaviors or processes that bring the purpose of the organization into primary work processes? Are work processes and products aligned with the organizational purpose?                                      | If there are no formal practices for keeping the organizational purpose firmly outlined and relevant, the mission is being neglected. The organization is at risk if its practices allow its purpose to become outdated, misaligned with the systems that receive its products and services, or if it is simply accomplishing its mission poorly through poor work practices. People should be doing things that keep the mission relevant. |
| Values  | What do people perceive to be the most important types of accomplishments to achieve in their jobs? In the organization? Do people's perceptions about the most important accomplishments or outcomes they can produce align with the organization's purpose?   | Low alignment between what people think are the most important accomplishments in their jobs and what really are the most important accomplishments in their jobs would indicate inconsistent consequences for the right kinds of performances. If values are not strong or shared, reinforcement of the most important accomplishments should increase.  |
| Explicit Rites, Rituals, Artifacts, and Socialization | What are the explicit consequences for expressing certain beliefs and values about the organization's purpose or for participating in shared practices linked to organizational purpose? What are the explicit signs, symbols, and training experiences related to learning and practicing the purpose of the organization                                  | In any organization there should be some set of formal antecedents and consequences that teach and emphasize its purpose. Weaknesses here might suggest causes for wrong or inconsistent beliefs about organizational purpose.  |
| Implicit Rites, Rituals,                              | What are the implicit consequences for expressing certain beliefs and   | If informal or implicit processes related to organizational purpose are   |

| Variable                     | Mission Questions  | Implications   |
|------------------------------|--|--|
| Artifacts, and Socialization | values about the organization's purpose or for participating in shared practices linked to organizational purpose? What are the implicit or informal models, symbols, signs, etc. for teaching the organizational purpose? | misaligned with formal or explicit processes, chances are that leadership does not often do what it says it will do (potential source of low trust). Implicit social contingencies may have evolved and developed that teach newcomers the "real" rules about purpose that matches the behavior of leaders more closely than explicit mission statements.<br>Problems associated with low trust may predict low initial acceptance of <i>any</i> management driven intervention. |

### THE CONCEPT OF CULTURAL EVOLUTION THROUGH SELECTION BY CONSEQUENCES

With regard to the processes by which cultures evolve and are maintained, Skinner and other environmentally oriented psychologists have promoted selection by consequences as the process by which cultures evolve and survive over many generations (e.g., Skinner, 1981). The consequences that select organizational practices can be viewed from two vantage points: 1) group or organizational level consequences that are important to the survival of the group or organization, and 2) individual level consequences that directly or indirectly strengthen or weaken individual behavior. The first vantage point is related to the evolution and survival of the culture as a whole while the second is related to the processes by which a culture is transmitted among organizational members. From either vantage point, a thorough analysis of this type ultimately focuses upon the processes that shape and maintain individual behavior. Skinner astutely summarized this point while discussing the evolution of human biology and the analogous evolution of human cultural practices in *Beyond Freedom and Dignity*, where he wrote that "A culture has no existence apart from the behavior of individuals who maintain its practices. It is always an individual who behaves, who acts upon the environment and is changed by the consequences of his action, and who maintains the social contingencies which are a culture" (Skinner, 1971, p.209, italics in original). The general proposition of selectionism is that the

evolution of cultural practices over time is ultimately caused by environmental consequences for both the cumulative accomplishments of the organization as a whole and for the behavior of individual members.

The importance of consequences in shaping and maintaining cultures is not completely neglected by traditional treatments of the OC concept, but they are usually not emphasized in final analyses. For example, Robbin's (2003) chapter on OC frequently refers the consequences of behavior as methods used to maintain culture and socialize new members. In his sub-section titled *Keeping Culture Alive* he wrote, "The selection process, performance appraisal criteria, reward practices, training and career development activities, and promotion procedures ensure that those hired fit in with the culture, reward those who support it, and penalize (and even expel) those who challenge it." A selectionist perspective suggests improved leverage points for adaptive cultural change by emphasizing the power of environmental (including social) contingencies rather than the power of the private thoughts and feelings of individuals.

In addition to describing the environmental contingencies that shape and maintain cultures, the theory of cultural selection by consequences encourages dependent measures at the level of a "practice," which can be defined as behaviors of a certain type that occur among a class of people over time (Mattaini, 1996). A focus upon practices places

the OC concept closer to actual work processes. In the end, it is the management, administrative, and customer processes that result in the valuable products and services that keep a for profit organization in business (Rummler & Brache, 1995). The selectionist approach also encourages practically oriented analyses and research related to 1) the effects of organizational level consequences within the greater socio-cultural context on organizational practices, and 2) the effects of individual level consequences within the organizational context on the transmission of practices among individuals, 3) analyses of the development of formal and informal contingencies that shape and maintain cultural practices, and finally 4) how consequences at the organization level affect consequences for individual behaviors and accomplishments. Through investigating questions like these, the selectionist approach seeks to understand the form, frequency, and function of cultural practices over time.

### **Linking Culture to Performance Improvement and Behavior Change Technologies**

The TPS concept and the selectionist perspective may be used to focus the OC concept in profitable directions. This may provide more effective pre-current behavior on the part of the organizational consultant in preparation to designing interventions to improve individual and group performance. In this sense, the content of this paper has generally been designed to help interested organizational scientists and practitioners enhance their organizational analysis repertoires and deal more effectively with complexity. Effective techniques for changing behavior and improving performance exist within the fields of ABA, OBM, and HPT<sup>1</sup>. However, these approaches are sometimes specialized to deal with particular types of behavioral and performance problems. The OC concept may help the organizational

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<sup>1</sup> For readers who are just becoming acquainted with behavioral and environmentally oriented strategies for improving organizational behavior and performance, a classic text on the application of behavior analysis to improve behaviors and accomplishments of individuals in organizations is Daniels (1989), *Performance Management*. Rummler and Brache (1995), *Improving Performance: Managing the White Space on the Organizational Chart*, outlines a systems analysis approach to improving organizational, process, and individual/group level performance

practitioner balance his or her specialized knowledge with generalized knowledge about possible effects and issues at the organizational level of analysis.

### **SUMMARIZING MAIN POINTS**

The OC and TPS concepts and the selectionist perspective are usefully considered together and should produce conceptual dividends for scientists and practitioners alike. The following numbered paragraphs attempt to summarize the main points discussed in this paper with regard to making effective use of the OC concept when organizational change or performance improvement is the ultimate goal.

1. The traditional OC concept is important to organizational clients and within the greater field of I/O psychology, therefore, it is worthy of some conceptual attention.
2. If one is interested in adding OC to their conceptual toolbox, they should beware of the limitations of it's descriptive focus, it's tendency to emphasize private behavior, and it's potentially directionless entertainment value.
3. Perhaps the most relevant aspect of the traditional OC concept to people interested in organizational change is the notion that shared learning experiences and the resulting shared public and private behaviors, may be helpful or detrimental to performance improvement interventions. In other words, shared learning experiences might predict the style or type of intervention that will be most readily accepted and permanently adopted.
4. The TPS concept can potentially narrow the scope of traditional OC variables one should be concerned with. In other words, if cultural analyses have been conducted, it may be helpful to focus only on those measures that might reveal strengths or weaknesses in one of

the seven essential performance system components. Other measures may be interesting, but are probably irrelevant to improving organizational, process, and individual/group performance.

5. A systems perspective enables technologies of behavior change and performance improvement to be directed intelligently. This stands in contrast to an approach that focused only on the traditional conception of OC, which may be powerful and/or convincing, but likely does not provide any direction or strategy.
6. A selectionist perspective emphasizes the power of environmental consequences for shaping cultural practices. If cultural change is needed because an organization's survival is at-risk, the greatest leverage exists within environmental contingencies. If you want better attitudes, values, beliefs, etc. among members of your organization. It is more practical to focus your efforts on contingencies and observable behaviors and accomplishments. Even in these instances, cultural design and change ought to be informed by the TPS concept.

### CONCLUSION

The fields of ABA, OBM, and HPT have produced effective techniques for changing behavior and improving performance in organizations, as evidenced by decades of applied research and case studies conducted in organizations that have been published in such outlets as the *Journal of Applied Behavior Analysis*, *The Journal of Organizational Behavior Management*, and *Performance Improvement Quarterly*. Concepts such as OC may help direct these technologies within complex organizational contexts if used in a selective and measured fashion. Perhaps the essential challenge is incorporating just enough complexity into our conceptual repertoires to work intelligently, while keeping our

intervention strategies simple enough to be implemented effectively.

### REFERENCES

- Bajdo, L. M., & Dickson, M. W. (2001). Perceptions of organizational culture and women's advancement in organizations: A cross-cultural examination. *Sex Roles, 45* (5/6), 399-414.
- Bem, D. (1972). Self-perception theory. In L. Berkowitz (Ed.), *Advances in experimental social psychology*. New York: Academic Press.
- Brethower, D. (1972). *Behavior analysis in business and industry: A total performance system*. Kalamazoo, MI: Behaviordelia.
- Brethower, D. (1982). The total performance system. In R. M. O'Brien, A. M. Dickinson, & M. P. Rosow (Eds.), *Industrial Behavior Modification*. New York: Pergamon Press.
- Brethower, D. (1995). Specifying a human performance technology knowledgebase. *Performance Improvement Quarterly, 8* (2), 17-39.
- Chatman, J., & Jehn, K. A. (June, 1994). Assessing the relationship between industry characteristics and organizational culture: How different can you be? *Academy of Management Journal, 522-553*.
- Daft, & Noe, (2001). *Organizational behavior*. Orlando, FL: Harcourt College Publishers.
- Daniels, A. (1989). *Performance management* (3<sup>rd</sup> ed.). Tucker, GA: Performance Management Publications.
- Eubanks, J. L., & Lloyd, K. E. (1992). Relating behavior analysis to the organizational concept and perspective. In Thomas C. Mawhinney (Ed.), *Organizational Culture, Rule Governed Behavior and Organizational Behavior Management: Theoretical Foundations and Implications for Research and Practice*. New York: Haworth Press.
- Glenn, S. S. (1988). Contingencies and Metacontingencies: Toward a synthesis of behavior analysis and cultural materialism. *The Behavior Analyst, 11*, 161-180.
- Harris, M. (1979). *Cultural materialism: The struggle for a science of culture*. New York: Random House.
- Krause, T. R. (1997). *The behavior-based safety process: Managing involvement for an injury-free culture* (2<sup>nd</sup> ed.). New York: Van Nostrand Reinhold.
- Larsson, & Lubatkin, (2001). Achieving acculturation in mergers and acquisitions: An international case study. *Human Relations, 54* (12), 1573-1600.
- Mattaini, M. A. (1996). Envisioning cultural practices. *The Behavior Analyst, 19* (2), 257-272.
- Mawhinney, T. C. (Ed.) (1992). *Organizational culture, rule-governed behavior, and organizational behavior management: Theoretical foundations and implications for research and practice*. Binghamton, NY: Haworth Press.
- McSween, T. E. (1995). *The values based safety process: Improving your safety culture with a behavioral approach*. New York: John Wiley & Sons.
- Muchinsky, P. M. (2003). *Psychology applied to work* (7<sup>th</sup> ed.). Belmont, CA: Wadsworth.



- O'Reilly, C. A. III, Chatman, J., & Caldwell, D. F. (September, 1991). People and organizational culture: A profile comparison approach to assessing person-organization fit. *Academy of Management Journal*, 487-516.
- Robbins, S. P. (2003). *Essentials of organizational behavior*. Upper Saddle River, NJ: Prentice Hall.
- Rummler, G. A., & Brache, A. P. (1995). *Improving performance: How to manage the white space on the organizational chart*. San Francisco: Josey-Bass.
- Schein, E. H. (1990). Organizational culture. *The American Psychologist*, 45 (2), 109-119.
- Skinner, B. F. (1948). *Walden II*. New York: Macmillan.
- Skinner, B. F. (1971). *Beyond freedom and dignity*. New York: Knopf
- Skinner, B. F. (1981). Selection by consequences. *Science*, 213 (4507) 501-504.

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