called aversion relief. For example, shock during alcohol sipping could be avoided or escaped by spitting out the alcohol. The aversion relief component of the treatment of alcoholics utilizes a desirable response (e.g., spitting out alcohol) as a potential positive reinforcing stimulus, deriving its positive quality from its contiguity with escape.

In covert sensitization, the imagining of an aversive situation (e.g., vomiting) as soon as the individual has an urge to perform the undesired behavior (e.g. drinking) is usually considered a punishment procedure: An aversive stimulus is made to follow the inappropriate response to be reduced. According to punishment theory, response frequency can be expected to decrease when the noxious stimuli are contiguous with that response. Initially, the aversive stimulus should be presented on a continuous basis, but later on a partial schedule can be used. The aversion relief part of covert sensitization can be considered an escape procedure, which occurs when a particular stimulus terminates the presentation of a noxious stimulus. Eventually, cues that initially led to urges will gradually become discriminatory stimuli for avoidance behavior.

Although there is some evidence that covert sensitization may lead to a favorable outcome in patients with addictions and deviant sexual interest a number of theoretical issues remain unresolved, which cast doubt on the presumed theoretical underpinnings of covert sensitization. First, although scene presentation in covert sensitization includes aversion relief, the addition of this component to the overall effectiveness of the procedure has not been evaluated. Moreover, Emmelkamp and Walta found that the effects of covert sensitization could better be explained by cognitive factors such as outcome expectancy than by conditioning. In their experimental study, half of the participants (smokers) were led to believe that they participated in an experimental study on the physiological effects of imagining smoking scenes, whereas the other half were informed that they received a bonafide treatment. All participants were treated with covert sensitization. Only the smokers who expected that they received an effective treatment showed a significant reduction in smoking rate. Thus, the results of this study suggest that cognitive factors (i.e., expectancy of improvement) rather than conditioning factors may account for the positive effects achieved with covert sensitization. Others have also questioned the conditioning explanation of covert sensitization, since covert sensitization using backward conditioning was found to be as effective as covert sensitization using forward conditioning. If covert sensitization acted by conditioning, the backward procedure should be considerably less effective than one administering the same conditioned and unconditioned stimuli, in the same number of trials, but in a forward conditioning paradigm.

III. EMPIRICAL STUDIES

Most of the studies attesting to the effectiveness of aversion relief as a principal treatment have been uncontrolled case studies. Procedures based on aversion relief have been successfully applied in specific phobias, obsessive compulsive behaviors, obesity, aphonia, torticollis, writing cramp, transvestism, fetishism, and other deviant sexual interests. Results with thumbsucking are not always positive. Nathan Azrin and his co-workers compared aversion relief therapy (using a bitter-tasting substance) with habit reversal in 32 children with thumbsucking. At three-month followup, 47% of the habit-reversal children had stopped thumbsucking, compared to 10% of the aversion relief children. These findings suggest that aversion relief may be of little value in reducing thumbsucking. However, the parents in the aversion relief therapy were only instructed by phone, whereas the therapist saw the habit reversal children and their parents in a single session. Given this methodological flaw, the results must be viewed with caution.

Much of the research on the effectiveness of aversion relief in anxiety disorder patients comes from research conducted by L. Solyom and his colleagues. The largest study to date involved 50 phobic patients randomly assigned to flooding in imagination, systematic desensitization in imagination, aversion relief, phenelzine, or placebo. On psychiatric rating, aversion relief was found to be more effective than the other methods. However, results are difficult to interpret since the patients in the aversion relief therapy received twice as many therapy sessions (24 sessions) as compared to patients who received flooding or systematic desensitization (12 sessions). In an earlier study by the same research group, the effects of aversion relief were investigated in agoraphobics. In this study, overall improvement was rather small. Patients rated their main phobia as unimproved.

Although some uncontrolled case studies suggest that aversion relief may be of some value in patients with obsessive-compulsive rituals and patients with pure obsessions, the only controlled study into the effectiveness of aversion relief with obsessive-compulsive

patients found this treatment to be ineffective. Or, as Kapche concluded in an earlier review of Aversion Relief Therapy (ART): "While ART does not apparently hinder treatment, there is no strong evidence that it is beneficial." Perhaps as a byproduct of the demonstrated effectiveness of exposure *in vivo* procedures, little interest has since been shown in evaluating the effectiveness of aversion relief in patients with anxiety disorders.

Several studies have evaluated the effects of covert sensitization among alcoholics, but the findings of most of these studies are difficult to interpret due to severe methodological limitations. One study provided some evidence that conditioned nausea could be produced in a number of alcoholics receiving covert sensitization treatment. Approximately 90% of patients who remained in treatment for at least six covert sensitization sessions reacted with genuine nausea responses as evidenced by swallowing, muscular tremor, and facial grimacing and occasionally by actual vomiting, but only two-thirds of these subjects developed some degree of conditioned nausea. Conditioned nausea was defined as "nausea arising as a direct consequence of the subject's focusing on pre-ingestive or ingestive concomitants of typical drinking scenes." Significant degrees of extended abstinence were observed for conditioned nausea subjects as opposed to other participants. Another well-controlled study found covert sensitization more effective than insight-oriented therapy and routine milieu treatment in alcohol-dependent inpatients. In both studies, participants were inpatients in a traditional alcoholism rehabilitation program. Thus, conclusions with respect to covert sensitization as a primary form of treatment are not warranted.

A number of studies have been reported that used covert sensitization to reduce deviant sexual interest, primarily exhibitionists. The largest series (n = 155) was reported by Barry Maletzky, which included a followup ranging from one to nine years. Generally, results of covert sensitization were positive, but a number of issues preclude more definite conclusions. For example, in the Maletzky studies, about half of the exhibitionists received other procedures in addition to covert sensitization. Moreover, these studies did not include control groups, and progress was evaluated by means of self-report only. Furthermore, there is some support in a number of controlled case studies for the effectiveness of covert sensitization in pedophilic child offenders, but controlled group studies have not yet been reported. Maletzky addressed the issue of whether there is a difference in outcome between self-referred and court-referred pedophiliacs (n = 38). Treatment consisted of 24 weekly sessions of covert sensitization and was followed by "booster" sessions every three months for three years. When assigning 75% reduction in covert and overt pedophile behavior as a criterion for improvement, 89% of the self-referred and 73% of the court-referred subjects were rated as improved. Several measures showed a slight superiority of response in the self-referred group. Inspection of the police records over a three-year period revealed that the self-referred group had no charges, while the court-referred group had four charges.

IV. SUMMARY

Despite its strong empirical basis in learning theory and the interest it evoked in the 1970s, few controlled studies have evaluated the effects of aversion relief therapies in clinical patients. Although a number of studies have reported successful treatment in a variety of disorders (e.g., alcohol dependence, smoking, overeating, and anxiety disorders), it should be noted that most reports involved (a series of) case studies. Apparently, the literature on aversion relief dried up in the early 1980s: A Psychinfo literature search revealed no new references in the 1990s, 7 references in the 1980s, and 18 and 5 articles in the 1970s and 1960s, respectively. This does not specifically concern aversion relief as such but involves nearly all aversive methods. Apparently, only covert sensitization has not gone totally out of fashion.

One of the main reasons behind the absence of recent controlled research into the effects of aversion relief procedures may be that aversive stimulation has become an increasingly controversial ethical issue. Some have argued that aversive methods are justified only when the behavior is seriously dangerous to the individual and when no alternative treatment options are available. Internationally, many institutions no longer allow aversive methods. In addition, in most institutions it is current practice to require that aversive methods using electric shock obtain prior approval by the human rights committee. To be approved, one typically needs to demonstrate that (1) alternative treatment options have failed or are unjustified, (2) the client (or parents) has given informed consent, and (3) colleagues have approved this technique as professionally justified.

Interest in aversion relief therapy may also have waned because alternative (and less intrusive/objectionable) treatments have been found to be at least as effective. For example, in the area of anxiety disorders

in vivo exposure methods are now considered the gold standard, and there is little reason to believe that aversion relief therapy will be able to surpass the effects achieved with exposure therapy. Similarly, in the area of alcohol dependence, alternative cognitive behavioral procedures (e.g., motivational interviewing, coping skills training, and relapse prevention) have been developed and evaluated in large multicenter trials, such as the MATCH project.

See Also the Following Articles

Anxiety Management Training ■ Assisted Covert Sensitization ■ Avoidance Training ■ Covert Reinforcer Sampling ■ Matching Patients to Alcoholism Treatment ■ Negative Reinforcement ■ Sex Therapy

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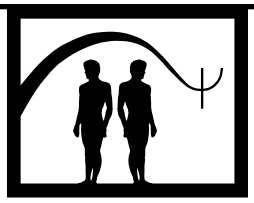

Avoidance Training

James K. Luiselli

The May Institute Inc., Norwood, Massachusetts

I. Description of Treatment
II. Theoretical Bases
III. Empirical Studies
IV. Summary
Further Reading

GLOSSARY

avoidance-responding Behavior that postpones (prevents) contact with an unpleasant consequence event.

escape-responding Behavior that terminates ongoing contact with unpleasant stimulation.

negative reinforcement An increase in behavior as a result of terminating or postponing an unpleasant stimulation or consequence event.

Avoidance training is an intervention approach used with children and adults that incorporates nonpreferred and unpleasant consequences to treat behavior disorders. Individuals are taught to refrain from problem responses or to demonstrate acceptable alternative responses by avoiding contact with the nonpreferred and unpleasant consequences. This entry reviews the conceptual foundations of avoidance training, use of the procedure in clinical psychology, and supportive research findings.

I. DESCRIPTION OF TREATMENT

An understanding of avoidance training can be gleaned from the following "everyday life" example. Motorists frequently exceed the speed limits posted on our highways. If a driver in such a situation sees a blinking light ahead and determines that it is a police vehicle, the driver responds by reducing speed and conforming to the specified limit. In this example, the driver's behavior of slowing down avoids a possible encounter with law enforcement that, in turn, leads to a negative consequence (receipt of a speeding ticket). Responding occurs in this way because the driver may have previously been stopped by police or may have observed such activity with other motorists. As described subsequently, this description includes all of the components integral to avoidance training.

When implemented for therapeutic purposes, avoidance training follows a five-step process: (1) identifying the problem behavior to be reduced, (2) selecting a response to serve as replacement for the problem behavior, (3) choosing a negative consequence, (4) pairing the negative consequence with the problem behavior, and (5) allowing the child or adult to avoid the negative consequence. A more detailed description of each step follows.

Behaviors that are the target of avoidance training usually are those that interfere with personal well-

being, social adjustment, school performance, occupational functioning, and the like. Thus, a child may show extreme noncompliance with parental requests, or an adult may argue excessively with co-workers. However, skill deficits also are addressed through avoidance training. A child, for example, may have a health-compromising condition because she or he has a chronic problem of eating a very limited amount of food. Here the issue is not the presence of a specified "challenging" behavior but instead the absence of a skill. In most cases, simultaneous elimination of a problem and acquisition of a replacement behavior is the objective of avoidance training.

The issue of a skill deficit is most relevant to step 2 in the avoidance training paradigm: the selection of a replacement behavior. Recall that a primary objective of avoidance training is to strengthen one or more responses that can substitute for the problem. However, one must determine whether the replacement behavior is a skill that the child or adult possesses but does not perform regularly or is a skill that the child or adult has not learned. Failure to demonstrate a skill that is within a person's repertoire is a difficulty with performance. Not using a skill because it has not yet been learned is a difficulty with acquisition. Accordingly, how a skill deficit is manifested will have implications for whether avoidance training is warranted as intervention and, if so, what the replacement behavior should be.

The third step in the process of avoidance training is to choose a negative consequence that eventually will be paired with the display of the problem behavior or the absence of the requisite skill. A negative consequence is unpleasant and produces distress for the individual. For this reason, certain ethical and clinical concerns must be embraced when considering avoidance training. During the 1960s and 1970s, many publications in the behavior modification and behavior therapy literature described avoidance training applications that relied on "noxious" (aversive) types of stimulation such as electric shock, distasteful solutions, and foul odors. These stimuli are highly invasive and, over time, have fallen out of favor with behavioral practitioners. As revealed in the subsequent section on empirical studies, the "later generation" research concerning avoidance training typically has incorporated negative consequences that are less restrictive and intrusive. Nevertheless, these interventions expose individuals to unpleasant conditions and, therefore, must be selected and formulated cautiously.

Step 4 of avoidance training is to implement the contingency in which the negative consequence is contacted. The contiguous pairing of behavior and consequence allows the individual to learn the avoidance function that is intended to promote alternative responses. Repeated trials usually are programmed to hasten learning effects. It should be noted, however, that informing an individual about the relationship between behavior and the negative consequence may also produce a desirable outcome. In this situation, the negative consequence is not experienced directly, and controlling effects are achieved through verbal mediation (i.e., the individual is told "what will happen").

The final step is the continued exposure of the individual to conditions where the negative consequence is avoided following the demonstration of the alternative behavior. The objective here is to maintain clinical improvement for an extended duration.

The following illustration depicts how the five steps in an avoidance training protocol would be instituted. The example is a school-age child who exhibits disruptive behaviors in the classroom such as talking out of turn, annoying other students, and using materials to make noise. Because of these behaviors, the child does not complete academic assignments. The classroom teacher determines that one way to reduce these interfering behaviors is to require the child to complete all assignments in order to participate in daily recess periods. If motivated to complete the assignments, it is likely that the problem behaviors will decrease. This depiction qualifies as avoidance training because the undesirable consequence of not having recess can be avoided when the child completes academic assignments. The child learns this contingency when she or he experiences the loss of recess because of incomplete performance. Or, to reiterate a previous point, simply informing the child about the conditions governing participation in recess may be sufficient to produce the behavior objective

II. THEORETICAL BASES

The theoretical foundation of avoidance training rests with the concept of negative reinforcement. Reinforcement principles form the basis of operant learning theory that is commonly associated with the research and writings of B.F. Skinner. Positive reinforcement is the presentation of a pleasurable consequence following a behavior, with the result that the frequency of the behavior increases over time. By contrast, negative reinforcement is the removal or postponement of a nonpleasurable consequence following a behavior. Negative

reinforcement has the same objective as positive reinforcement, which is to increase behaviors that are appropriate, useful, and functional for an individual. With negative reinforcement, the removal or postponement of undesirable consequences is an effect that is "pleasurable" to the individual and makes it more likely that the behavior producing that effect will occur more frequently.

Negative reinforcement can operate in two ways. In one instance, a behavior can occur that terminates or reduces the intensity of ongoing stimulation that is unpleasant. The behavior would be described as "escape." With the second operation, a behavior can postpone or prevent the unpleasant stimulation and would be described as "avoidance." Escape responding, therefore, requires that behavior be demonstrated in the presence of the unpleasant (negative) stimulation, whereas avoidance responding occurs in the absence of the unpleasant (negative) stimulation.

On a clinical level, the distinction between escape-generated and avoidance-generated behavior is an important one because it is defined by the presence or absence of negative conditions. Imagine an adolescent boy in a psychiatric hospital who is confined to a room (seclusion) because he becomes "out of control" on the inpatient unit. Being in the room is unpleasant for the boy, and he learns that this condition can be terminated by being released from the room when he composes himself. Regaining his control is reinforced negatively because it allows him to escape a contemporaneous, unpleasant condition. Learning by avoidance would be evident when confinement to the room is not encountered by the boy because he behaves properly without "losing control." Here, negative reinforcement functions because the boy's desirable behavior prevents room confinement.

Avoidance training can be traced to experimental animal research. Under conditions termed free operant avoidance, electric shocks were delivered automatically to a rat through a device on the grid floor of a small metal chamber. The shocks were programmed to occur at preset intervals via a recycling timer. A second timer postponed shock onset by a particular duration each time the rat pressed a lever. This type of experimentation revealed different patterns of lever-press responding as a function of variables such as shock intensity, temporal parameters between intervals, and the schedule of shock presentations. Related research concerned the study of "discriminated avoidance" in which a neutral stimulus was programmed to precede electric shock. The neutral stimulus functioned as a "warning signal," and if the rat exhibited a specific behavior during the time between the onset of the signal and the noxious stimulation, the electric shock would be prevented. The behavior of the rat is "discriminated" because it does not occur in the absence of the signal. This acquisition of discriminated avoidance with lower animals serves as an analog for avoidance training applications with humans.

III. EMPIRICAL STUDIES

As a preview to the presentation of research concerning avoidance training with children and adults, several considerations should be the focus of attention. First, in contrast to other procedures within behavior modification and behavior therapy, there has been less emphasis on avoidance training as a first-line strategy to clinical intervention. This fact likely results from the requirement that unpleasant consequences must be incorporated when programming avoidance training. For many professionals, it is unpalatable to add distress to the life of a child or adult who already is experiencing adjustment difficulties. Even in cases where avoidance training may be clinically justified, it can be an arduous task arranging the conditions wherein negative consequences are arranged contiguously with behavior or are introduced within everyday settings.

A second issue is that where avoidance training has been supported by empirical research, the procedure frequently is combined with other treatment methods. It is rare, in fact, to find studies that have not described such multicomponent intervention. Again, inclusion of negative consequences in the therapeutic process dictates that additional (e.g., positive reinforcement) procedures be used.

Finally, the early history of avoidance training in clinical practice addressed problems, and included certain negative consequences, that are not consistent with contemporary standards. One example is research conducted during the 1960s in which children who had autism and were not responsive to social interaction were treated through avoidance training with electric shock. A therapist issued the instruction, "Come here," and an electric current was passed through the grid floor. The children "escaped" the aversive stimulation when they approached the therapist. They then learned to avoid the shock by responding quickly to the social instruction.

Other research, reported in the 1970s, used electric shock in an avoidance training paradigm to "treat"

women and men who were homosexual and wished to changed their sexual orientation. The clients viewed slides that were projected on a screen and included pictures of same-sex adults, clothed and nude, that were rated as attractive. Viewing the slides for a fixed duration produced an electric shock. The shock could be avoided by pressing a switch, which terminated the slide, before the predetermined viewing time elapsed. Another component of this procedure was to have a slide of the opposite sex appear when the preceding same-sex slide was removed. This strategy was an attempt to build in counterconditioning in which opposite-sex adults would become appealing because they were paired with the relief (a positive event) experienced when shock was avoided.

The preceding examples provide an historical perspective from which to view avoidance training, but they do not represent acceptable, present-day treatments. For one, electric shock is extremely invasive stimulation that behavioral psychologists essentially have abandoned and ceased to defend as viable treatment. Relative to children with autism and other developmental disabilities, many training procedures and effective interventions have been validated that do not rely on aversive methods or subject individuals to painful consequences. As per the description of adult homosexuality, the professional community no longer judges this form of sexual orientation as an illness or pathology. Furthermore, if a homosexual woman or man sought assistance to change her or his sexual orientation, avoidance training of the type described would not be implemented.

More benign examples of avoidance training can be found in the treatment literature with children who received intervention for feeding disorders. Several studies have evaluated avoidance training that targeted chronic food refusal. Children with this problem do not consume food orally or may eat only select food items. In many cases, the food refusal is volitional in that there is no physical cause for the behavior. One type of intervention in such cases has been to place food on a utensil, bring the utensil to the child's lips, instruct the child to "take a bite," and wait several seconds for the child to consume the food. If independent eating does not occur, a therapist prompts mouth-opening by gently pushing against the child's jaw and depositing the food. The physical guidance delivered by the therapist functions as mildly unpleasant stimulation that can be avoided by the child opening his or her mouth after the verbal instruction is given.

Reference to the literature on child behavior problems reveals that avoidance training has been incorporated in many interventions that include contingent effort. Effort procedures require that when an individual exhibits a behavior that disrupts the environment or causes property destruction, the effects of such behavior must be corrected. Thus, children who break objects during an episode of agitation must clean up and restore the surroundings to their previous condition. This increased response effort associated with cleanings is avoided by refraining from the problem behaviors.

IV. SUMMARY

Avoidance training is an approach to clinical intervention that is founded on the principle of negative reinforcement. Children and adults learn to avoid negative and unpleasant consequences by not exhibiting problem behaviors or by demonstrating acceptable alternatives. Avoidance training as a therapeutic procedure can be linked to operant learning theory that was studied in the animal laboratory. In contrast to other behavior-change procedures, avoidance training is used less frequently in clinical practice. Because the procedure requires exposing a child or adult to unpleasant conditions, it must be considered cautiously and implemented with great care in those situations where it can be justified clinically.

See Also the Following Articles

Aversion Relief ■ Behavioral Weight Control Therapies ■ Conditioned Reinforcement ■ Eating Disorders ■ Electrical Aversion ■ Negative Reinforcement ■ Operant Conditioning

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Backward Chaining

Douglas W. Woods and Ellen J. Teng

University of Wisconsin-Milwaukee

I. Description of Treatment
II. Theoretical Basis
III. Empirical Studies
IV. Summary
Further Reading

GLOSSARY

chaining Process by which an organism learns an ordered sequence of behaviors.

discriminative stimulus A stimulus in the presence of which a particular behavior is reinforced.

reinforcement A process in which a behavior is followed by the presentation of a stimulus and as a result, produces an increase in the future probability of that behavior.

target behavior The behavior of interest, or the behavior to be altered.

task analysis A step in the backward chaining procedure in which the entire target behavior is broken down into smaller sequential steps.

Backward chaining is a procedure used to establish relatively complex sequences of behaviors in organisms. Although the procedure was originally applied to nonhumans, it has been adopted for use with humans. Typically, backward chaining is used to improve the independent functioning of individuals with developmental disabilities, but it can also be used to establish a number of other behaviors in individuals with developmental disablities and who are typically developing. This article will present a description of the procedure along with the theoretical basis and empirical support for its use.

I. DESCRIPTION OF TREATMENT

Many human tasks involve a number of simple, but separate, motor behaviors that when organized into a specific sequential fashion, produce a desired outcome. For example, the task of brushing one's teeth can be broken down into the following simple behaviors: picking the toothbrush up, reaching for the tube of toothpaste, grasping the tube of toothpaste, putting paste on the brush, putting the brush in the mouth, moving the brush back and forth across the teeth, rinsing the mouth, and rinsing the toothbrush.

Even a relatively simple task such as brushing one's teeth consists of a number of component behaviors (which themselves, could be further broken down) that must be completed in a specific sequence before an acceptable outcome can be achieved (i.e., clean teeth). In most cases, humans learn such sequences of behavior (called chains) without focused instruction. However, in some cases, focused instruction is required as may be the case for persons with developmental disabilities.

To aid in establishing chains of behavior in humans, applied psychologists have borrowed strategies

originally designed by basic researchers in the area of operant conditioning. Practitioners have adopted three such strategies including whole-task chaining, forward chaining, and backward chaining. The focus of this article is on backward chaining.

Backward chaining is implemented in the following fashion. First, the clinician must identify the chain of interest and the target behavior from completing the chain. For example, assume that the clinician wishes to train a client with low functioning to make sandwiches. In this case, the chain of interest is sandwich making and the target behavior would be consuming the sandwich.

After the target chain and target behavior have been identified, the clinician must conduct a task analysis. When doing a task analysis, the clinician breaks the target chain into discrete component behaviors. For example, the task analysis of the sandwich-making chain may consist of the following components: taking a plate out of the cupboard, taking two slices of bread out of the bag, taking the lunch meat and mustard out of the refrigerator, putting one slice of bread on the plate, putting the meat on the sandwich, putting the mustard on the meat, placing the remaining slice of bread on top, and lifting the sandwich to the open mouth.

Although it clearly can be seen that the aforementioned task analysis could be broken down into more specific behaviors, the level of specificity used in creating the task analysis should be matched with the client's level of functioning. Clients with lower functioning may require a task analysis that breaks the chain into very simple and specific components, whereas clients with higher functioning may do well with a less simplified task analysis.

On completion of the task analysis, the actual chaining procedure begins. In backward chaining, the first behavior learned by the client is the last component behavior in the chain. On completion of the final behavior in the chain, the person receives the reinforcer associated with the outcome of the chain (called the terminal reinforcer). In the aforementioned chain, the first behavior learned by the client would be lifting a prepared sandwich to the mouth, and the resulting reinforcing outcome would be consuming a bite of the sandwich. To teach the sandwich lifting, the clinician should start by providing a verbal prompt to engage in the chain of behavior (e.g., "Alice, make a sandwich for yourself.") and then model the behavior for the client. After the clinician models the behavior, he or she should then provide the verbal prompt again followed by a physical prompt for the client do the same behavior. After the client lifts the sandwich to her mouth, she should be allowed to take a bite and should be praised at the same time. After the final behavior in the chain occurs reliably when the verbal prompt is given, the clinician should begin to train the second-to-last step in the chain.

When training the second-to-last step, all the steps in the chain should be completed by the beginning of that step. Continuing with the previous example, in teaching the second-to-last step in the chain, the sandwich would be completely made except that the last slice of bread would not be on the sandwich. When training this task, the clinician would again provide the verbal prompt (e.g., "Alice, make a sandwich for yourself."), model the specific task (putting the last slice on the sandwich) and complete the remainder of the chain (lifting the sandwich to the mouth and taking a bite). After the modeling, the clinician would provide the verbal prompt then physically prompt the client to engage in the novel step (i.e., putting the last slice of bread on the sandwich), provide praise for doing so, and prompt the completion (if necessary) of the remaining steps in the chain.

After the client is reliably implementing the second-to-last link followed by the completion of the remainder of the chain, the clinician should begin training the third-to-last step using the aforementioned procedures. This sequence should continue until the client has learned the entire sequence and can implement the entire chain contingent on the verbal prompt (e.g., "Alice make a sandwich for yourself.").

II. THEORETICAL BASIS

Backward chaining was developed by operant learning researchers to systematically train complex sequences of behaviors. The term chaining refers to the way in which the behaviors pertaining to a specific sequence are linked together. In backward chaining, the behaviors are learned in a reverse order from how the chain is performed. In other words, the final step in the chain is learned first, followed by the next-to-last step and so on. Each link in the behavioral chain is evoked by a discriminative stimulus and reinforced by the consequences of the behavior involved in the link. For example, in early learning studies, a discriminative stimulus (e.g., a red light) was presented to the organism. If the organism made the correct response (e.g., pressing a lever), food was presented. Not only was the lever pressing reinforced, but the red light was also established as a reinforcing stimulus. When the operant chamber was rearranged so the organism had to do another behavior (e.g., wheel running) to produce the red

light, it soon did so and then completed the chain of pressing the lever and receiving food. In this case, the presence of the wheel became a discriminative stimulus for wheel running, which was reinforced by the appearance of the red light. The red light, in turn served as a discriminative stimulus for the lever pressing that was reinforced by the final outcome of food presentation.

In the applied arena, backward chaining is conceptualized in a similar fashion. The outcome of the chain is equivalent to the food received by the non-human organism in the operant chamber. The discriminative stimulus for the last link in the chain is the situation present immediately prior to engaging in the last behavior. Using the previous applied example, the discriminative stimulus would be the completed sandwich lying on a plate prior to being picked up. As the clinician moves backward to the next step in the chain, the completed sandwich will not only function as a discriminative stimulus for picking the sandwich up, but the sight of the completed sandwich will function as a reinforcer for the preceding behavior in the chain (e.g., putting the last piece of bread on top of the mustard-covered sandwich). This process will continue until the original verbal prompt begins to function as the discriminative stimulus that will initiate the entire behavioral chain.

As can be seen from these examples, an individual learning a sequence of behavior through backward chaining repeatedly experiences the effect of the terminal reinforcer presented at the end of the chain as each link is added. This theoretical advantage of backward chaining distinguishes it from other methods of chaining such as forward chaining, in which the first step of a sequence is taught first and then linked to the second step and so on, or whole-task chaining, in which all the steps, from start to finish, are attempted on each trial. In the latter two cases, the terminal reinforcer is not presented until the person has successfully learned all steps in the behavioral chain.

III. EMPIRICAL STUDIES

Backward chaining was first implemented in an operant laboratory by B. F. Skinner in 1938. After demonstrating the effectiveness of backward chaining in studies with non-human animals, the procedure was first applied to humans in an effort to develop more effective instructional methods in classroom settings. Since then, backward chaining has been applied in diverse settings and found to be effective in teaching specific skills. In this section, the clinical utility of backward chaining is briefly reviewed. Included are brief discussions of variables to consider when using this technique, such as target populations and behaviors, treatment outcome variables, and a comparison of backward chaining to other chaining procedures, including a brief discussion on when backward chaining methods should be implemented.

A. Client Populations

Research demonstrates that backward chaining has been successfully used with diverse populations ranging from children to elderly adults. Although some research has demonstrated the effectiveness of this procedure with persons who are typically developing the majority of studies have focused on individuals with developmental disabilities. Within this latter population, backward chaining has been extensively used and found to be particularly effective in teaching skills to children and adults with mild to profound mental retardation and to children with other developmental disorders such as autism. It is not clear why research has focused so heavily on evaluating backward chaining in persons with developmental disabilities, but it may be the case that persons who are typically developing often do not require the intensive type of training to establish behavior sequences as provided by the procedure.

B. Targeted Behaviors

Among persons who are typically developing, backward chaining has been effective in treating children with specific speech problems such as misarticulation. In 1987, Edna Carter Young used backward chaining as part of a procedure to retrain the speech of two toddlers who frequently omitted weak syllables or consonants. Essentially, the procedure involved teaching the child to say the last part of a word first and then incorporating that part into the word. For example, to learn to say the word monkey, the child was first taught to say key, and then join it to the rest of the word, mon, thereby producing the word monkey.

Some evidence also suggests that backward chaining can be an effective teaching method for learning novel tasks. For example, in 1990, Daniel W. Ash and Dennis H. Holding used backward chaining as one method of teaching students without prior musical experience to play different sequences of musical notes on an electric piano. Likewise, other studies examining the effectiveness of backward chaining methods in flight simulation tasks have demonstrated it to be an effective method in teaching various components of aircraft landing.

Although the prior examples demonstrate the use of backward chaining with persons who are typically developing the procedure is most commonly used to teach skills to persons with developmental disabilities. Within this population, backward chaining has been widely applied in teaching various independent living skills to children and adults. Examples include hygiene skills such as self-grooming, teeth brushing, and toileting, socialization, and travel skills. For example, in 1979, Barbara Gruber and colleagues used backward chaining to teach four institutionalized males with profound retardation to walk independently from their place of residence to school. Such efforts have been instrumental in allowing persons with developmental disabilities to live in less restrictive environments such as group homes.

Not only has backward chaining been used to teach self-help skills to persons with developmental disabilities, it has also been successful in helping children with autism to learn to speak in short sentences. In addition, several studies have demonstrated the effectiveness of backward chaining in treating children who refuse to eat or drink. For example, in 1996, Louis P. Hagopian and colleagues used backward chaining as part of a procedure to treat a 12-year-old boy with autism and mental retardation who completely refused liquids. After obtaining a baseline measure of the boy's drinking and conducting a task analysis, backward chaining was implemented. In this case, drinking water from a cup was the target response, and the chain consisted of three segments: (1) bringing the cup of water to the mouth, (2) accepting water into the mouth, and (3) swallowing. To implement this backward chain, the boy was first reinforced by being given access to a preferred activity for 90 sec when he swallowed after being prompted to do so, and then he gradually swallowed a small amount of water from a syringe. In the third step, he was required to bring a cup containing a small amount of water to his mouth, accept the water into his mouth, and swallow the water before reinforcement was delivered. Using this procedure, Hagopian and colleagues were able to successfully teach the boy to gradually drink an increasing quantity of liquids.

C. Variables Used to Determine Outcome Effectiveness

As with most behavioral interventions, the structure and goal of an intervention is determined after an assessment is conducted. Similarly, depending on the goal of the intervention, the way in which its effectiveness is measured will vary across situations. Therefore, there is no one set criterion against which to measure the effectiveness of a backward chaining procedure. Instead, there are a number of variables that are commonly used to gauge its effectiveness. In a review of chaining techniques by Fred Spooner and colleagues in 1984, the major dependent variables of interest include (1) time to criterion (predetermined number of successful performances of entire chain determined by the trainer), (2) number of incorrect responses (steps of the chain performed incorrectly), (3) number of correct responses (steps of the chain performed correctly), (4) rate of correct responses (number of correctly performed steps of the chain performed in a given period of time), and (5) rate of incorrect responses (number of incorrectly performed steps of the chain performed in a given period of time).

Although there has been some question regarding how to determine the effectiveness of a training procedure, variables should be selected based on the goal of the behavior that is being taught. For example, in 1980, Richard T. Walls and colleagues noted that number of errors often serve as the critical measure because errors may impede subsequent learning. On the other hand, if speed is more important than accuracy in learning the behavioral sequence, then rate should be selected as a measure of outcome effectiveness.

D. Comparing Backward, Forward, and Whole-Task Chaining

Comparative research on the effectiveness of the different chaining methods has produced mixed results. Several studies involving individuals with developmental disabilities have revealed that forward and backward chaining were more effective methods for teaching new skills compared to a whole-task approach. For example, in 1981 Richard T. Walls and colleagues compared all three chaining methods and found that forward and backward chaining resulted in fewer errors when teaching adults with moderate retardation to assemble objects, compared to the whole-task chaining method. In this study, there were no significant differences between forward and backward methods.

On the other hand, in 1983, Fred Spooner and colleagues compared only backward to whole-task chaining when teaching adults with profound retardation to assemble objects and found that whole-task chaining required fewer trials to reach criterion than backward chaining.

Research comparing the effectiveness of chaining methods remains equivocal. However, as Gregory J.

Smith suggested in 1999, the mixed results regarding the effectiveness of different chaining methods may be due to the fact that different populations were used in various studies, and different types of behaviors were taught. Therefore, no direct comparisons among chaining methods can be made without first taking these variables into account.

Similarly, as a review of the research suggests, there does not seem to be one method that is more effective than the others across all situations, rather, it is more probable that the effectiveness of the chaining method used is dependent on several factors, including variables associated with the learner (such as level of cognitive functioning) and the type of behavior being taught. Therefore, when deciding which chaining methods to use, clinicians should consider their client's level of intelligence and the type of behavior being taught.

E. When Backward Chaining Should Be Implemented

In general, the backward chaining method has been found to be effective and most appropriate for use with individuals with cognitively lower functioning including persons with developmental disabilities. However, it is also appropriate to use with individuals with higher functioning when a behavior is more complex and difficult, often involving many steps. In this case, backward chaining may be preferred over a whole-task approach because it can be particularly effective in teaching the person one component of the behavioral sequence at a time, before attempting to chain all the components together. Furthermore, backward chaining may be more effective than other chaining methods in situations when client motivation is low or when a response is infrequent or absent, because other chaining methods will limit the client's access to the terminal reinforcer.

IV. SUMMARY

Generally, backward chaining is an effective technique used to teach a complex sequence of behaviors to humans. Although it has also been used with persons who are typically developing, it has been predominantly applied when teaching basic daily living skills to persons with developmental disabilities. The essential feature of backward chaining is teaching a sequence of behaviors in reverse order, starting with the last step in the behavioral sequence. Although it is unclear if backward chaining is more effective than other chaining procedures, one advantage of backward chaining is that the terminal reinforcer is always delivered as the individual completes each step.

See Also the Following Articles

Behavior Therapy: Historical Perspective and Overview ■ Chaining ■ Classical Conditioning ■ Conditioned Reinforcement ■ Forward Chaining ■ Home-Based Reinforcement ■ Operant Conditioning

Further Reading

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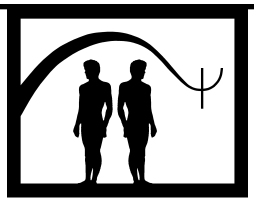

Beck Therapy Approach

Judith S. Beck

Beck Institute for Cognitive Therapy and Research, University of Pennsylvania

I. Description of Treatment
II. Theoretical Basis
III. Efficacy
IV. Summary
Further Reading

GLOSSARY

automatic thought An idea that seems to arise in one's mind spontaneously, in verbal or imaginal from.

belief One's basic understandings of oneself, one's world, and other people.

cognition A thought, image, rule, attitude, assumption, or belief.

cognitive distortion A type of thinking error.

schema A relatively stable and enduring mental structure that exerts a significant influence over one's processing of information.

Cognitive therapy is a system of psychotherapy, based on a comprehensive theory of psychopathology and personality. Its theoretical underpinnings have been empirically supported, and the therapy itself has been demonstrated to be effective in over 325 outcome studies for a wide range of psychiatric disorders. Treatment is based on specific cognitive formulations of each disorder and on the individual cognitive conceptualization of each patient. Cognitive therapy tends to be time limited, problem solving oriented, and structured. Both patient and therapist are quite active. The treatment emphasizes having patients learn to identify and modify their distorted or dysfunctional thoughts and beliefs and to change their dysfunctional behavior. In doing so, patients' mood, symptoms, functioning, and relationships improve.

I. DESCRIPTION OF TREATMENT

Cognitive therapy is based on the cognitive model that describes the relationship between people's perceptions and interpretations of situations and their reactions (emotional, behavioral, and physiological). When people are in distress, their thinking is often characterized by faulty information processing; their perceptions are often invalid, or not completely valid. For example, a depressed woman makes only two mistakes when word processing a long document at work and thinks, "I can't do *anything* right." This thought is called an "automatic thought," because it seems to pop up spontaneously in her mind. Before therapy, she may have been only vaguely aware of these kinds of thoughts, if at all. She may have been much more cognizant of her reaction: her affect (sadness), her dysfunctional behavior (leaving work early), and/or her physiological response (heaviness in her body).

In therapy, patients learn to cue themselves when they notice their negative reactions so they can identify

their automatic thoughts. Then they learn techniques of evaluating the validity and utility of their thoughts. When they correct their distorted thinking, they have a more positive reaction: their affect lifts, their behavior becomes more functional, they have an improved physiological response. Much of the therapy is organized around helping patients directly change their thinking and behavior and solve problems.

Treatment varies somewhat from disorder to disorder and patient to patient, though there are several basic principles described elsewhere by the author.

1. Cognitive therapy is based on an ever-evolving formulation of patients and their problems according to a cognitive framework.
2. Cognitive therapy requires a sound therapeutic alliance.
3. Cognitive therapy emphasizes collaboration and active participation..
4. Cognitive therapy is goal oriented and initially focuses on current problems.
5. Cognitive therapy is educative and emphasizes relapse prevention.
6. Cognitive therapy aims to be time limited.
7. Cognitive therapy sessions are structured.
8. Cognitive therapy teaches patients to identify, evaluate, and respond to dysfunctional thoughts and beliefs.
9. Cognitive therapy uses a variety of techniques to modify thinking, mood, and behavior.

These principles are described below.

Cognitive therapists conceptualize patients in cognitive terms, that is, they seek to understand how patients' beliefs give rise to specific thoughts in current situations and influence their reactions. When patients have longstanding personality problems, therapists also seek to understand how patients have historically interpreted events, often since childhood, and how these interpretations have influenced (and still influence) their ideas about themselves, their worlds, and others.

Therapists also identify the maladaptive behavioral "coping" strategies patients develop to get along in the world. For example, a therapist hypothesized that because of genetic predisposition and early abuse, Beth developed the belief that she was bad and defective. Fearful that others would view her negatively, she developed the coping strategy of always putting on a good face. Otherwise, she believed, people would see her "real" self and reject her.

Treatment is based on an ever-evolving conceptualization as therapists collect additional data to confirm, disconfirm, or modify their hypotheses. A Cognitive Conceptualization Diagram (Figure 1) aids therapists in concretely formulating their conceptualization. Therapists check out their conceptualization with patients to ensure they are on the right track.

A strong therapeutic alliance is an essential part of cognitive therapy. Therapists build the alliance by working collaboratively with the patient as a "team," demonstrating care, concern, and competence; providing rationales before using various strategies; summarizing patients' narratives to ensure accurate understanding; checking hypotheses and formulations with patients; solving problems; eliciting feedback at the end of sessions (and during sessions, if they infer a negative reaction); and helping patients quickly to reduce symptoms.

It is often more difficult to establish a strong therapeutic alliance with patients who have dysfunctional relationships outside of therapy. They often bring dysfunctional beliefs about themselves and other people to the therapy relationship (e.g., "If I trust other people, I'll get hurt."). When such a belief interferes with a "standard" approach, therapists help patients elicit, test, and respond to patients' distorted ideas about the therapist and about therapy.

Therapists as well as patients are quite active during the therapy session. Therapists continually engage in Socratic questioning, as they ask patients open-ended questions to collect data, elicit key thoughts, uncover the meaning of their thoughts, identify beliefs, test the evolving conceptualization, and evaluate thoughts and beliefs. Collaboration is an important principle of cognitive therapy: therapist and patient work together to identify and understand the patient's problems and perspectives. They collaborate in setting goals, defining and solving current problems, and devising tests to assess the accuracy of their thinking.

Initially the focus is on the present, helping patients identify and modify their thinking about distressing situations, solving problems, and changing behavior. Toward the middle of therapy, there is an additional emphasis on modifying maladaptive beliefs. In the final stage of therapy, relapse prevention strategies are emphasized. In actuality, therapists use relapse prevention strategies from the beginning of therapy, as they not only help patients change their thinking and behavior but also instruct patients in how to do so themselves. An important goal of therapy is to teach patients to become their own therapists.

Cognitive therapy is generally a relatively brief form of psychotherapy. Most straight-forward depressed and anxious patients achieve remission with six to twelve sessions of therapy (weekly at first, then spaced further

COGNITIVE CONCEPTUALIZATION DIAGRAM

Patient's name: Sally **Date:** 2/22
Diagnosis: Axis I Major depressive episode **Axis II** None

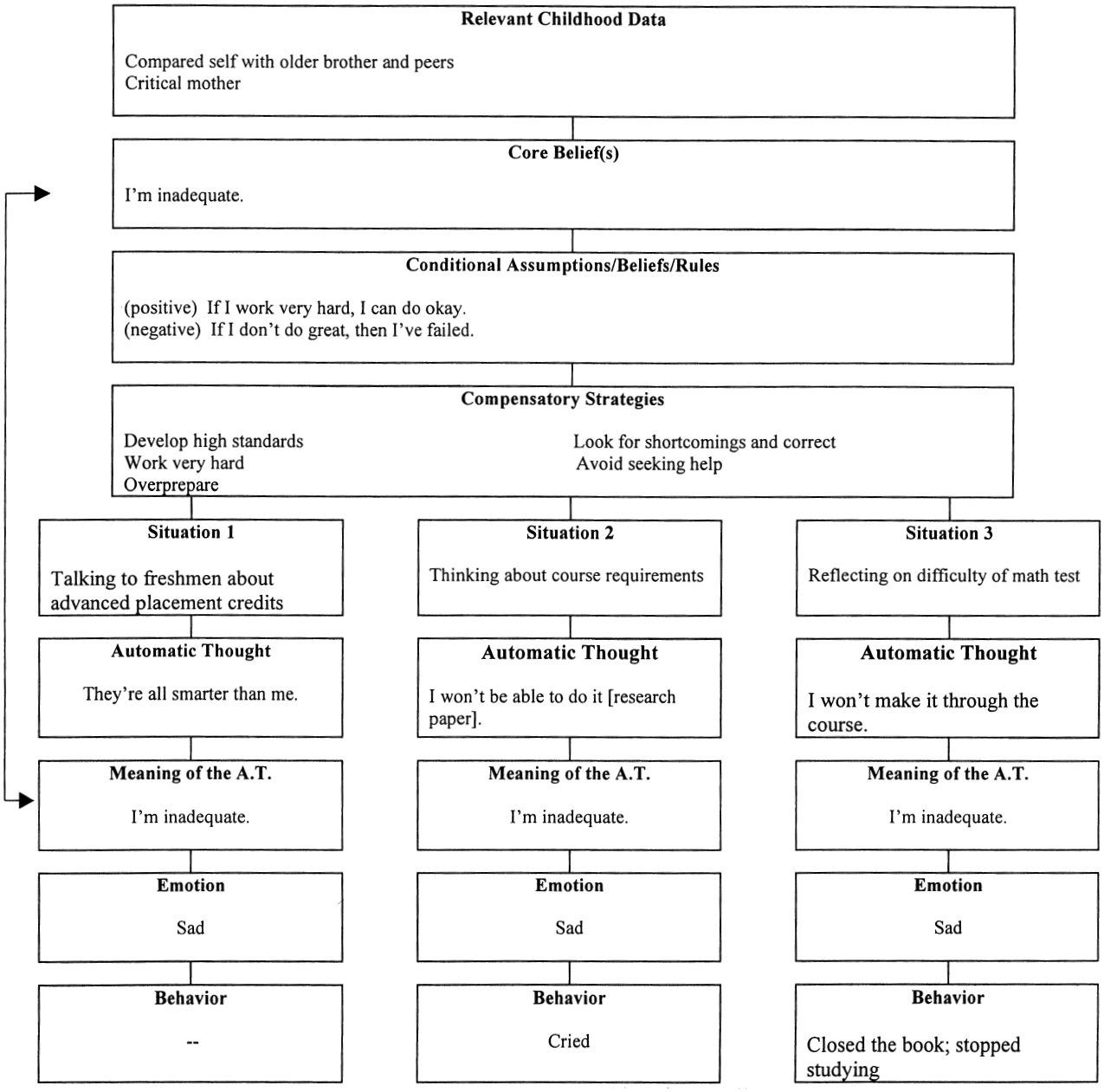

FIGURE 1 Cognitive Conceptualization Diagram. From Judith Beck, *Cognitive Therapy: Basics and Beyond.* © Judith S. Beck, 1993. Reprinted with permission of Guilford Press.

apart). Patients with more complex disorders, comorbid diagnoses, severe or chronic symptoms, or personality pathology may require (sometimes significantly) longer treatment.

Cognitive therapy sessions generally follow a certain structure. At the beginning therapists obtain an objective and subjective account of patients' symptoms, general mood, progress, and behavior in the past week.

They jointly set an initial agenda; patients are asked to label the most important problem(s) they want to work on during the session. They make a "bridge" from the previous session, asking patients to recall important conclusions from the previous session, significant events during the past week, and what they gained or learned from the self-help assignments ("homework") they did. They also ask patients whether they predict any special problems will arise in the coming week.

This additional data often leads to additional agenda items. The agenda is collaboratively prioritized. The session is then organized around the problems on the agenda. Patients and therapists collaboratively decide which problem to focus on first. In the context of discussing a problem, therapists gather data to refine their conceptualization and teach patients skills, such as identifying and critically evaluating their distorted thinking and using behavioral and problem-solving techniques. Homework assignments are also generated by the discussion.

Before moving on to another problem, therapists ask patients to summarize their conclusions from the discussion and ensure that they are likely to do the agreed-on assignments. At the end of each session, patients summarize the most important points of the session, and therapists elicit their feedback about the session.

Cognitive therapists use many different types of techniques to modify patients' thinking, mood and behavior, including

- *Cognitive:* identifying, evaluating, and modifying thoughts, images, and beliefs
- *Behavioral:* activity monitoring and scheduling, skills training, graded tasks, distraction, exposure, response prevention
- *Problem solving:* specifying problems, responding to automatic thoughts and beliefs that interfere with problem solving, brainstorming and choosing solutions, implementing solutions and evaluating outcomes
- *Emotional:* regulation of affect through engaging in self-soothing activities, relaxation, controlled breathing, distraction, seeking support, reading therapy notes
- *Physiological:* medication (if indicated), exercise, reducing caffeine and other drugs, focusing externally instead of internally
- *Interpersonal:* correcting faulty beliefs, learning communication, assertiveness and other social skills, solving interpersonal problems (bringing family members or significant others into therapy, if indicated)
- *Environmental:* weighing advantages and disadvantages of making changes in living or work environments (if indicated), responding to thoughts that interfere with making needed changes
- *Supportive:* demonstrating empathy, regard, caring, acceptance, and accurate understanding of patients' internal reality through verbal and non-verbal responses
- *Experiential:* roleplaying; using imaginal techniques to respond to automatic thoughts in the form of images; inducing images to heighten affect (to uncover key cognitions) or to reduce affect; restructuring the meaning of traumatic events through the re-experience of key memories in imaginal from in the presence of heightened affect, then using guided imagery and/or psychodrama techniques
- *Psychodynamic-like:* helping patients identify and evaluate automatic thoughts that arise and dysfunctional beliefs that become activated during the therapy session, particularly dysfunctional ideas about the therapist or therapy, then guiding them to generalize what they learned to relationships outside of therapy; drawing connections between beliefs (learned earlier in life and maintained throughout the patient's life) and his/her interpretations and reactions to current situations

These techniques, whether they are specifically cognitive in nature or not, result in cognitive change. Much of the therapeutic work in cognitive therapy, however, *is* devoted toward directly identifying and modifying inaccurate or dysfunctional thoughts and assumptions. Therapists often use a worksheet, the *Dysfunctional Thought Record* (DTR) to help patients record and respond to their thoughts and assumptions in a structured way (Table 1).

Although DTRs are used with many patients, they generally are adapted for (or discussed verbally with) patients who might not be able to grasp them fully. Patients are encouraged to use questions such as the following to help them evaluate and devise alternative responses to their dysfunctional thinking:

- What is the evidence that my automatic thought is true? What is the evidence on the other side, that my automatic thought might not be true, or not completely true?
- What is an alternative explanation or an alternative viewpoint?
- What is the worst that could reasonably happen and how would I cope? What is the best that could happen? What is the most realistic outcome?

TABLE 1
Dysfunctional Thought Record

Directions: When you notice your mood getting worse, ask yourself, "What's going through my mind right now?" and as soon as possible jot down the thought or mental image in the Automatic Thought Column.

Date/time	*Situation*	*Automatic thought(s)*	*Emotion(s)*	*Adaptive response*	*Outcome*
	1. What actual event or stream of thoughts, or daydreams or recollection led to the unpleasant emotion? 2. What (if any) distressing physical sensations did you have?	1. What thought(s) and/or image(s) went through your mind? 2. How much did you believe each one at the time?	1. What emotion(s) (sad/anxious/ angry/etc.) did you feel at the time? 2. How intense (0–100%) was the emotion?	1. (optional) What cognitive distortion did you make? 2. Use questions at bottom to compose a response to the automatic thought(s). 3. How much do you believe each response?	1. How much do you now believe each automatic thought? 2. What emotion(s) do you feel now? How intense (0–100%) is the emotion? 3. What will you do (or did you do)?
Friday, 2/23 10 A.M.	*Talking on the phone with Donna.*	*She must not like me any more. 90%*	*Sad 80%*		
Tuesday, 2/27 12 P.M.	*Studying for my exam.*	*I'll never learn this. 100%*	*Sad 95%*		
Thursday, 2/29 5 P.M.	*Thinking about my economics class tomorrow.*	*I might get called on and I won't give a good answer. 80%*	*Anxious 80%*		
	Noticing my heart beating fast and my trouble concentrating.	*What's wrong with me?*	*Anxious 80%*		

Questions to help compose an alternative response: (1) What is the evidence that the automatic thought is true? Not true? (2) Is there an alternative explanation? (3) What's the worst that could happen? What could I do to cope? What's the best that could happen? What's the most realistic outcome? (4) What's the effect of my believing the automatic thought? What could be the effect of changing my thinking? (5) What should I do about it? (6) If (friend's name) was in the situation and had this thought, what would I tell him or her?

TABLE 2
Typical Thinking Errors

Cognitive distortions

1. *All-or-nothing thinking* (also called black-and-white, polarized, or dichotomous thinking): You view a situation in only two categories instead of on a continuum.
   Example: "If I'm not a total success, I'm a failure."
2. *Catastrophizing* (also called fortune telling): You predict the future negatively without considering other, more likely outcomes.
   Example: "I'll be so upset, I won't be able to function at all."
3. *Disqualifying or discounting the positive:* You unreasonably tell yourself that positive experiences, deeds, or qualities do not count.
   Example: "I did that project well, but that doesn't mean I'm competent; I just got lucky."
4. *Emotional reasoning:* You think something must be true because you "feel" (actually believe) it so strongly, ignoring or discounting evidence to the contrary.
   Example: "I know I do a lot of things okay at work, but I still feel like I'm a failure."
5. *Labeling:* You put a fixed, global label on yourself or others without considering that the evidence might more reasonably lead to a less disastrous conclusion.
   Example: "I'm a loser." "He's no good."
6. *Magnification/minimization:* When you evaluate yourself, another person, or a situation, you unreasonably magnify the negative and/or minimize the positive.
   Example: "Getting a mediocre evaluation proves how inadequate I am. Getting high marks doesn't mean I'm smart."
7. *Mental filter* (also called selective abstraction): You pay undue attention to one negative detail instead of seeing the whole picture.
   Example: "Because I got one low rating on my evaluation [which also contained several high ratings] it means I'm doing a lousy job."
8. *Mind reading:* You believe you know what others are thinking, failing to consider other, more likely possibilities.
   Example: "He's thinking that I don't know the first thing about this project."
9. *Overgeneralization:* You make a sweeping negative conclusion that goes far beyond the current situation.
   Example: "[Because I felt uncomfortable at the meeting] I don't have what it takes to make friends."
10. *Personalization:* You believe others are behaving negatively because of you, without considering more plausible explanations for their behavior.
    Example: "The repairman was curt to me because I did something wrong."
11. *"Should" and "must" statements* (also called imperatives): You have a precise, fixed idea of how you or others should behave, and you overestimate how bad it is that these expectations are not met.
    Example: "It's terrible that I made a mistake. I should always do my best."
12. *Tunnel vision:* You only see the negative aspects of a situation.
    Example: "My son's teacher can't do anything right. He's critical and insensitive and lousy at teaching."

From Judith Beck, *Cognitive Therapy: Basics and Beyond.* Adapted with permission from Aaron T. Beck. Reprinted with permission of Guilford Press.

- What is the effect of my believing this automatic thought? What could be the beneficial effects of changing my thinking?
- If [name of specific close friend or family member] were in this situation and had this thought, what would I tell him or her?
- What should I do now?

Teaching patients to identify their typical *cognitive distortions,* or types of thinking errors, also helps them understand the relative invalidity of many of their negative thoughts (Table 2). When emotionally distressed, people tend to make many more errors in their interpretations of events than usual. Matthew, for example, consistently displayed all-or-nothing thinking ("Either I'm the best or I'm a failure."), mind reading ("They [his co-workers] are probably laughing behind my back."), fortune telling ("I'll never catch up.") and labelling ("I'm a total loser.")

Other techniques used to help patients evaluate their automatic thoughts include:

- behavioral experiments (where patients directly test thoughts or assumptions such as, "If I try to get more done, I'll just fail.")
- imagery work (using imagery techniques in response to spontaneous, negative images)
- coping cards (collaboratively composing statements, graphics, or pictures for patients to read during the week to remind themselves of important learnings from previous sessions)

After patients learn the skill of modifying their automatic thoughts, therapists start emphasizing their cognitions at the belief level. An intermediate level of belief contains attitudes, rules, and assumptions that may have been understood, but unexpressed, before therapy. Therapists often seek to understand patients' intermediate beliefs in assumption form. For example, Peter had a dysfunctional attitude, "It's terrible to make a mistake." His rule was, "I can't make mistakes." His assumption, which was more easily subject to a behavioral test was, "If I make a mistake, terrible things will happen."

Core beliefs are a deeper level cognition. They are rigid, overgeneralized, global, dysfunctional, and largely inaccurate understandings that people have of themselves, their worlds, and other people, such as "I am unlovable," "I am helpless," "Other people will hurt me," "The world is a hostile place."

Key dysfunctional beliefs can be identified in several ways. Sometimes patients (especially depressed patients) express their beliefs directly, as automatic thoughts ("I'm a complete failure.") Beliefs may be inferred by examining the consistent themes in automatic thoughts across situations. Cynthia, for example, had frequent thoughts such as, "Mary won't want to spend time with me," "No one will want to talk to me at the party," "My friends don't really know me very well," "If I try to get closer to Jane, she'll reject me," and "People don't seem to like me much." One of Cynthia's central beliefs, expressed indirectly in the thoughts above, was that she was unlovable.

A third way to uncover beliefs is to ask patients the *meaning* of their typical automatic thoughts: "If this automatic thought is true,…

- what does that mean?
- what's the worst part about it?
- what does it say about you as a person?

Many of the techniques used to help patients evaluate their automatic thoughts can be used to evaluate core beliefs as well. Before working on belief modification, however, therapists present an explanatory model to patients, so they can better understand why they are absolutely convinced of the validity of a belief, even though the belief may be inaccurate or largely inaccurate. An information processing model helps them understand how and why they easily assimilate data confirming their core belief but ignore or discount positive data that disconfirm their belief. Patients learn, with their therapists' help, to bring this kind of information processing under conscious control. Much of the therapy from this point on is directed toward helping patients develop alternative (more accurate and functional) perspectives of negatively perceived events and to become aware of, and process without discounting, positive data and events.

Other methods for the modification of core beliefs about the self are the use of extreme contrasts ("How much of a failure are you compared to [a specific person whom the patient sees as an extreme failure]?"), metaphors, and cognitive continua (which help patients see that their beliefs are at an extreme, instead of on a continuum). Therapists may help patients recall childhood events from which their core beliefs arose (or through which their beliefs became strengthened) and then evaluate the validity of those beliefs at that time and at the current time. This process allows patients to restructure the meaning of important childhood or adolescent experiences at an intellectual level. They may need experiential techniques to restructure the meaning at an "emotional" or "gut" level.

II. THEORETICAL BASIS

Beck originally based his cognitive treatment for depression on his cognitive theory of depression that has been largely supported in hundreds of subsequent studies. Cognitive theory posits that people tend to perceive and interpret situations in characteristic ways that color their feelings and shape their behavior. People often have spontaneous "automatic thoughts" about their past, current, or future situations. Because automatic thoughts are generally "silent," people are more apt to be aware of their subsequent emotions, behavior, or physiological reactions. Automatic thoughts are often fleeting, sometimes telegraphic in nature, and, when recognized, highly plausible to the individual—even when incorrect or dysfunctional. When people are in emotional distress, their thinking becomes more rigid, primitive, and distorted. They make characteristic errors, or cognitive distortions, and may begin to ruminate or obsess.

At a deeper level, when people are emotionally distressed, their maladaptive beliefs (their basic understandings of themselves, their worlds, and other people) become activated. These beliefs influence their perception and interpretation of their experience. Individuals may being to develop a preponderance of negative thinking.

Beliefs are ideas embedded in mental structures in the mind called "schemas." Relatively adaptive schemas may predominate when people are not distressed. When they develop a psychiatric disorder, however, their negative cognitive schemas, which may have been dormant or

latent, start to dominate and influence their thinking. A particular "mode" (composed of a network of interrelated cognitive, affective, motivational, and behavioral schemas) may become activated and profoundly affect individuals' thinking, motivation, mood, and behavior. The mode represents the constellations at the core of full-blown disorders such as depression or paranoia.

How do people develop negative beliefs? These basic rules, formulas, and concepts are influenced by genetic predisposition and develop in response to environmental events. A child who is verbally abused at school, for example, may start to believe that she is unlikable. If she has supportive parents, however, her belief may be tempered, and she may see herself as predominately likeable. If, in her twenties, though, she is rejected by a significant other, her latent belief of unlikability may become activated again, and she may be vulnerable to developing a depressive disorder.

Cognitive theory posits a diathesis-stress model to explain the occurrence of emotional disorders. Individuals may be relatively psychologically healthy until a congruent stressor activates their dysfunctional beliefs. These beliefs start to bias how they process information. People who have relatively strong autonomous personalities, for example, are usually adversely affected when their efficacy, freedom, or mobility is threatened or reduced. If they are not also high in sociotropy, however, they may be relatively less affected by interpersonal disruption or loss (and vice versa).

Joe, for example, was relatively well-adjusted until three stressors occurred. In the first semester of his senior year in high school, he began to have difficulty in one of his courses, he was dropped by his school's varsity basketball team, and he started a challenging and demanding after school and weekend job. He started to have negative thoughts about himself and his performance. "I must be stupid. I can't believe I did so badly on those math tests." "It's humiliating to be dropped from the team. I'm such a loser." "I don't understand what to do. This job is too hard. I can't do anything right."

Joe had an underlying specific vulnerability to situations in which his sense of efficacy was challenged, and he began to attend selectively to experiences that supported his view of himself as inadequate. He began to interpret more and more situations in light of this belief (his performance in other classes, his estimation of his general intellectual and athletic abilities, his standing among his peers). Feeling inadequate, he began missing classes, avoiding basketball practice, doing his homework superficially, skipping work, and spending a lot of time in bed, watching television. A recognition of these dysfunctional behaviors strengthened Joe's negative beliefs of inadequacy and failure that led to increasingly negative and dysfunctional thinking that led to a deteriorating mood and more dysfunctional behavior, in an escalating downward spiral.

Beck and colleagues have developed specific cognitive formulations for the major psychiatric disorders. Depression, for example, is characterized by negative thoughts about the self, experience, and future ("I'm worthless, the world presents too many obstacles, I'll always be a basket case."). Anxious patients' thoughts reflect overestimations of threat and underestimations of resources ("It's very likely terrible things will happen and I won't be able to cope."). Patients with panic disorder make catastrophic misinterpretations of physiological or mental sensations ("This unreal feeling in my head means I'm going crazy."). Obsessive-compulsive patients make misinterpretations of their negative thoughts and images ("My imagining that I will stab my friend with this knife means I'm out of control. I really might harm her."). Hypomanic patients have an inflated view of themselves and their future ("I am so powerful, I can do anything I want.").

Specific beliefs for each personality disorder have also been identified. Patients with dependent personality disorder, for example, believe they are weak and helpless and others are strong. Paranoid patients believe other people are potentially dangerous and that they could be harmed if they are not watchful. Avoidant patients believe they are defective and others will reject them.

These kinds of negative, global, rigid beliefs may have originated in childhood or adolescence in people with long-standing problems, and their beliefs may be more or less continuously activated. Typically, they develop certain guidelines or rules to help them cope with these painful ideas. Histrionic patients may believe, "If I am dramatic, people will pay attention to me and they will accept me." The corresponding negative belief, however, is "If people don't pay attention to me, it means I'm nothing." Obsessive-compulsive personality disorder patients believe, "If I control myself and others, setting up systems of order, then I'll be okay. But if I don't, my world will fall apart." Narcissistic patients hold the belief, "If people give me the respect and entitlements I want, it will show I'm superior. But if they don't, it means I'm inferior." Eating disorder patients believe, "If I control my eating, I'll be thin, and therefore acceptable. But if I don't, my eating will go out of control, I'll gain weight and be unacceptable to myself and others."

When individuals' beliefs are extreme, they display overdeveloped behavioral strategies (compensatory or coping) to protect themselves or compensate for their perceived deficiencies, and they tend to use these

strategies in an undiscriminatory manner, even when they are maladaptive. They fail to develop a broad range of strategies that would be more adaptive in many situations. Dependent patients, for example, inordinately rely on others, borderline patients reject others to avert being rejected themselves, substance abuse patients use drugs or alcohol to avoid intolerable emotion, hypochondriacal patients continually check their bodies for signs of disease or infirmity.

The relationships among an individual's developmental experiences, his or her core beliefs, assumptions, and compensatory strategies are illustrated in the top half of Figure 1. The bottom half shows how these underlying factors influence the individual's interpretation of and reaction to current situations. This conceptualizaton helps guide the therapist in modifying patients' dysfunctional thinking and behavior.

III. EFFICACY

Andrew Butler and Judith Beck conducted an analysis of fourteen meta-analyses of cognitive therapy outcome studies in 2000. They found substantial support for the efficacy of cognitive therapy in 325 studies, comprising 9,000 patients. Cognitive therapy was found to be somewhat superior to antidepressant medications in the treatment of adult unipolar depression. A significant finding was that depressed patients treated with cognitive therapy had half the *relapse* rate (30%) of those who had taken medication (60%). Cognitive therapy was found to be superior to supportive and nondirective therapies for adolescent depression and equally effective as behavior therapy for obsessive-compulsive disorder. Cognitive therapy was superior to a number of miscellaneous psychosocial treatments for sexual offenders. Cognitive therapy was also efficacious in the treatment of bulimia nervosa.

Other research studies have demonstrated the efficacy of cognitive therapy for generalized anxiety disorder, panic disorder, and hypochondriasis. It has also been shown to be effective for inpatient depression, posttraumatic stress disorder, substance abuse, phobias, social phobia, marital problems, and some personality disorders. Combined with pharmacotherapy, it is effective for the symptoms of bipolar disorder and even schizophrenia.

Recently, cognitive therapy has been used in medically related disorders, and there is substantial support for its efficacy in the treatment of chronic pain, chronic fatigue syndrome, migraine headaches, and non-cardiac chest pain, among others.

IV. SUMMARY

Cognitive therapy is a form of psychotherapy that has been empirically supported in over 325 outcome studies for a variety of psychiatric disorders, psychological problems, and medical conditions with psychological components. It is based on the cognitive model: that individuals' interpretations and perceptions of current situations, events, and problems influence how they react emotionally, behaviorally, and physiologically. Treatment varies according to the cognitive formulation of patients' disorders and therapists' cognitive conceptualizations of specific patients. Generally, cognitive therapy is short term, structured, collaborative, educative, and focused on working toward specific behavioral goals, solving current problems, alleviating symptoms, and providing relapse prevention strategies.

See Also the Following Articles

Behavior Therapy: Historical Perspective and Overview ■ Behavior Therapy: Theoretical Bases ■ Cognitive Appraisal Therapy ■ Cognitive Behavior Group Therapy ■ Cognitive Behavior Therapy ■ Eating Disorders

Further Reading

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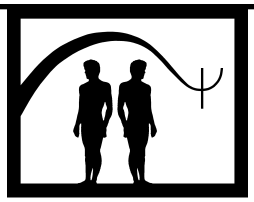

Behavioral Assessment

David C. S. Richard *Eastern Michigan University*

Stephen N. Haynes *University of Hawaii at Manoa*

I. Description of Behavioral Assessment
II. Theoretical Bases
III. Goals and Objectives of Behavioral Assessment
IV. Features of Behavioral Assessment
V. Methods of Behavioral Assessment
VI. Factors Affecting Inferences Made from Behavioral Assessment Data
VII. Clinical Case Formulation
VIII. Computers and Behavioral Assessment
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GLOSSARY

accuracy The correctness, precision, and exactness of psychological measurement.

antecedent event A stimulus or event that occurs prior to a response or subsequent event.

content validity The degree to which elements of an assessment instrument are representative of, and relevant to, the targeted construct for a specific assessment purpose. Applied to behavioral assessment, content validity refers to the degree to which a selected assessment method facilitates collection of data that are representative of behavior in the client's natural environment.

context (setting) A naturally occurring environmental unit having physical, behavioral, and temporal properties. The context may affect the response of an individual to presented stimuli, often through classical or operant conditioning.

dimension, of a behavior problem or causal variable A property of an event, or series of events, that can be quantified (e.g., frequency, duration, magnitude, cyclicity, or rate of an event).

facets The components that contribute to an overall whole, as in facets of a construct or variable.

functional analysis The identification of important, controllable, causal functional relations relevant to the expression of a target behavior for an individual. The term also is used to describe the experimental manipulation of hypothesized controlling variables as a means of determining functional relations.

functional analytic clinical case model (FACCM) A vector graphic representation of a clinical case formulation. Causal relationships between variables are expressed using unidirectional or bidirectional arrows. Clinical case models visually express (1) the importance of a target problem, (2) relationships among target problems, (3) relationships between target problems and their effects, (4) the modifiability of antecedent or causal variables, (5) the clinical utility or importance of antecedent or causal variables, (6) the role of unmodifiable causal variables (i.e., original causal variables), and (7) the role of moderating variables. Path coefficient calculations suggest which causal variables, if modified, would likely lead to the greatest amount of change in the client's presentation.

functional relation A relation between two events that may be expressed in the form of an equation. A functional relation does not imply a causal relation. Examples of a functional relation include the conditional probability that one event may occur given another event (e.g., permitting a child to play a video game after his or her homework is completed), covariation between two events (e.g., the correlation between increased heart rate and self-reported distress during an imaginal exposure trial), and the identification of

controlling variables for a behavior problem through experimental manipulation.

idiographic assessment An assessment strategy emphasizing the individual or individual case. Idiographic assessment procedures often are not standardized, and observed relations and results are not necessarily generalizable across persons or groups.

level of inference (specificity) The number of elements or components subsumed by the variable label. An example of a higher level construct is "depression" since the label subsumes multiple lower-level phenomena such as motoric slowness, sad affect, insomnia, eating disturbances, and other more specific variables.

nomothetic assessment An assessment strategy in which judgments are based on the comparison of measures from the target person with data on the same instrument gathered from other persons, such as the use of normative or comparison groups.

phase–space relationship The expected, or realized, time-course context of a variable. The phase state of a variable is its historical and projected curve at the time of measurement.

reactive effects The degree to which the behavior of an observed individual is modified by the assessment method.

response class A group of behaviors that are topographically dissimilar yet produce the same functional effect.

response contingency A conditional relationship between two variables such that the occurrence of one variable or event is dependent on the occurrence of the other variable or event.

response mode The form, type, or method of behavior. Response modes are organizational categories or a taxonomy of behavior. Response modes can include motor, verbal, cognitive, and physiological events (or a combination of these, such as emotion).

state of a variable The current level of the variable when measured. Unlike the phase of a variable, the state does not provide information on the variable's historical course.

stimulus class A set of topographically dissimilar stimuli that evoke either the same behavior or a set of behaviors that have similar functions.

target behavior A response, or response class, that has been selected by the clinician for measurement and modification.

treatment utility The degree to which data from one or more assessment instruments, or from a model of clinical case formulation, are associated with increased treatment effectiveness.

I. DESCRIPTION OF BEHAVIORAL ASSESSMENT

Within the broad scope of psychological assessment, behavioral assessment is distinguished by its emphasis on empirically supported, multimethod, and multi-informant assessment of precisely defined, observable behaviors. Consistent with respondent, operant, and social learning traditions, behavioral assessment emphasizes the measurement of contemporaneous causal variables and environmental response contingencies using empirically validated assessment instruments. Thus, behavioral assessment includes a family of methods and instruments that measure behavioral change through direct and indirect observation of clients' behavior problems and the variables that maintain those problems. While the variables that cause or maintain a client problem often reside in an individual's external environment, assessment of covert events (e.g., cognitions, physiological responses) have been incorporated within a behavioral assessment framework.

In pretreatment applications, data collected during behavioral assessment must be synthesized by the clinician and this synthesis, in the form of a behavioral clinical case formulation, often guides treatment selection. Clinical case formulations are a series of hypotheses that may be evaluated in light of an ongoing clinical information collection process. As such, behavioral assessment is an iterative process—it is an ongoing, hypothesis-testing approach to clinical assessment. Assessment methods and resulting clinical judgments may be adapted to new information that causes the clinician to reevaluate initial hypotheses of client functioning (see Fig. 1). Contemporary behavioral assessment emphasizes the dynamic and contingent relationship between assessment, clinical case formulation, hypothesis testing, and intervention.

II. THEORETICAL BASES

Behavioral assessment is an integral adjunct to behavior therapy and, like behavior therapy, evolved from basic behavioral research. Behavioral psychology has frequently been divided into two related models of learning: respondent conditioning and operant conditioning. Early work in respondent conditioning demonstrated that both humans and nonhumans learned new behavioral responses as a function of the association of extrinsic stimuli. Early in the twentieth century, Ivan Pavlov showed that dogs could learn new reflexive behavior after being presented with a series of paired stimulus associations. Shortly thereafter, John B. Watson and Rosalie Rayner showed that, in humans, emotional responding to a previously neutral stimulus could be acquired by pairing a neutral stimulus with a loud noise. Treatment methods based on respondent conditioning principles would later be refined by Mary Cover Jones, Joseph Wolpe, and others.

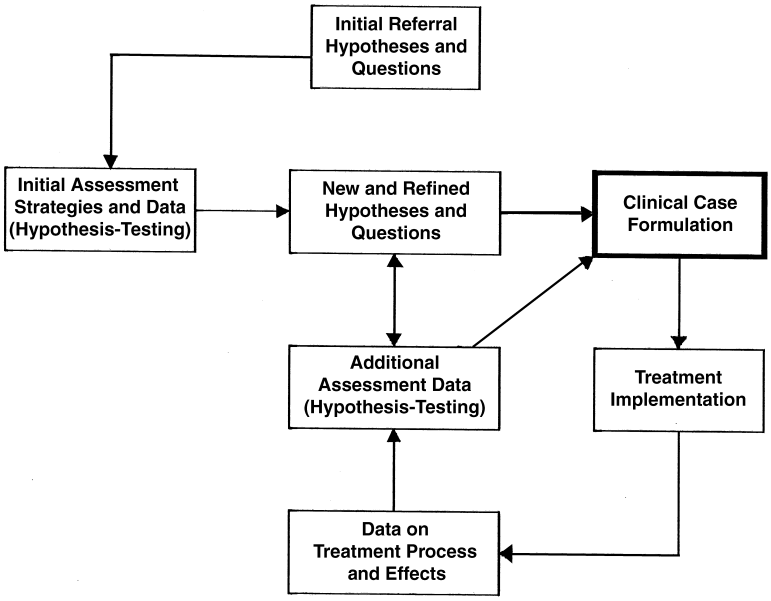

FIGURE 1 A dynamic model of behavioral assessment. Adapted from Haynes and O'Brien (2000), *Principles and practice of behavioral assessment.* New York: Kluwer Academic/Plenum Publishers.

The operant, or instrumental, model of learning is illustrated by the work of E. L. Thorndike and B. F. Skinner. Thorndike found that learning occurred when behavior was instrumental in, or had the effect of, achieving a reward (e.g., cats would learn a novel behavior if the effect of engaging in the behavior was instrumental in acquiring food). Thorndike called this principle "the Law of Effect." Skinner extended Thorndike's work by identifying the effects of specific types of consequences on behavior. According to Skinner, reinforcing consequences increased the rate of behavior while punishing consequences decreased the rate of behavior. Behavior that was not reinforced eventually was extinguished from the animal's repertoire and the rate of extinction depended on the organism's reinforcement schedule history.

Behavioral principles, initially studied in animal laboratories, formed the foundation of behavior therapy and have guided the development of behavioral assessment methods. Because antecedent events and response contingencies shape and affect an individual's behavioral repertoire, a goal of behavioral assessment is to identify those events and contingencies that maintain behavior. Antecedent events and response contingencies that maintain the rate of behavior are called controlling or maintaining variables. The identification of controlling variables and their relationship to the target behavior is called a functional analysis. Thus, an important goal of behavioral assessment is to identify variables that maintain a target behavior (i.e., the behavior to be modified) in a functional analysis.

For example, behavioral assessment with a Vietnam veteran diagnosed with posttraumatic stress disorder might identify certain conditional stimuli (e.g., the sound of a truck backfire, the whir of helicopter blades) as having a high probability of eliciting flashbacks and emotional responses because of their similarity to, or association with, aversive historical events. Operant responses may initially help the client cope with anxiety (e.g., drinking alcohol to induce intoxication and facilitate avoidance). Thus, a two-factor model of the patient's behavior incorporating both respondent and operant principles would form the basis of a functional analysis for the patient (see Mowrer's 1947 work).[1]

III. GOALS AND OBJECTIVES OF BEHAVIORAL ASSESSMENT

The primary objectives of behavioral assessment include identifying (1) target behavior problems (i.e., the problems that are to be modified) and establishing

[1] Whereas Mowrer emphasized a two-factor model of conditioning, contemporary behavioral models stress the importance of family functioning, biological determinants, cognition, cultural processes, and other factors when assessing functional relations.

TABLE 1
Goals of Behavioral Assessment

1. Supraordinate goal: Increase the validity of clinical judgments
2. Obtain informed consent from client
3. Select an appropriate assessment method (e.g., direct observation, indirect observation, psychophysiological measurement)
4. Determine if consultation and referral are appropriate (e.g., determine if medication consultation with a psychiatrist is appropriate when working with a child diagnosed with attention deficits)
5. Development of a clinical case formulation
   a. Identify behavior problems and their interrelations
   b. Identify causal variables and their interrelations
6. Design of intervention programs
   a. Identify client intervention goals and strengths
   b. Identify variables that may moderate intervention effects (e.g., occupational status, family support, other life stressors)
   c. Assess client knowledge of goals, problems, and interventions
   d. Evaluate any medical complications that could affect intervention process or outcomes
   e. Identify potential side effects of intervention
   f. Assess acceptability of intervention plan for client
   g. Assess time and financial constraints of therapist and patient
7. Intervention process evaluation
   a. Evaluate intervention adherence, cooperation, and satisfaction
   b. Evaluate client–therapist interaction and rapport
8. Intervention outcome evaluation (immediate, intermediate, and ultimate intervention goals)
9. Diagnosis (behavioral assessment strategies can be used to increase the validity of information on which diagnosis is made)
10. Predicting behavior (e.g., dangerousness and self-harm assessment)
11. Informed consent (i.e., inform clients and other relevant parties about the strategies, goals, and rationale of assessment)
12. Nonclinical goals
    a. Theory development (e.g., evaluating learning models for behavior problems)
    b. Assessment instrument development and evaluation
    c. Development and testing of causal models of behavior disorders

Note. Table adapted from Haynes & O'Brien (2000), Principles and practice of behavioral assessment. New York: Kluwer Academic/Plenum Publishers.

whether the problems involve behavioral excesses or deficits; (2) causal and moderating variables that influence target behavior dimensions; (3) immediate, intermediate, and ultimate intervention goals; and (4) any adaptive or appropriate alternative behaviors to the target behaviors. In addition, behavioral assessment data form the foundation for a functional analysis, suggest appropriate intervention strategies, can be used to evaluate ongoing intervention efforts, may identify therapy process variables that can affect treatment outcome, and can inform diagnostic decision making. Table 1 outlines the multifaceted goals of behavioral assessment.

The supraordinate goal of behavioral assessment is to increase the validity of clinical judgments to facilitate clear formulation and treatment selection. Ultimately, the formulation should have treatment utility. Treatment utility is the degree to which data from one or more assessment instruments, or from a model of clinical case formulation, are associated with increased treatment effectiveness.

The selection, evaluation, and refinement of treatment goals and strategies can be among the most complex and vexing tasks that clinicians face. Haynes, Leisen, and Blaine in 1997 reviewed 20 studies that examined the relationship between components of a functional analysis and treatment outcome. They found that the studies were moderately supportive of the treatment utility of a functional analysis but that methodological limitations limited the inferences that could be drawn from the studies. At the very least, it is reasonable to assume that interventions are more likely to be effective if there is a close relationship between the causal variables identified in the preintervention assessment and those variables targeted for modification during the intervention.

Although an accurate functional analysis is a goal of behavioral assessment, factors other than the functional analysis can influence client responsiveness to treatment. Examples of other factors that can affect treatment outcome include the quality of treatment delivery, cooperation of persons in the client's environment, the client's cognitive and physical limitations, cultural and ethnicity factors, the developmental level of the client, and therapist–client rapport. Because so many factors may affect treatment outcome, isolating the putative effects of a functional analysis on treatment outcome is difficult.

Information collection can only occur in the context of a fully informed client who understands the rationale and strategies of the assessment. The goals of assessment and treatment should be carefully discussed with the client when possible and should reflect a cooperative approach. In addition, the clinician should discuss with the client hypotheses of functional relations operating in the client's life.

IV. FEATURES OF BEHAVIORAL ASSESSMENT

A. Assessment Strategies

Behavioral assessment emphasizes repeated measurement, quantification, multimethod and multimodal assessment, and assessment of behavior as it occurs naturally. Although assessment of behavior on just one occasion may provide an estimate of its current state, it does not provide information regarding changes in behavioral patterns over time, or the phase of the behavior. For example, how a therapist interprets a Beck Depression Inventory (BDI) score of 25, which suggests clinical levels of depression, depends significantly on the previous week's BDI score and the pattern of BDI scores over previous sessions. If a score of 25 represents a 10-point drop from the client's last BDI results, the clinician might infer that the depression may be less severe today than it was a week ago. However, a 10-point change in the opposite direction would be interpreted quite differently.

Interrupted time series designs are sometimes used in behavioral assessment to assess state–phase relationships. These strategies emphasize repeated measurement of behaviors, assessment of at least one causal variable across time, and systematic manipulation of hypothesized causal variables. They are powerful designs for measuring both the state and the phase of a behavior and assessing cause–effect relationships between a behavior and its hypothesized maintaining variables.

The behavioral assessment paradigm also emphasizes data quantification—the assignment of numbers to variables targeted in an assessment. For example, assessors may obtain measures of a client's self-reported level of anxiety in group social situations using a subjective units of distress scale. Measures might also include the frequency with which one marital partner compliments another during a problem-oriented discussion, the proportion of times a child's self-injurious behavior is followed by attention from a teacher, or blood pressure readings obtained during exposure to laboratory stressors. Although qualitative information and judgments are always part of a behavioral clinical case formulation, quantified data are very useful in time series assessment, can help identify functional relations, and facilitate the evaluation of treatment effects. Quantified data can also be presented in graphical form to facilitate inferences regarding behavior change.

In order to minimize error and make informed hypotheses about client functioning, behavioral assessment emphasizes repeated measurement across multiple assessment instruments, informants, contexts, settings, and response modes (e.g., behavioral, physiological, cognitive). The rationales for these strategies are (1) clients often behave differently across situations as a function of contingencies and contexts associated with each situation; (2) multiple measures across time help capture the dynamic nature of behavior and functional relations; and (3) informants differ in their source of information about a client and data from each informant may include unique sources of measurement error. Overall, these assessment strategies help reduce the effect of measurement error from any single information source.

The emphasis on multimodal assessment recognizes that different response modes (e.g., behavioral, physiological, cognitive) may demonstrate different time courses, may vary in their responsiveness to hypothesized causal variables, and may differ in their response to a therapeutic intervention. For example, combat veterans treated with exposure techniques (e.g., imaginal exposure, systematic desensitization) for posttraumatic stress disorder often report reduced nightmares and intrusive thoughts; however, little or no change may occur in other modes of responding. Thus, changes in one mode may not necessarily be accompanied by commensurate changes in another mode if the modes are controlled or maintained by different variables.

The emphasis on environmental variables means that behavioral assessment emphasizes a social-systems view of behavior problems—client behavior problems can best be understood by taking into consideration medical, family, work, cultural, religious, and other social systems. For example, a case formulation of a child with aggressive behavior problems may need to take into account contextual cues that evoke hitting and other aversive behaviors. However, a comprehensive case formulation might also include consideration of the quality of parenting practices or whether the educational setting is structured in a way that positively facilitates a teacher's ability to manage the child's aggressive behaviors. A successful intervention to reduce the aggressive behaviors of such a child might involve family therapy and intervention within the structure of the classroom in addition to traditional behavior management strategies.

B. Behavior Problems, Levels of Analysis, and Behavioral Dimensions

Often, the initial task of the behavioral assessor is to identify and specify the client's behavior problems, most often on the basis of client self-report or the report of a

referral source (e.g., a teacher, counselor). To guide initial intervention foci, behavior problems are ordered in terms of importance. In many cases, consultation with the client will facilitate selection of the most important target behaviors. However, when the client is not able to provide meaningful information about the relative importance of behavior problems (e.g., clients with cognitive limitations), behaviors that are dangerous to the client or to others are often selected as the first intervention target.

The level of specificity of a behavior problem refers to the number of elements or component behaviors that are subsumed by the variable label. Behavior problems characterized by low specificity are molar in their construction and subsume one or more behavioral facets. For example, the diagnostic construct major depression is a molar level construct that includes several observable, and more specific, behavior facets such as changes in eating and sleep patterns and low rates of pleasurable activities. Behavior problems with greater specificity have fewer clinically important facets, require less inference for observation, and often are more amenable to behavioral assessment methods and measurement.

Measurement of behavior implies measurement of one or more dimensions of behavior. A behavioral dimension is a property of an event, or series of events, that can be quantified. The dimension most often modified in a behavioral treatment program is rate, or the frequency of behavior per unit of time. For example, although the ultimate goal of an overweight client might be to lose weight, the immediate goal may be to decrease daily high caloric snacking and increase the frequency of daily exercise. Treating a child with autism often means decreasing the rate of self-injurious behaviors while increasing development and frequency of self-help skills. Behavioral marital therapy might include decreasing the rate of negative or sarcastic remarks while increasing the rate of proactive verbal communication and problem-solving.

Other dimensions often measured in behavioral assessment include (1) the magnitude or intensity of the behavior (e.g., decreasing the intensity of a fear or anxiety response); (2) the duration of the behavior (e.g., decreasing perseveration on a task, increasing time studying, increasing time in the presence of a feared stimulus); (3) the latency of behavioral responses (e.g., decreasing response time to a stimulus); (4) interresponse time (e.g., the time between two instances of a response; for example, the time between two instances of a child's disruptive behavior in a classroom); and (5) qualitative aspects including the physical features of the behavior or its topography (e.g., the types of errors a child with a stuttering problem makes) and acceptability (e.g., whether the behavior is appropriate in a given social context, whether the behavior is compatible with societal expectations or laws, or the client's own moral standards). An important task of the behavioral assessor is to identify which of the above response dimensions is the most appropriate dimension to modify and to design an assessment plan that facilitates accurate measurement of that dimension.

Finally, responses must be recorded in some way using a reliable and accurate data coding system. The most common recording systems include paper-and-pencil forms, electromechanical devices, audio and video recording, and computerized data entry. Data collected during self-monitoring is often recorded in a journal or self-monitoring diary. Psychophysiological data are frequently recorded using a polygraph machine. Even with highly standardized assessment methods, reliability and accuracy of recording should not be assumed. Reliable and accurate measurement of behavior is as much dependent on the definition and level of specificity of the variable being measured as it is on the methods by which the behavior is recorded.

V. METHODS OF BEHAVIORAL ASSESSMENT

A distinctive feature of the behavioral assessment paradigm is the variety of assessment methods available to the behavioral assessor. Table 2 provides a listing of common behavioral assessment methods. We now introduce each behavioral assessment method, discuss examples of the behavioral assessment method drawn from the empirical literature, and review factors that affect the validity of inferences that are derived from each behavioral assessment method.

A. Behavioral Observation

1. Naturalistic Behavioral Observation

Naturalistic behavioral observation is a behavioral assessment method in which an individual is observed in his or her natural environment (e.g., home, school, work), usually in a context that is most associated with a problem behavior. Typically, observations are made on a predetermined schedule by one or more observers. A time sampling interval is determined *a priori* (e.g., 20-second periods, 5-minute periods) and the observer records the occurrences of the target behavior and/or other relevant events during the interval. Multiple observers are often used and percentage agreement or

TABLE 2
Behavioral Assessment Methods

Method	*Types and descriptions*	*Instruments and measurement devices*
Behavioral observation	Naturalistic behavioral observation involves measurement of overt behavior in the individual's natural environment. *Example:* Observe a child's behavior in a classroom or at home.	Child Behavior Checklist Direct Observation Form; Revised Edition of the School Observation Coding System; Marital Interaction Coding System.
	Analogue behavioral observation involves the measurement of a client's overt behavior in a contrived situation that is analogous to situations the client is likely to encounter in his or her environment. *Example:* Code marital interactions during a marital therapy session.	
Behavioral rating scales	Completed by individuals who are either familiar with a client's behavior or have the opportunity to directly observe a client's behavior. *Example:* Have a parent and teacher complete a child behavior checklist.	Child Behavior Checklist; Motivation Assessment Scale.
Self-monitoring	Systematic self-observation and recording of parameters (e.g., frequency, intensity) of targeted behaviors, environmental events, cognitions, and/or mood states. *Example:* Have a client diagnosed with anorexia nervosa complete an eating diary after each meal.	Self-monitoring forms are usually individually tailored to an individual's target behavior problem(s).
Psychophysiological assessment	Measurement of physiological and motoric components of behavior problems using a variety of measurement devices, especially electromyographic, EEG, cardiovascular, and electrodermal measures. *Example:* Record heart rate, galvanic skin response, and blood pressure of trauma survivor while the client listens to a script recounting the traumatic event.	Polygraphs, heart rate monitors, amplifiers are available through several commercial companies.
Self-report	Behavioral Interview: A structured or semistructured interview that assesses dimensions of a client's behavior, behavior–environment interactions, behavioral contexts, and the functional relation of the behavior(s) with other controlling variables. *Example:* Interview inmates in a residential drug treatment facility using the Drug Lifestyle Screening Interview (see Walters, 1994).	Functional Analysis Interview Form; Drug Lifestyle Screening Interview; Alcohol Use Inventory
	Behavioral Questionnaire: A measurement instrument completed by the client, or individuals that know the client well, that assesses (1) behavioral dimensions and (2) functional relations of behaviors with cognitions, emotional states, and other controlling variables. *Example:* Have a client complete the State and Trait Food Cravings Questionnaire to identify conditions under which food cravings occur and the cues that elicit cravings.	Motivation Assessment Scale; State and Trait Food Cravings Questionnaire

other statistics are calculated (e.g., kappa) to ensure reliable data recording.

Naturalistic behavioral observation has been used as an assessment method to assess a wide array of behaviors. For example, Gulley and Northrup in 1997 observed two children diagnosed with attention deficit–hyperactivity disorder (ADHD) in their classrooms and systematically varied each child's daily dose of methylphenidate (MPH). By observing multiple, operationally specific behaviors over time (e.g., social behavior, disruptive behavior,

efficiency at solving math problems, responses to comprehension problems), they were able to show the dosage level of MPH that was associated with the greatest improvement across behaviors. Teacher ratings corresponded with the academic, behavioral, and social measures for one participant, but not the other, suggesting that teacher ratings were not necessarily sensitive to changes in behavior as a function of medication dose.

Data collected using naturalistic behavioral observation can be affected by both participant-related and observer-related error variance. On the participant side, reactivity to the assessment method can change the rate of a participant's behavior and make it less likely that observed behavior reflects behavior as it naturally occurs in the environment. Reactivity effects are discussed in more detail at the end of this section.

Observer-related error variance can affect the accuracy of observations in a potentially endless number of ways. For example, the degree of observer training can affect observer reliability and accuracy. Cumbersome recording forms or poorly operationalized behaviors can lead to unreliable coding. Raters can "drift" in their ratings if their understanding or application of coding rules decays over time. Other observer-related factors include observer attentional lapses during recording intervals, contamination of data if an observer is aware of another observer's recordings, errors in time-sampling parameters (e.g., frequency and duration of the time-sampling parameters are incongruent with the dimensions of the observed behavior), behavioral sampling errors (e.g., an important behavior is not included in the behavioral coding system), and observer knowledge of patient status. Frequent accuracy checks of observer ratings should be made by an independent auditor to ensure that observer agreement indices do not fall below an acceptable level (e.g., .80). If the accuracy of an observer's ratings is below the criterion, retraining should be initiated.

The validity of inferences drawn from naturalistic observation also depends on the choice of observation setting. As a general rule, observation should occur in situations where the problem behavior is most likely to occur. Because the dimensions of behavior often vary across situations and contexts, selecting the most relevant naturalistic setting for observation is an important decision.

How the data are aggregated and displayed can have a significant bearing on the validity of inferences as well. Naturalistic behavioral observation data may provide useful information when data are aggregated across many minutes but not in shorter intervals, and vice versa. In addition, how the data are interpreted affects the validity of inferences that are made. A common interpretive strategy for observational data is to graph data and intuitively interpret the results. O'Brien in 1995 showed, however, that individuals using intuitive estimation methods often underestimate the magnitude of highly correlated variables and overestimate the magnitude of weakly correlated variables.

2. Analogue Behavioral Observation

Analogue behavioral observation is a behavioral assessment method in which a clinician observes a client's behavior in a contrived environment (e.g., a waiting room, play room, clinical setting) to assess variables hypothesized to influence behavior. Although analogue assessment is a direct measure of behavior, the target behavior is observed outside of the individual's natural environment. A special section of the journal *Psychological Assessment* (Vol. 13, No. 1) is devoted to a discussion of analogue behavior observation.

There are several classes of analogue behavioral assessment. Each class includes many different instruments for measuring behavior. A role-play is an analogue behavioral assessment class in which a client performs one or more behaviors in a contrived social situation. An experimental functional analysis is a structured observation session in which clients are observed while variables hypothesized to control or maintain a target behavior are systematically introduced and withdrawn. Family and marital interaction tasks is a class of analogue behavioral assessment in which members of a familial unit interact with one another on a task specified by the assessor that is relevant to the family or couple. Behavioral avoidance tests are often used to assess a person's response to a feared stimulus by measuring proximity to the stimulus (e.g., how close, in feet, a person with a snake phobia can come to a snake in a glass cage) or other approach behavior.

Other analogue behavioral observation techniques include enactment analogues, in which the individual is observed performing a newly acquired skill; contrived situation tests, in which a novel situation is presented to an individual to determine whether the individual can apply newly learned skills; think-aloud procedures, in which a person reports his or her thoughts during performance of a behavior; and response generation tasks, in which an individual engages in, or generates, one or more response options to a stimulus event. Variants of analogue behavioral observation have been used to assess a wide array of behavioral problems and phenomena. Hundreds of studies have employed the technique to assess marital interactions, child behavior

problems, adult social functioning, and countless other behavioral disorders.

The utility of the analogue observation in helping the clinician generate hypotheses about functional relations depends on the degree to which the analogue context includes the elements that affect the behavior problem in the natural environment. For example, McGlynn and Rose in 1998 observed that anxious patients usually fear stimulus classes, rather than a single stimulus, and that one analogue session would be unlikely to include the myriad of feared stimuli present in the client's natural environment. Analogue behavioral observation is most likely to be a cost-effective alternative to naturalistic behavioral observation when the targeted behavior(s) occurs with high frequency in the analogue situation and is not reliably or accurately measured using other less costly assessment methods (e.g., questionnaires, rating scales).

Analogue observation sessions are more likely to provide important information regarding functional relations than behavioral rates. For example, couples may exhibit a higher frequency of negative comments toward one another during an initial assessment interview than they would at home where they could more easily avoid their spouse or partner. Alternatively, behaviors that occur only in private contexts may not occur at all in an analogue situation (e.g., battering, verbal threats). Researchers have long noted that partial-interval recording in analogue settings underestimates high rate responding, does not produce valid estimates of behaviors of short durations, and can misrepresent temporal relationships between behaviors and events.

The novelty of the assessment environment may make it more likely that irrelevant behaviors, rather than the target behavior, are observed. For example, a child who is defiant toward his parents may be stimulated by unfamiliar objects and toys in an observation room and may not interact with a parent as a result. Nonetheless, role-play activities may still permit observation of related variables and their dimensions (e.g., tone of voice, eye contact, frequency of reflective statements made by each partner).

All forms of analogue behavioral assessment require a coding or rating system in which the assessor quantifies a dimension of behavior. For example, Heyman and Vivian in 1993 developed the Rapid Marital Interaction Coding System (RMICS) to facilitate analogue observation of marital communication styles. In 2001 Heyman and colleagues found that observation periods as brief as 15 minutes were sufficient to obtain stable estimates of most RMICS codes in maritally distressed couples. However, in happily married couples, some variables and behaviors (e.g., dysphoric affect, withdrawal) were observed too infrequently to be reliably coded in brief laboratory interactions.

Analogue behavioral assessment methods and their respective coding systems have generally not been subjected to the type of psychometric rigor common for other psychometric instruments. For example, reports of analogue assessment methods often do not include information about (1) the goals of the analogue assessment, (2) the specific behaviors, functional relations, constructs, and facets to be measured, (3) the response modes and dimensions to be measured, (4) the methods of data collection, (5) how the specific scenarios, situations, and instructions might affect client behavior, or (6) a discussion about how dimensions of individual differences (e.g., sex, religion, age, ethnicity, sexual orientation) might influence responses. One of the major difficulties in evaluating the usefulness of analogue assessment, especially in the assessment of child behavior problems, is the lack of standardization demonstrated by most available measures.

Closely related to standardization is the issue of reliability, or consistency of measurement. The reliability of analogue behavioral observation coding systems is generally not well studied. For example, one researcher concluded that only 20% of published marital communication studies included reliability information for the constructs that were studied. Another researcher concluded that no test-retest reliability data are available for parent-directed-play coding systems or free-play behavior coding systems.

Additionally, the external validity of most analogue assessment measures has not been well investigated. External validity, in the analogue context, is the degree to which behavior observed in the analogue setting is representative of the client's behavior in his or her natural environment. Norton and Hope in 2001 concluded that the evidence concerning the external validity of role-play methods is "equivocal" and data on the external validity of other analogue assessment classes are either insufficient or absent.

B. Behavioral Rating Scales and Behavioral Checklists

A behavioral rating scale is an assessment instrument completed by a clinician or a third party (e.g., significant other, teacher, parent, peer) that includes items that assess one or more targeted client behaviors. A behavioral checklist is similar to a behavioral rating scale but often includes fewer items and may include dichotomously scored response options. Many behavior

rating scales and behavioral checklists have been standardized using a normative sample of individuals and aggregate raw data into standardized scale scores or global scores.

Behavioral rating scales are frequently divided into two classifications: narrow band behavior rating scales and broad band behavior rating scales. Narrow band behavior rating scales include items that sample from a small number of domains and are not intended to be global measures of an individual's behavior. Broad band behavior rating scales usually include more items, sample from a wider spectrum of behaviors, and are often used to screen for more than one disorder or behavioral syndrome.

For example, behavioral checklists and behavioral rating scales are the most popular methods of gathering information in assessing ADHD. Narrow band measures include the 55-item Social Skills Rating System, which divides item content into three narrow domains: problem behaviors, social skills, and academic competence. Another narrow band instrument is the Disruptive Behavior Rating Scale (DRS). The DRS includes item content covering oppositional defiant disorder, ADHD, and conduct disorder. Broad band behavioral rating scales include the Child Behavior Checklist (CBCL) and the Conners Parent and Teacher Rating Scales. Both the CBCL and the Conners Scales provide several scale scores and include versions for parents, teachers, and youths to complete. The popularity of these behavioral assessment methods can be attributed to their cost-efficiency, ability to quantify the opinions of important persons in a client's life, and their ease of administration. In addition, the most widely used instruments (e.g., the CBCL) rest on an extensive foundation of empirical literature that testifies to their reliability and validity.

Although behavioral rating scales and behavioral questionnaires are popular, it should be emphasized that they are indirect measures of behavior. As indirect measures, data collected using behavioral rating scales and behavioral checklists reflect a rater's retrospective impression of a client's behavior rather than an objective recording of the rate at which behavior occurs, as with naturalistic behavioral observation methods. Consequently, all behavioral rating scales and behavioral checklists are subject to rater bias regardless of the rigor with which the instrument is designed. Although indirect observation of behavior can be useful in behavioral assessment, its limitations need to be understood by the behavioral assessor.

In addition to being indirect measures of behavior, behavior rating scales and behavioral checklists rarely provide information pertaining to the functional relations of variables. Most behavior rating scales and behavioral checklists include items that measure topographical behavioral dimensions rather than functional relations. To some degree, the contextual variability of behavior can be addressed by having multiple informants complete the instrument provided each informant observes the client in different contexts (e.g., having a parent and a teacher complete the same rating scale). A thorough functional assessment, however, requires greater attention be paid to other variables that may be maintaining the behavior (e.g., the type of reinforcement received for an oppositional behavior; whether the problem behavior results in avoidance of an aversive event or situation).

C. Psychophysiological Assessment

Psychophysiological assessment involves recording and quantifying various physiological responses in controlled conditions using electromechanical equipment (e.g., electromyography, electroencephalography, electrodermal activity, respiratory activity, electrocardiography). Which response or response system is measured depends on the purpose of the assessment. Psychophysiological measurement has been used to assess autonomic balance (e.g., heart rate, diastolic blood pressure, salivation), habituation to environmental stimuli, reactivity to traumatic imagery, orientation response, and other physiological systems.

Frequently, the behavioral assessor is not so much interested in the behavior measured by the equipment as what may be inferred from the behavior. For example, a large literature exists with regard to the psychophysiological measurement of responses to anxiety-eliciting stimuli. Keane and co-workers in 1998 showed that male military veterans with posttraumatic stress disorder (PTSD) exhibited greater changes in psychophysiological responding (i.e., increased heart rate, skin conductance, systolic and diastolic blood pressure) when presented a series of trauma-related cues than did veterans without PTSD. Other studies have found increased physiological responsivity in females with PTSD and increased heart rate responses to startling tones in individuals with PTSD.

Selection of the eliciting stimulus, or stimuli, and the response modes to monitor during a psychophysiological assessment are important considerations, especially when investigating responses to trauma-related cues.

For example, research has consistently shown that individuals are more physiologically reactive to scripts detailing their own personal experiences than to standardized scripts detailing either neutral scenes or traumatic situations. Synchronous responding to stimuli across physiological modes has not, however, been generally observed. For example, Blanchard, Hickling, Taylor, Loos, and Gerardi in 1994 found that heart rate and electrodermal activity, but not systolic or diastolic blood pressure, were responsive to audiotaped scripts describing a motor vehicle accident the participant survived.

All of these studies demonstrate how psychophysiological assessment can be used to identify behavioral differences in individuals, provide criterion-related validity for psychiatric diagnoses, and can be used as a clinical marker of client change since clinical improvement has been associated with changes in physiological indices. However, psychophysiological assessment is often cumbersome, expensive, and, depending on the client and his or her problems, may not provide information that sheds light on the functional relations of variables operating in a client's life. In addition, psychophysiological information does not inherently possess greater validity or is more objective than other behavioral assessment methods. Data from a psychophysiological assessment require interpretation in the context of convergent evidence from other assessment methods (e.g., a behavioral interview, analogue behavioral observation) in order for the information to be clinically meaningful.

D. Self-Monitoring

Sometimes neither naturalistic nor analogue behavioral observation methods are feasible. For example, a behavior may occur only in private (e.g., vomiting in a client diagnosed with bulimia nervosa), may not be directly observable (e.g., negative self-statements), may occur in contexts that cannot be easily observed in the natural environment (e.g., problematic interactions with a work superior), or may not be easily replicable in an analogue assessment context (e.g., group social gatherings). In these situations, clients may be asked to self-monitor their own behavior. Self-monitoring refers to any assessment method in which clients record observations of their own behavior to a recording form. While most self-monitoring studies have reported methodologies in which the client records data on a predetermined schedule (e.g., hourly, daily, when an event occurs), recent research has explored the use of electronic pagers, wrist terminals, ambulatory measurement devices, and handheld computers to signal, and sometimes record, client behavior.

Most self-monitoring recording instruments are designed to maximize the chance of observing a functional relation between a behavior and an extrinsic variable. A common self-monitoring record is an A-B-C log. An A-B-C log is a serial record of the antecedent events (A) that occur prior to the behavior (B) and the consequences (C) or events that follow the behavior. A-B-C logs are useful in identifying environmental events that are functionally related with a problem behavior. Variants of the A-B-C log are the basis of most self-monitoring recording forms. For example, daily food records have been used by researchers studying clients diagnosed with bulimia nervosa. Daily food records typically provide space for the client to record the time of a meal, the food and liquid that was consumed, where the food was eaten, the type of eating event (e.g., meal, snack, binge, purge), and the circumstances surrounding the food intake. Some researchers have used a daily obsessional thought record to assess obsessions, mood, and other cognitive variables. Other recording formats include paper-and-pencil diaries and computerized diaries.

The accuracy of self-monitoring data can be affected by several factors. For example, one difficulty in having HIV-positive males self-monitor sexual behavior is that the activity of self-monitoring may affect rates of sexual behavior (i.e., reactivity to the assessment method). In addition, clients who are unlikely to comply with self-monitoring instructional sets should be assessed by other means. Eating disorders researchers have pointed out that clients with anorexia pose significant challenges for a self-monitoring assessment methodology. Clients with anorexia may distort their reports of caloric intake in order to mislead therapists and avoid negative consequences from family and friends. Thus, the validity of self-monitoring data may be affected by the type of eating disorder and the context of the monitoring. Clients who restrict their intake, and are keeping food diaries for themselves, are likely to be accurate in their recording. However, if the recording is in a treatment context, accurate recordings are less likely to occur because of the constellation of influences that could affect the client's report. Other variables that are known to affect the accuracy of self-monitoring data include the number of behaviors to be monitored, social desirability, demand characteristics, the length of the recording period, the client's awareness of accuracy

checks, availability heuristics, the client's emotional state when making a recording, and degree to which the client was trained in self-monitoring.

The wisdom of using self-monitoring techniques with children has also been questioned. Shapiro and Cole in 1999 concluded that children can be reliable monitors of their own behavior but that the technique frequently leads to reactive effects that can change the rate of behavior. Peterson and Tremblay in 1999 concluded that self-monitoring in children is likely to be inaccurate if the behavior is contrary to medical advice, when a behavior is supposed to occur but the child deliberately fails to perform it, when the behavior is socially inappropriate or embarrassing, when the child is not motivated to self-monitor behavior, or when the child may have difficulty monitoring the behavior (e.g., thumbsucking).

Several strategies may enhance both the accuracy of collected data and the probability of client compliance. For example, researchers recommend scheduling accuracy checks, selecting target behaviors that are not difficult to code and record (e.g., self-monitored motoric responses as opposed to verbal responses), training participants in self-monitoring, contracting with individuals, providing reinforcement contingent on accurate recording, providing a recording device that is unobtrusive, limiting the number of behaviors to be monitored, and selecting behaviors that have a positive rather than negative emotional valence.

E. Self-Report Instruments

1. Behavioral Interviews

A behavioral interview is a set of structured or semi-structured queries designed to elicit responses regarding (1) one or more overt target behaviors, (2) behavior–environment interactions, (3) the most relevant behavioral dimensions, and (4) relations of the behavior(s) with hypothesized maintaining variables. Behavioral interviews differ from traditional clinical interviews in that they are structured, focus on overt behavior and behavior–environment interactions, are sensitive to situational sources of behavioral variance, focus on current rather than historical behaviors and determinants, and define behavior at a molecular rather than molar level.

Behavioral interviews are sometimes cumbersome and time consuming to administer. However, the recent development of behaviorally oriented computerized assessment applications has made efficient collection of behaviorally relevant data less problematic. For example, Albert Farrell has developed a computer program that helps both clinicians and clients assess client behavior problems and monitor treatment progress. Farrell's program has become a seamless part of the assessment procedures of a university clinic.

2. Behavioral Questionnaires

A behavioral questionnaire is a series of questions, often in Likert-type format, that include item content designed to assess the functional relations of extrinsic variables with a target behavior. In contrast to traditional clinical questionnaires, behavioral questionnaires usually include questions that assess antecedent events, the effects of the behavior problem, and acquire data on one or more behavioral dimensions. For example, Cepeda-Bineto, Gleaves, Williams, and Erath in 2000 designed a food cravings questionnaire with items that assess cues that trigger food cravings, positive reinforcement that comes from eating, relief from negative states as a result of eating, physiological states associated with hunger, and emotions surrounding food cravings and eating.

3. Issues in the Use of Self-Report Instruments

Behavioral assessors have historically been somewhat skeptical of the inferences made from self-report data. Objections include the role that client biases, memory errors, and other factors might play in degrading the accuracy of self-reports. However, some behavioral problems are difficult to observe directly and the client's self-report may be the only source of information concerning the dimensions of the target behavior. For example, Sobell, Toneatto, and Sobell in 1994 concluded that self-reports are a valuable, cost-efficient, and reasonable source of information when assessing patients with substance abuse problems. However, they issued the caveat that inaccurate self-reports are most likely to occur when (1) individuals may violate social conventions or the law by admitting to engaging in a behavior or (2) individuals are unable to provide accurate self-reports (e.g., a demented patient, a very young child).

Although behavioral questionnaires may be inexpensive to administer, have face validity for patients, and are easily scored, behavior therapists should be cautious when making inferences from instruments that are not developed from a behavioral framework. Traditional clinical questionnaires often yield global or aggregate scores that are insensitive to the conditional nature of behavior, the functional relation of behavior to antecedent events and consequences, and the variability of behavior across situations and contexts. In addition, variables are often defined at a molar level that is not

sensitive to variability of component behavioral facets. Many individuals exhibit discordance across response modes (i.e., behavioral, physiological, cognitive) while most self-report questionnaires produce scale or global scores that imply uniform responding.

Inferences drawn from questionnaire data are also attenuated by the fact that self-report and observer ratings often only modestly agree. For example, some researchers have reported significant mean differences between self- and peer-reported interpersonal problems. In one study reported in 1999, Handwerk, Larzelere, Soper, and Friman had parents of 238 troubled children complete the CBCL and the children complete the Youth Self-Report (YSR), the self-report version of the CBCL. They found that parental ratings of the frequency and intensity of their child's problem behaviors were over a standard deviation higher than the self-reports made by the children. The discrepancies were apparent across all scales, and in the same direction (i.e., parents > children) regardless of age, sex, site, and parent informant. These results suggest a lack of agreement of parent and child's appraisals of the child's behavior. Another implication is that the estimated severity of a child's behavior will depend on whether a clinician places more weight on a child's self-report or a parent's rating of the child's behavior. The assumption that responses to a questionnaire or behavioral interview accurately reflect dimensions of client behavior is generally not warranted. Inferences based on questionnaire and interview results should be cross-checked against data collected via other methods.

VI. FACTORS AFFECTING INFERENCES MADE FROM BEHAVIORAL ASSESSMENT DATA

All behavioral assessment methods include variance that is attributable to the behavior being measured and variance that is due to measurement error. The validity of clinical inferences can be affected by the content validity of an instrument, reactivity of individuals to the assessment process, and the degree of accuracy in measurement.

A. Content Validity

Content validity refers to the degree to which elements of an assessment instrument are relevant to and representative of the targeted construct. With regard to behavioral assessment, content validity refers to whether the methods and instruments chosen for conducting the assessment capture all important aspects of client functioning. For example, in assessing a client complaining of depression, the inferences derived from the assessment would be limited to the degree that the assessor failed to assess the component facets of depression and the various modes of responding. A strategy that focused solely on identifying cognitions surrounding depressive symptoms might not identify important behavioral patterns (e.g., lack of activity) that contribute to the client's low mood. Thus, assessment strategies that incorporate multiple methods of information gathering across multiple modes of responding are likely to minimize error variance associated with any one assessment method.

B. Reactivity

Reactivity refers to changes in behavior that occur in a person who is being observed as a function of the assessment process. Reactivity effects can occur in all behavioral assessment methods and can lead to behavioral increases or decreases depending on the behavior that is being observed. Reactivity effects are often associated with the duration of observation, the amount of change in the environment associated with the observation, the identity of the observers, the amount of instructions provided subjects, the goals of assessment, and the methods of data reporting. Korotitsch and Nelson-Gray in 1999 suggested that variables affecting self-monitoring reactivity include the valence of the target behavior (desirable behaviors tend to increase in frequency), motivation for change, the topography of the target, the schedule of recording, concurrent response requirements, the timing of recording, goal-setting feedback and reinforcement, and the nature of the recording device. Reactivity may be mitigated or eliminated by allowing participants to habituate to the changes introduced to their environment because of the assessment procedure. For example, if a video recorder is introduced to a classroom, allowing the camera to be present for a few days before beginning measurements may allow children to habituate to its presence.

Emerging technological innovations can also minimize reactivity effects in some situations. For example, Boyce and Geller in 2001 reported a study in which the experimenters observed automobile driving behaviors by utilizing several hidden cameras strategically placed in a moving automobile. The cameras were the size of a pinhead and recorded what the driver saw on the road during a 45-minute drive, the driver's face,

the location of the driver's hands, and road markings on the highway. The four video channels were funneled to a quad-multiplexer that integrated the camera views and time stamped the videotape record. The video images were later coded in 15-second intervals for safe driving techniques (e.g., correct turn signal use, maintaining a safe following distance from another vehicle). The results showed that older participants engaged in less risky driving behaviors than younger participants. In addition, male drivers did not take more risks than female drivers, leading the authors to suggest that previous research suggesting greater risk-taking behavior by males may be an artifact of the self-report methods that were used.

C. Accuracy

Although many definitions of accuracy have been proposed in the behavioral literature, accuracy refers to the extent to which data collected during a behavioral assessment approximates the true state of nature. In behavioral assessment, accuracy is relevant to both the recording (i.e., data coding) and the reporting (i.e., interviewee responses) of behavior.

Accuracy may be attenuated in several ways. Researchers have long noted that accuracy of self-monitoring data can be affected by the response mode that is monitored (i.e., cognitive, motor, or physiological behavior). Low-frequency, overt motor behaviors appear to be more accurately recorded than high-frequency, verbal behaviors for most individuals.

Accuracy can also be affected by recorder bias. Recorder bias may result from a potentially endless number of factors: inattention, carelessness, poor training, errors in selection of intervals during which behavior is recorded, technical difficulties, and so forth. When multiple raters observe behavior, calculating the degree to which any one rater agrees with the other raters can help identify raters who may be systematically biasing their observations and, hence, their data.

Accuracy of reporting can fluctuate over time as a function of a variety of respondent variables. For example, Carr, Langdon, and Yarbrough in 1999 concluded that the accuracy of clients self-report is subject to (1) biased or inaccurate recall of behavioral occurrences and (2) the changing functions of behavior. In addition, modifying a client's recognition and understanding of a problem behavior may affect both rates of responding and the client's estimates of behavioral rates. For example, a client may not initially be aware of the environmental cues that reliably precede a panic attack (e.g., being in a public place). However, a functional analysis may make the client aware of a relationship between the behavior and the context and make it more likely that the client is able to cope with previously anxiety-eliciting situations. As a result, the client may experience a decrease in frequency of panic attacks.

VII. CLINICAL CASE FORMULATION

Ultimately, behavioral assessment must inform treatment planning and increase the probability that maximally efficacious treatments are implemented. The importance of developing a clinical case formulation based on assessment results has been recognized by workers endorsing diverse models of psychopathology. However, integration of assessment tools from diverse, and sometimes incompatible, theoretical models has not been successful.

Increasingly, clinical case formulation is being viewed by behavior therapists as a crucial contribution to successful treatment outcome. Recent volumes on clinical case formulation highlight the prominent role case formulation plays in treatment planning. However, appreciation for the importance of clinical case formulation in the behavioral paradigm is a relatively recent phenomenon. Behavioral models of clinical case formulation have focused on the identification of antecedent conditions and behavioral effects that maintain the target problem. Clinical case formulations have spanned a wide array of disorders and behaviors including transient tic disorder, delusional speech in schizophrenia, trichotillomania, obsessive–compulsive disorder, developmental disabilities, chronic cough, and borderline personality disorder.

However, the necessity of conducting a clinical case formulation, while intuitively appealing, remains a subject of some debate. Studies confirming the utility of an *a priori* case formulation are difficult to design for several reasons because numerous intervening variables that are extraneous to the case formulation can affect a client's behavior (e.g., client–therapist rapport, quality of treatment delivery, duration of the client's presenting problems, frequency and strength of the client's responses, response class parameters of the client's behavioral repertoire). Nonetheless, some authors have suggested that treatment outcome is more related to the accuracy of the clinical case formulation than to intervention strategies. For example, Persons, Curtis, and Silberschatz in 1991 proposed the formulation hypothesis, which suggested that successful treatment outcomes depends on the accuracy of the initial

case formulation, thereby elevating the role of clinical case formulation to a level on a par with, and even superior to, treatment delivery. Objections to the formulation hypothesis include the observations that (1) treatment outcome is affected by a wide variety of factors extrinsic to the therapeutic context, and (2) clients sometimes improve in the absence of a formal clinical case formulation.

A. The Cognitive-Behavioral Case Formulation Model

Jacqueline Persons and her colleagues have developed a cognitive-behavioral case formulation model (CB) that focuses on the identification of overt behaviors and the underlying cognitive mechanisms hypothesized to control the behaviors. The therapist works with the client to create a behavior problems list, a list of specific beliefs about himself or herself that may affect the client's behavior problems, and a list of external events and situations that activate core beliefs. From these data, a set of working hypotheses are developed regarding the functional relations of problem behaviors and maintaining variables. Causal mechanisms in CB are often presumed to be underlying cognitions and are assessed using a multiple-choice questionnaire.

Persons and her associates have found that clinicians trained in the CB show moderate agreement in their lists of clients' overt problems. Doctoral-level training, clinical formulation training, experience in cognitive-behavior therapy, and greater psychotherapy experience have been associated with better agreement in problem identification but not in identifying schemas that may be influencing the client's behavior.

B. A Problem-Solving Approach to Clinical Case Formulation

Whereas the model described by Persons and her colleagues emphasizes the identification of core schemas that underlie behavioral problems, Arthur and Christine Nezu have conceptualized assessment and therapy as a problem-solving process composed of the following components:

1. *Problem orientation:* The clinician conceptualizes the client's problem as multiply determined by psychological, biological, and social influences.
2. *Problem definition and formulation:* The clinician assesses the behavioral problem across multiple response modes (e.g., behavioral, cognitive, affective, physiological) and contexts, considers historical and developmental information, and gathers data from standardized measures, behavioral observation, and psychophysiological measures.
3. *Generation of alternatives:* The clinician considers different treatment options and creates a list of possible target variables, solutions, and interventions.
4. *Decision making:* The clinician evaluates the clinical utility of each treatment and selects the one that is likely to be most effective for the client.
5. *Solution implementation and verification:* The clinician works with the client using the selected treatment option and assesses outcome.

A visual summary of the case formulation is provided by means of a clinical pathogenesis map. The map is a flow diagram summarizing the relationship between stressful events, historical factors, contemporaneous events, and behavior problems.

C. Functional Analytic Clinical Case Modeling

Another case formulation model has been developed by Stephen Haynes and his colleagues. A functional analytic clinical case model (FACCM) is a means of schematically representing a functional analysis[2] using vector graphic diagrams, as discussed by Haynes, Leisen, and Blaine in 1997. FACCM variables include original causal variables, causal variables, moderating variables, client behavior problems, and effects of client problems. Original causal variables are variables that affect client behavior, either directly or through their effects on other causal variables, and are not modifiable (e.g., events that happened in the past, medical conditions). Causal variables are variables that affect the client's problems and are presumed to be modifiable. Client problems are behaviors or cognitions exhibited by the client that are evoked or maintained by causal variables. Finally, the effects of client problems are events or processes that follow, and may be consequences of, client problems. In addition to identifying the above variables, FACCMs communicate the hypothesized strength of each variable in the model,

[2] The definition of the term "functional analysis" varies within behavioral psychology and across disciplines that use behavioral principles. In applied behavior analysis, the term refers to the systematic manipulation of variables to estimate functional relations. We use Haynes and O'Brien's more broad use of the term in 1990 to refer to the identification of "important, controllable, causal and noncausal functional relations applicable to specified behaviors in the individual."

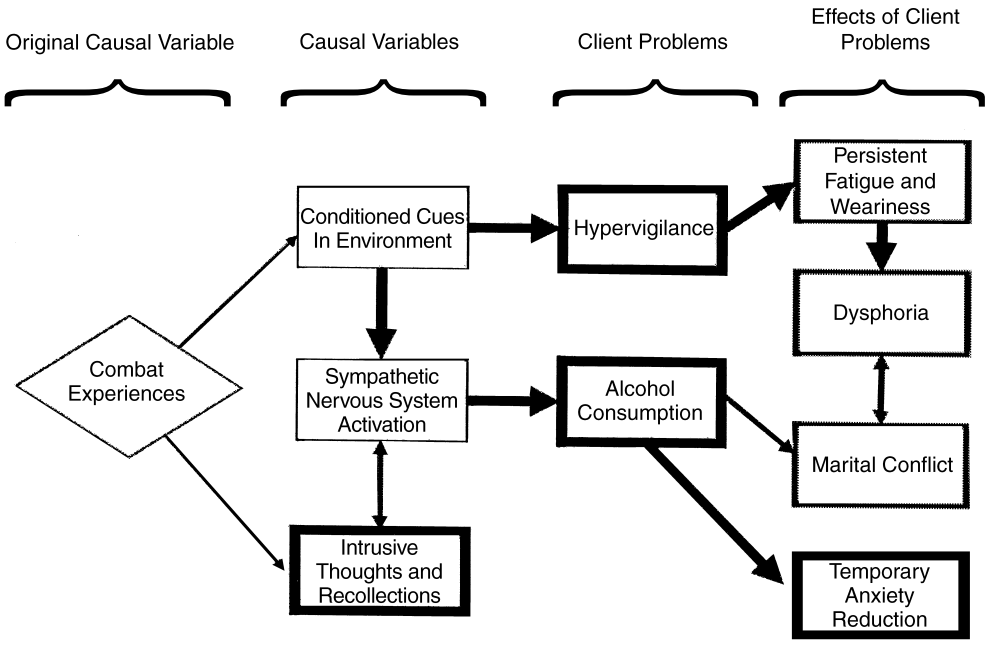

FIGURE 2 A functional analytic clinical case model (FACCM) of a Vietnam war veteran's drinking behavior and hypervigilance. *Note.* Using the example of the war veteran provided in the article, an FACCM can show both respondent and operant conditioning at work. An original causal variable, the combat experience, is paired with a variety of innocuous stimuli (smells, sounds, etc.) that will later remind the veteran of his combat experiences through respondent conditioning and generalization. The trauma of the combat experience leads to intrusive thoughts and recollections long after the veteran returns from the combat theater. Both environmental cues and the intrusive thoughts and recollections have the potential to elicit sympathetic nervous system activation (e.g., increased heart rate, respiration). Sympathetic nervous system activation can also reciprocally elicit intrusive thoughts and recollections (e.g., an increase in heart rate through exercise can trigger a combat memory). The main client behavior problems thus involve alcohol consumption, which has the effect of temporary anxiety reduction and is maintained through negative reinforcement, and hypervigilance of environmental stimuli (i.e., conditioned cues in the environment). Sustained hypervigilance has the effect of creating a persistent sense of fatigue and weariness. In tandem with marital conflict caused by excessive alcohol consumption, the fatigue resulting from the client's hypervigilance contributes to another effect, dysphoria.

the modifiability of causal variables, the strength and causal direction of relationships between variables, and the importance of each behavior problem. A computer program developed by Haynes, Richard, and O'Brien in 2000 conducts a path analysis that takes into account all variable relationships in an FACCM and rank orders the effect of each causal variable on the model.

FACCMs are usually specific to a context and are not assumed to be equally valid for individuals with topographically similar target behaviors. FACCMs are dynamic in that they are expected to change as more assessment information becomes available and the variables affecting a target behavior change. Figure 2 is an example of an FACCM for a Vietnam war veteran addressing client behavior problems of excessive alcohol consumption and hypervigilance.

D. Commentary

The three models described by Persons, Nezu and Nezu, and Haynes provide frameworks by which clinicians can assess and understand functional relations in a clinical case. The models provide a systematic, generalized way of thinking about functional relations rather than suggesting causal mechanisms for a specific behavior or any of its dimensions. In this way, clinical

case formulation models can be thought of as templates that guide conceptualization of functional relations across disorders.

An interesting question for future research involves the degree to which the various clinical case formulation models lead clinicians to hypothesize different functional relations in the same client. In addition, researchers have yet to determine conclusively whether clinical case formulation models enhance treatment outcome and which models, if any, are more likely to produce incremental treatment gains.

VIII. COMPUTERS AND BEHAVIORAL ASSESSMENT

In the future, behavioral assessment will be increasingly augmented by the use of computer technology. Already, researchers have developed computer programs that help the behavioral assessor efficiently collect, store, and analyze data. Programs are now available that ease data collection and analysis across all the major methods of behavioral assessment. For example, software for event recording has replaced earlier electromechanical devices and paper-pencil recording formats. Tapp, Wehby, and Ellis in 1995 developed the Multiple Option Observation System for Experimental Studies (or MOOSES). The software eases event-based recording, interaction-based recording, duration recording, and interval recording of observed behavior. The software is also capable of several types of data analysis (e.g., interobserver agreement, sequential analysis, duration of events within behavioral states). Similarly, Noldus in 1991 reported the development of an early MS-DOS-based coding system called The Observer, and a subsequent multimedia revision, that allow researchers to construct complex coding templates and code behavioral responses as they occurred. Other computerized observational coding systems are available to behavioral researchers and have been extensively reviewed in the literature.

Self-monitoring software has also been developed for handheld devices. An advantage of handheld devices is that they promote assessment of momentary states in the natural environment. Recent research has found that assessment of momentary states may yield results that are significantly different from participant's retrospective ratings of their behavior and skills. For example, some researchers have reported that retrospective self-report measures of coping skills were very poor predictors of how well individuals actually cope in stressful situations.

Several clinically applicable handheld software programs have been described in the literature in recent years. Newman, Kenardy, Herman, and Barr Taylor in 1996 used a Casio PB-1000 handheld computer to prompt patients with panic four times per day to report anxiety levels and occurrence of panic attacks. During the client's office visit, data were uploaded to a desktop computer, stored in a database, and then analyzed. Reports were generated that summarized client responses to the computer. Others have recently reported using handheld devices to record frequency of smoking behavior, measure reaction time during a prolonged, simulated submarine crisis, measure stress reactions in the natural environment, and assess obsessive–compulsive, fibromyalgia, and dementia symptoms.

The extent to which handheld devices will be successfully incorporated into the clinical practice depends on cost-effectiveness, technological, and psychometric issues. With regard to cost-effectiveness, handheld devices may be prohibitively expensive for clinicians to use with clients given that the devices are at higher risk for being lost, not returned, or damaged. In addition, software that is robust enough to be generalized to a wide array of behavior problems is not currently available for handheld devices.[3] Even if the software was readily available, efficient methods for conducting data analyses and incorporating results into treatment planning have yet to be developed. Additionally, the technological learning curve may dissuade some clinicians from using these devices at all. From a psychometric standpoint, the effect collecting data using a handheld device has on client behavior (e.g., reactivity effects) is not well understood. Despite these considerations, however, computer and handheld technology should continue to play an important role in the evolution of behavioral assessment.

IX. SUMMARY

Behavioral assessment emphasizes the measurement of variables that are highly specific and require low

[3] However, the tools for developing such software are readily available. For instance, Microsoft offers copies of Embedded Visual Basic 3.0 free of charge through its Web site. The software allows developers to create user interfaces for a number of handheld and palmtop devices and debug the software in an emulated mode on a desktop computer platform. Data saved in an Embedded Visual Basic application can be downloaded to Microsoft Access for analysis. In order to run Embedded Visual Basic 3.0, users should have the Windows NT 4.0 or Windows 2000 operating systems installed on their development computers.

levels of inference, over multiple assessment periods, across multiple methods and modes of responding. The behavioral assessment paradigm is closely tied to behavioral principles first elucidated almost 100 years ago. The vitality of behavioral assessment and behavior therapy is evidenced by the exponential growth of journals devoted to their study.

The behavioral assessor may choose from a variety of assessment methods (e.g., naturalistic behavioral observation, analogue behavioral observation, psychophysiological measurement, behavioral rating scales, self-monitoring, behavioral interviews, and behavioral questionnaires). The ultimate goal of behavioral assessment is to facilitate clinician hypotheses about client functioning and develop a clinical case formulation that will suggest the most efficacious treatment intervention. Several behavioral and cognitive-behavioral researchers have developed clinical case formulation models in recent years and the importance of these models in focusing treatment planning continues to increase. With the development of sophisticated handheld and desktop computer applications that ease data collection and analysis, the family of behavioral assessment methods should continue to evolve as the most useful way to assess the relationship and importance of variables operating in a client's life.

See Also the Following Articles

Behavioral Case Formulation ■ Behavioral Consultation and Therapy ■ Behavioral Therapy Instructions ■ Documentation ■ Functional Analysis of Behavior ■ Neuropsychological Assessment ■ Objective Assessment

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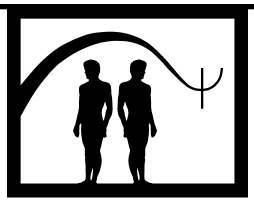

Behavioral Case Formulation

Jennifer R. Antick and Johan Rosqvist

Pacific University

I. Description of Behavioral Case Formulation
II. Theoretical Bases for Behavioral Case Formulation
III. Empirical Bases for Behavioral Case Formulation
IV. Summary
Further Reading

GLOSSARY

antecedents Events, environmental circumstances, thoughts, behaviors, statements, emotions just prior to the onset of the behaviors targeted for change.

consequences Events, internal or external, that immediately follow the targeted behavior(s).

punishment Any consequence, internal or external, that decreases the likelihood that a targeted behavior will occur in the future.

reinforcement Any consequence, internal or external, that increases the likelihood of a targeted behavior occurring in the future.

single case design Applying scientific methods to a clinical case utilizing an $n = 1$.

Case formulation is a process in which a therapist collects information regarding the presenting concerns of a therapy client, describes the client and how a problem(s) came about, and summarizes what the primary problem is as well as what skills and resources the client brings to therapy. The ultimate purpose of case formulation is to suggest how to proceed in making alterations in the individual's behavior with the intent of creating solutions to the presenting problem(s). Behavioral case formulation utilizes behavioral and learning theories in this process, emphasizing observable behaviors and environmental factors that influence the initiation, alteration, or maintenance of problematic and more useful behaviors. This article outlines the basic processes involved in case formulation from a behavioral perspective.

I. DESCRIPTION OF BEHAVIORAL CASE FORMULATION

Behavioral case formulation is a process in which therapists seek to describe clients, their strengths and resources, stressors, and current concerns in the context of specific, observable, and measurable indicators. Behavioral case formulation has been described as testable hypotheses that connect presenting problems to one another, explains why the problems have developed, and provides predictions of the patients' behavior based on those hypotheses. Other descriptions include references to scientific or empirical methods applied to clinical cases or to considering each case as a minipsychological experiment. An interesting example of this approach is the single case design in which empirical methods are used in the case formulation and treatment of a single individual.

The behavioral emphasis on applying scientific methods assumes several things: (1) behavior may be understood in scientific terms, (2) behavior is sufficiently predictable that we may draw inferences based on earlier behavioral patterns to predict future behavior, (3) behavior may be internal or external, but observable in some fashion by the client and others, (4) behavior is strongly although not exclusively influenced by the environment, (5) all clients present with existing skill sets, resources, and useful observations that can be utilized during behavioral therapy, and (6) we can further alter behavior patterns systematically through the application of scientific and learning principles. The first step of behavioral case formulation is an observation period during which the therapist and client jointly begin collecting information about the presenting concerns of the client. During this phase of treatment the client and clinician identify the target problem(s), including intensity, severity, duration, and the contexts (who is present and what happens just before during and after the problem) in which the problem(s) occurs. Target difficulties in behavioral therapy may be (1) behavioral excesses, occurring more than is desirable in a given context (2) behavioral deficits, not occurring as frequently as desirable in a given context, (3) skills deficits, for example coping or problem-solving skills deficits, or (4) behavioral anomalies, such as behaviors that are inappropriate for any person at any age in any context.

Gathering this information can be accomplished through direct clinical observation, interviews, self-report instruments, self-monitoring, and other assessment methods.

Direct clinical observation is theoretically the most accurate method of data collection. Observation allows the clinician–scientist to witness and therefore evaluate firsthand the relevant external environmental factors and make hypotheses about what would result in the desired change. In application, however, direct observation is neither very practical nor particularly objective. First, as stated earlier, target behaviors may be internal and not directly observable by the clinician. When this is the case, extra time must be taken by the clinician and client to jointly identify external signs of the internal experience so that they may develop observable criteria for success. Second, human behavior patterns change when a person is aware of being observed and covert observation presents such significant ethical concerns as to render it inappropriate in most circumstances. In addition, even well trained observers show bias, seeing what is expected. However, even with its potential pitfalls, direct observation may provide the most valuable information in the case of child behavior analysis.

Interviewing is the most common method of gathering relevant clinical information. The clinical interview may be unstructured, structured, or semistructured. Unstructured interviews offer a great deal of flexibility for the client to discuss personal concerns in the order that makes the most sense and may assist in developing rapport. The cost of that flexibility, however, may be a loss of salient information, timeliness, objectivity, and reliability across interviews. Structured interviews offer greater detail and the likelihood of a thorough and consistent assessment at the cost of rapport and flexibility. Semistructured interviews such as the SCID-I (Structured Clinical Interview for the *DSM IV*) appear to offer the best of both worlds with increased reliability and predictable production of clinically useful data.

Assessment instruments may also be helpful in the data-gathering phase of behavioral case formulation. "Objective" standardized self-report instruments usually require clients to make quantitative or forced qualitative responses to specific questions. These standardized assessment instruments are helpful in balancing some of the subjectivity common to interviewing methods. They allow for the questions to be asked consistently at each administration, scores can be compared to other administrations (if test-retest reliability is sufficiently high) and to other clients' scores or "normal" population scores. They are also quite practical, making repeated information collection inexpensive (over time) and fairly quick relative to obtaining the same information through interview. For example, a common depression questionnaire may take as little as 5–10 min for the average adult to complete when the interview needed to ask the same questions may easily require 20–30 min to complete. Although standardized instruments as a group often have much better test-retest reliability and interrater reliability than interviewing methods, there are a number of disadvantages to the use of standardized questionnaires. Clients often state that they do not prefer to complete the instruments on a frequent basis. Because of this, clients may answer questions in a habitual pattern rather than answering each question uniquely. Validity (the extent to which a questionnaire measures what it is intended to measure) is also a concern as questionnaires cannot anticipate the way individuals will express themselves or explain their experiences. It is a common occurrence in clinical practice to have clients scratch out items or choose not to answer items on an assessment instrument because it does not directly pertain to their experience. This requires further time from the clinician to ask for the relevant information in interview format, thereby reducing the initial utility of the instrument. It is noteworthy that several authors have found that the

clinician's effectiveness in treatment as well as the client's willingness to complete outcome assessment measures may be enhanced when the instruments are immediately scored and the client and clinician get rapid feedback about the results.

Self-observation or self-monitoring may be an effective option to direct clinical observation. As discussed earlier, humans are natural scientists and with some coaching, most clients can become excellent observers of their own behavior. Some theorists have reasoned that this process may be therapeutic in and of itself, increasing the likelihood of follow-through on therapy assignments and resolution of nontargeted problems before they need to become the focus of therapy. Examples of common self-monitoring tasks include the client noting the intensity, frequency, duration, context, and so on of the target behavior(s) such as intensity of depressive feelings on a 1–10 scale, frequency of crying spells, duration of time spent sleeping in bed, and contextual information (antecedents and consequences) of pain behaviors. As with other methods, self-monitoring or self-observation may be biased, may be simply inaccurate, may have numerous omissions of important data, and may include erroneous information. Practically speaking, if the client does not want to fill the observation sheets out on a regular basis, the information will not be particularly useful. Utility of self-monitoring tasks may be enhanced by reinforcement of the behaviors required to fill them out, by directly using the information brought in (no matter how much is available or unavailable), and by refining the self-monitoring forms to emphasize that which is most salient to the client at that time.

Regardless of which methods are used, the emphasis of the initial data sort includes

1. A description of who the client is in behavioral terms
2. What this person's concerns–problems are from their perspective
3. What is the person ready and willing to work on first
4. What personal or environmental strengths and resources are available
5. What the person's most effective learning strategy is
6. What strategies to remedy the problem have already been attempted (with an emphasis on that which has been successful under some circumstances)
7. A detailed accounting of an example of the problem behavior–behavior chain
8. The antecedents to the problem behavior(s)
9. The consequences to the problem behavior
10. The reinforcing properties of the environment
11. The functional relationships between the environment and behavior
12. How have these developed
13. How have they persisted
14. What in the environment can produce change now
15. What change has been produced in the past
16. A detailed accounting of how change occurred in the past
17. A detailed accounting of the exceptions to the problem
18. Identification of the antecedents and consequences of the exceptions to the problem
19. Identification of significant life events
20. Identification of family history of presenting concerns
21. Information about client's medical condition
22. Information about any substance use including prescribed medications, over-the-counter medications, illegal drugs, or herbal supplements.

Together, these indicators are used to formulate the hypothesis about the problem, how it formed, how it is maintained, and how it may be resolved.

This formulation becomes the foundational underpinning of a course of behavioral treatment and is updated through continuous assessment in the course of treatment refining the hypotheses over time. It is of note that discussing the context in which the problem occurs (or when exceptions to the problem occur) is a prime opportunity to utilize the expertise of the client and to create rapport through positive reinforcement of the client's efforts and differential reinforcement of scientific thinking processes. As humans are natural scientists and hypothesis testers, the client is likely to have formed hypotheses in attempting to remedy the problem prior to seeking external help. In fact, the client may already know "how" to fix the problem but is having difficulty implementing the solution or may have had success fixing the problem in certain contexts but not others. An expert clinician will partner with the client from the beginning of the information gathering or observation phase. It is also important to note here that the information gathered should include hypotheses about the potential effect of making a change in that person's behavior or environment. For example, will changing the target behavior(s) result in reinforcement from the environment or, instead, punishment or loss of previous reinforcement? Will making a change elicit a significant desirable or undesirable response from the environment resulting in a likelihood of short and unsustainable therapeutic gains? The ecology of the

change is an essential part of the hypothesis to be tested in the modification phase of behavioral case formulation.

Now that the target behaviors have been observed, discussed, reported, or otherwise recorded, and hypotheses have been formed about how they began, have been maintained, and how they can be modified, the modification phase begins. The therapist at this point may find that seemingly clear terms are not operationalized sufficiently to proceed. In this case, the clinician and client can refine their terms and make certain that the focus is on the observable, specific, and measurable. Specific behaviors rather than labels or traits are the hallmark of a behavioral approach such that external signs of internal experience are defined as well. Although diagnoses are required by most third-party payers and many institutions as an aspect of treatment planning, there is little agreement as to their clinical utility in behavioral case formulation. Because it is often required, it is recommended that the client and clinician partner in the diagnostic process finding the best-fitting category. It may be necessary to discuss the purpose of a diagnosis (for most clinicians it appears to be for communication with other professionals and for payment structures) and to work toward the least severe and most inclusive diagnostic category possible, minimizing the negative stigma associated with diagnoses.

Together the client and clinician devise a modification methodology, based on the clinician's expertise and skills and client's readiness and willingness to engage in specific, observable, and measurable behavior change. This phase involves clarifying which specific behaviors will be targeted in which order, which methods will be used to observe the change, and how the clinician and client will measure the amount of change. They will further establish a timeline for the testing of the hypotheses (i.e., treatment phase of eight sessions over 8 weeks) and agree on what exact interventions will be implemented (i.e., exposure, relaxation procedure, self-reinforcement schedule). How the changes will be implemented and how the changes and effort will be monitored are particularly important parts of this phase. It is common to utilize the previously chosen observation methodologies with modifications to reduce the amount of time required. For example, a pre- and posttest battery of methods may be proposed with a simple rating system and utilization of one short standardized instrument at each session. Applying scientific principles, the methodology is updated throughout the formulation, and the hypotheses are revised and then sequentially tested. As the clinican and client obtain more relevant data, they gain greater specificity of modification method.

II. THEORETICAL BASES OF BEHAVIORAL CASE FORMULATION

Behaviorists contend that all behavior is understood in context, and that all behavior is systematically variable. Behavioral therapists contend that although individuals vary from one another in their response to similar environmental stimuli, they will frequently develop their own idiosyncratic behavior patterns that can be defined, observed, and measured. These patterns are the focus of behavioral theory and of behavioral therapies. The basic theoretical framework is that effective clinical intervention is dependent on an accurate understanding of the factors that initiate and maintain behavior(s). The factors that initiate and maintain behaviors include antecedents and consequences. Antecedents are the events that immediately precede the targeted behaviors. Like the target behaviors, they can be overt or covert. They are not considered causal but, instead, are said to mitigate the likelihood of a behavior occurring. This relationship with the targeted behavior is strengthened in conjunction with consequences. Consequences are events that immediately follow the targeted behavior(s). These are also overt or covert and can either increase or decrease the likelihood of a behavior occurring. When an increase in a consequence increases the likelihood of a behavior occurring again it is termed positive reinforcement. When the decrease in an unpleasant consequence increases the likelihood of a particular behavior, it is called negative reinforcement. Negative consequences reducing the likelihood of a particular behavior are called punishment. An increase in a negative consequence that reduces the likelihood of a particular behavior is termed positive punishment. A decrease in a consequence that reduces the likelihood of a particular behavior is called negative punishment. In practical terms, different types of punishment are often grouped together and may also be referred to as "mitigating factors." Behavior therapists assert that antecedents and consequences govern both normal and abnormal behavior.

These basic principles yield the following theoretical explanations of undesirable behavior:

1. The excessive use of punishment or aversive stimuli can produce behavioral anomalies, emotional disturbance, and "traumatic" conditioning
2. Inadequate opportunities for learning may result in an inadequate repertoire of skills
3. Reinforcement of inappropriate behavior may result in behavioral excesses, behavioral deficits, or behavioral anomalies

4. Failure to reinforce appropriate behavior may result in behavioral excesses, behavioral deficits, or behavioral anomalies
5. Lack of models or poor models may result in an individual failing to develop a functional behavioral repertoire
6. Poor discrimination skills may result in failure to discriminate between situational variables determining what behavior is appropriate or inappropriate
7. Inadequate self-reinforcement may result in anindividual seeking an excess of external reinforcement, social skills deficits, or insufficient emotion regulation

These hypotheses for abnormal behavior reinforce the basic theoretical construct that stimulus–response chains can be identified for any given behavior or set of behaviors. It is of note that early behavioral theorists used a strict definition of behavior that included only that which is externally observable. More recent theorists such as David Barlow and Aaron Beck suggest that internal, or covert, behaviors are governable by the same principles as overt behaviors and therefore equally malleable by the application of learning principles. Current theorists continue to emphasize that the key is in targeting specific, observable, and measurable behaviors; identifying what initiates and reinforces behavior; and then making systematic adjustments (behavior therapy methods) to the behavior chain to create the desirable result.

III. EMPIRICAL BASES FOR BEHAVIORAL CASE FORMULATION

Behavior therapy and its constituent methodologies have been extensively studied, and are, at present, "a favored child" among therapies. One reason for this is that behavioral case formulation requires specificity, the utilization of hypothesis formation, and systematic hypothesis testing. Behavioral methodologies are the clinical equivalent to scientific methodologies and, as such, lend themselves to empirical study. It is said that behavioral methods are studied more than any other therapies. The most recent findings suggest that behavioral and cognitive-behavioral methods consistently produce positive therapeutic results, are easily individualized to the needs of the client, and are, by design, replicable. Behavioral methodologies have been proven to be more effective than medications for most anxiety problems. Studies also show that behavioral methods are more effective with depressive disorders than any other therapy modality and are recommended as the treatment of choice in conjunction with medication therapy for a number of depressive disorders. Behavioral methods have also been proven effective for externalizing behavior disorders, anger management problems, learning difficulties, social skills deficits, coping skills deficits, pain management, compliance issues in medical treatments, and sleep problems.

IV. SUMMARY

Behavioral case formulation is a method by which a clinician–scientist seeks to understand and then summarize the concerns and strengths of a therapy client. It has long been considered the scientific method applied to therapy. It is a process by which therapists systematically investigate targeted behaviors, form hypotheses about how the targeted behaviors came about, and hypothesize about how they are maintained. The hypotheses form the basis for treatment in which the clinician and client jointly alter individual factors in the internal or external environment (testing the hypotheses) and make observations about the results. Based on these observations, the methodology continues to be modified until the desired result is achieved. Clients are often taught the basic methods involved so that they can maximize the benefit from the process and generalize what they learn to other areas of their life.

See Also the Following Articles

Behavioral Assessment ■ Behavioral Consultation and Therapy ■ Behavioral Therapy Instructions ■ Documentation ■ Functional Analysis of Behavior ■ Objective Assessment

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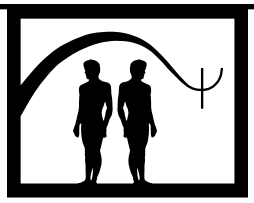

Behavioral Consultation and Therapy

Mark E. Ehrlich and Thomas R. Kratochwill

University of Wisconsin, Madison

I. Description of Treatment
II. Theoretical Bases
III. Applications and Exclusions
IV. Empirical Studies
V. Case Illustration
VI. Summary
Further Reading

GLOSSARY

baseline The period during which behavior is observed before any treatment is implemented.

developmental consultation A form of behavioral consultation that involves sequential, planned treatment of a large number of behavior problems, frequently related to a major psychological disorder or dysfunction.

operant learning A behavioral theory which holds that behaviors are learned by the consequences (reinforcement or punishment) associated with them.

problem-centered consultation A form of behavioral consultation that involves treatment of a small number of specific behavior problems.

punishment Any consequence of a behavior that decreases the frequency of the behavior.

reinforcement Any consequence of a behavior that increases the frequency of the behavior; loosely synonymous with the common term *reward*. Positive reinforcement involves providing something desirable to the individual, while negative reinforcement involves removing something undesirable from the individual's environment. Both positive and negative reinforcement have the function of increasing the frequency of the behavior they follow.

treatment acceptability The degree to which the consultee approves of a particular treatment plan.

treatment integrity The degree to which a particular treatment plan is implemented as intended.

I. DESCRIPTION OF TREATMENT

A. Overview and Fundamental Characteristics

Behavioral consultation is a treatment modality that involves at least three individuals: the client, the consultee, and the consultant. The client is typically a child who is exhibiting some sort of behavior problem and needs psychological services. The consultee is typically a caregiver for the client, usually a parent or teacher, but it could be a peer. The consultant is a mental health professional, trained in a variety of treatment practices and techniques. Through the consultation process, the consultant and consultee work together to address the challenging behaviors displayed by the client. The consultation process also can be used to increase the skills and social competencies of the client.

Each individual has specific roles and responsibilities in the consultation process. The consultant works with the consultee to elicit a clear description of the behavior problem(s) and goals, examine possible explanations for the behavior, develop a plan for treatment, and formulate a method for evaluating the effectiveness of the treatment. The consultee implements the treatment with

the client and collects data that are used to evaluate treatment efficacy. After the treatment has been implemented for a sufficient period of time to permit evaluation, the consultant and consultee together decide whether to maintain, modify, or discontinue the treatment program. It must be emphasized that the treatment is typically implemented by the consultee in this process, although in some cases the consultant and consultee may share this role. This strategy distinguishes consultation from traditional psychotherapy, where the treatment is administered directly by the mental heath professional (the therapist). For this reason, consultation is considered an indirect mode of service delivery.

Consultation is also a problem-solving process. In fact, the traditional term behavioral consultation is now usually replaced by the term "problem-solving consultation." Very specific, carefully defined problems are targeted for treatment. In most cases, the process of consultation focuses on remediating a few targeted behavior problems, rather than addressing more general concerns about the client. This type of consultation is called problem-centered consultation. A second type of consultation, called developmental consultation, can be invoked to deal with a wider array of client problems, including comprehensive assessment and treatment of major disorders. Developmental consultation involves repeated application of the same steps used in problem-centered consultation; problems are addressed in sequence to produce broad improvements in client functioning. Ultimately, the goals of both types of consultation are twofold: to attain an acceptable level of client behavior, and to teach the consultee a process for handling other behavior problems exhibited by other children. The first goal is accomplished by implementation of a treatment plan designed for the identified client. The second goal is accomplished by having the consultee participate in every stage of the consultation process, and in so doing develop their skills and understanding of how to approach children's challenging behaviors.

Five stages of the consultation process have been identified: initiation of a consulting relationship, problem identification, problem analysis, plan implementation, and plan evaluation. In textbook cases, problem identification, problem analysis, and plan evaluation are readily accomplished through single interviews of approximately one hour each between the consultant and consultee. Initiating a consulting relationship typically occurs at the same time as the problem identification interview. Plan implementation is the lengthiest part of the process and is usually carried out by the consultee during the consultee's day-to-day interactions with the client in the natural setting.

B. Initiation of a Consulting Relationship

Successful initiation of the consulting relationship is crucial to the success of the treatment process. It is important for consultants to use positive interpersonal skills in their interactions with consultees. Some characteristics that appear to enhance the relationship between the consultant and consultee include active listening by the consultant and consultant acceptance of the consultee's perspective through nonjudgmental statements, openness, nondefensiveness, and flexibility.

In traditional behavior consultation, the establishment of a collaborative relationship between the consultant and consultee during the initiation stage is viewed as essential to the ultimate success of the consultation process. Each participant contributes his or her own knowledge and expertise to the case. The consultant brings professional knowledge of treatment procedures (e.g., behavioral principles) and the consultative process. The consultee brings knowledge of the client and the problems that the client is exhibiting. The consultant's and consultee's knowledge bases are combined through the consultation process to achieve effective problem resolution.

It is important during the initiation stage for the consultee to attain a clear understanding of the stages of the consultation process, and to identify the roles and responsibilities of each participant at each stage. In this way, appropriate focus will be maintained through the process, allowing for organized development, implementation, and evaluation of a treatment plan. To assist the consultee in understanding the consultation process, it is essential for the consultant to review and discuss the stages of the process—and the roles and responsibilities of each person at each stage—during the initiation of the consultation relationship.

C. Problem Identification

The second stage of the consultation process is known as problem identification. The primary goal of this stage is for the consultant to elicit a clear description of the client's problem behavior and/or social or academic difficulties. In consultation, a behavior problem is defined as a discrepancy between the actual and desired behavior level. Thus, it is very important to arrive

at a clear understanding of both the client's current behavior and the desired behavior level. Often, however, descriptions initially provided by consultees are vague and incomplete. For instance, a teacher may say, "Billy has problems getting along with peers." Although this description gives some general information about the area of concern, it does not provide specific information essential for understanding the problem and planning a treatment. At this point, the consultant needs to elicit such particulars. This specific information is usually obtained by asking the "W" questions—such as who, what, where and when the behavior occurs. For instance, the consultant might ask, "what does Billy do when he is having trouble getting along with peers," and "when does this behavior occur?" Answers to these specific questions help the consultant and consultee obtain a clear picture of the problem situation, which will later be used to develop an appropriate treatment. For instance, Billy's problems could range from failing to initiate conversations with peers to physically attacking peers when they invite him to play. Knowing the precise nature of Billy's behavior problem is essential for developing an appropriate treatment. The most desirable descriptions of problem behaviors in consultation are those that refer only to the observable aspects of the behavior, are unambiguous, and fully specify all aspects of the behavior—thereby distinguishing the problem behavior from other behaviors that are not of concern. Such clear descriptions are called operational definitions.

Sometimes, in the course of problem identification, more than one behavior is of concern to the consultee in more than one situation. If the list of problem behaviors is relatively short, problem-centered consultation is generally the most appropriate treatment modality. If the list is long, developmental consultation may be the best option. In either case, the therapeutic process works best when only one or two behaviors are chosen for treatment at a time. Thus, the consultant must elicit from the consultee a prioritized list of concerns that will be targeted for treatment. In problem-centered consultation, the consultant and consultee focus their immediate efforts on the top one or two concerns on the list. After those issues have been satisfactorily addressed through consultation, the process may be used again to address the next one or two concerns on the list (provided they have not changed in the meanwhile). For developmental consultation, the consultant must help the consultee recognize at the outset that numerous iterations of the consultation process will be necessary to address the various problem behaviors displayed by the client. These behaviors are addressed in a planned sequence, designed to most effectively produce broad improvements in client functioning.

By the conclusion of the problem identification stage, the consultant and consultee should have an understanding of the "ABCs" of the highest priority problem behavior(s). The "A" refers to the antecedent conditions that regularly come before the behavior occurs; the "B" refers to a clear description of the behavior itself; and the "C" refers to the consequences that follow the client's behavior. All of this information is necessary for a full understanding of the problem to be addressed and in planning a treatment to remediate the problem(s).

Another important part of the problem identification process, which can be completed only after the ABCs of the behavior are understood, is to decide on the specific goal(s) for the treatment. Goals are typically expressed as desired increases or reductions in the frequency, duration, or severity of identified behaviors. Setting specific goals helps the consultant and consultee focus on the most important problems and ensures that these behaviors are addressed in the remainder of the consultation process. Equally as important, goal setting is essential for determining the success of the treatment(s) applied.

The last step of problem identification involves establishing a baseline for the problem behavior(s). The baseline refers to the level of the behavior before treatment is started. In textbook cases, the consultee agrees to record the occurrence of the problem behavior for a representative period of time following the problem identification interview—perhaps two weeks. In practice, if the behavior problem is severe, it may be necessary to rely on retrospective records and to proceed immediately to the problem analysis stage. In either case, it will be important to have the most accurate information possible regarding the occurrence of the problem behavior before treatment is begun, so that any changes in behavior level with treatment can be measured and the effectiveness of the treatment can be evaluated accurately.

The importance of thorough problem identification in the consultation process can hardly be overemphasized. Without successful problem identification, the behavior of concern remains partly unknown. It will be very difficult to design an effective treatment, and any treatment attempted will likely be applied in inappropriate situations. Thus, the problematic behavior will not be addressed consistently (if at all), and change is unlikely to occur. Moreover, if the behavior is not

clearly identified, it will be impossible to monitor accurately any changes in the behavior, and the effect of the treatment cannot be accurately evaluated. Research in the field has shown that clear problem identification is a major factor closely associated with successful treatment outcomes in consultation.

D. Problem Analysis

Problem analysis is the third stage of the consultation process. In this stage, the consultant and consultee work to identify particular antecedents and consequences that may be influencing the problem behavior. The process of identifying the relevant connections between antecedents, behaviors, and consequences is known as "functional assessment" because the function performed by each factor is evaluated. Once the functional assessment is completed, a treatment plan may be formulated. The plan may involve changing relevant antecedents to the problem behavior, consequences of the problem behavior, or both. If the plan involves changes in consequences, contingencies that reinforce the behavior problem are removed. In addition, new contingencies are instituted to reinforce alternative, positive behaviors (e.g., prosocial skills and social competencies). Usually, the new contingencies involve providing the client with some type of reward for displaying the alternative, positive behavior. In practice, it may be wise to identify a number of rewards that clients would find motivating, and either to rotate the rewards periodically or to allow clients to choose a reward for which they will work. Both strategies have the advantage of preventing clients from becoming satiated with a single type of reward; the latter strategy also allows clients to select the most motivating reward and encourages them to "buy into" the treatment process by participating actively in its application. It should be stressed that well-designed treatments emphasize use of reinforcement to increase appropriate behavior, rather then punishment to decrease problem behaviors. In this way, clients receive positive feedback about their performance, which may have the additional benefits of enhancing self-esteem, increasing willingness to cooperate in the treatment, improving rapport with the caregiver (the consultee), and preventing defiant behavior.

Another strategy frequently used in treatment design is removing or altering antecedents that may trigger the problem behavior. This technique can be a very easy and effective means of changing client behavior, for it may prevent the problem behavior from ever getting started. For example, telling a young girl that she has to wash up for dinner in two minutes, rather than that she has to quit playing immediately, may be sufficient to prevent a temper tantrum. The first strategy allows the child to finish the current activity and includes a promise of a generally pleasurable event (dinner), whereas the second strategy signals only the immediate end to playtime. In some cases, removal or significant alteration of antecedents may not be feasible. For instance, a young child may always have to get into the car to be taken to school, even if getting into the car for school triggers a temper tantrum. Nonetheless, in those cases where antecedents can be removed or substantially altered, rapid improvements in client behavior may occur with minimal consultee effort during plan implementation.

Another strategy that may be helpful in plan design is for the consultant and consultee to select an established treatment technique that "matches" the problem or concern, based on empirical research supporting the match. Increasingly, a number of behavior therapy procedures have been shown to work effectively with children when implemented by mediators.

The last step in problem analysis is to set initial goals for clients. It is usually too much to expect the client to obtain the final, desired goal level right away. To facilitate client success during the early stages of the treatment, initial goals that are attainable by the client must be set. Generally, these goals will be well short of the ultimate desired behavior level and may represent a very modest improvement in behavior over baseline level. Nonetheless, such intermediate goals must be used. If attainable goals are set, the client will begin to experience success, and will be rewarded and reinforced for appropriate behavior. This success will result in performance of appropriate behavior at the initial goal level. Once this step is achieved, the goal may be raised in another increment that is attainable by the client. This process is repeated as necessary until the desired end behavior level is attained.

E. Plan Implementation

Plan implementation is the next stage of the consultation process. It is the only stage that is generally the sole or primary responsibility of the consultee. Typically, the teacher or parent carries out the treatment by changing the antecedents and consequences in the natural setting (usually home or school) as planned, so that problem behavior is no longer reinforced, and positive, alternative behaviors are rewarded. If the treatment has been designed appropriately for the client,

the problem behaviors will begin to decrease and positive behaviors will increase.

During this stage, it is critical that the client's behavior level is closely monitored. The consultee must make periodic records of the client's behavior. This monitoring is essential for determining the success of the treatment during the plan evaluation stage. The consultant and consultee should hold brief but regular meetings during the treatment process to discuss and evaluate client progress. Once the client achieves the initial goal, successively higher goals are set. In an ideal situation, the client will show continuous improvement and meet each successive goal.

If the client consistently fails to attain a certain goal level, the consultant and consultee must determine the reason for failure. One possibility that always should be considered is that the goal level was too high. If this appears to be the case, the treatment may be continued by returning to the last behavior level that the client successfully achieved, and then increasing the goal level in smaller increments than previously attempted.

Another possibility that always should be considered is that the design of the treatment was flawed. For instance, it is possible that the consultant and consultee did not correctly identify all the reinforcing consequences of the behavior problem during the functional assessment. In this case, the client still may be receiving sufficient reinforcement to continue the problem behavior, despite the changes made. Thus, the treatment must be re-designed to remove the remaining reinforcing contingencies. It also is possible that the rewards instituted for positive alternative behaviors were not sufficiently motivating. In this situation, new rewards must be identified that are sufficiently attractive to change the client's existing behavior pattern.

A treatment may also fail because it is not implemented as intended. In technical terms, the treatment may lack integrity. A wide variety of factors may be responsible for consultee failure to make the planned changes. Some common reasons include lack of time, improper understanding of the precise changes that need to be made, or interference from outside sources. If it appears that the consultee did not carry out the treatment as planned, the consultant and consultee should carefully review the difficulties that arose and should make appropriate modifications to the plan. In extreme cases, the whole treatment plan may need to be reformulated. It is a fundamental principle of behavior consultation that treatments must be implemented as intended to produce the desired positive effects.

Once the causes of failure have been identified and a revised plan has been formulated, the implementation phase begins again, usually starting at the last goal level successfully achieved by the client. Although one may hope that treatments always will succeed on the first round of implementation, often several rounds are necessary to attain the ultimate desired goal. Design and implementation of treatments is a complex process, and participants should anticipate a certain degree of frustration and backtracking in a significant proportion of cases.

F. Plan Evaluation

Plan evaluation, the final stage of the consultation process, occurrs at the end of a somewhat lengthy course of treatment—either at the end of a time limit set by the consultant and consultee for the consultation process, or when it appears that the client has attained maximum benefit from the treatment program. The consultant and consultee together review the client's progress. Data collected by the consultee are essential for assessment of client progress. Generally, case study methods using an AB design are applied to evaluate progress. In AB designs, the "A" refers to the baseline period before the treatment was started, and the "B" refers to the treatment phase after the treatment plan was implemented. The level of the problem behavior in these two phases is compared to determine client progress. Ideally, if data have been collected by the consultee over a period of weeks during both the baseline and treatment stages, it may be graphed for easy visualization of trends.

Figure 1 displays a sample graph for a treatment designed to reduce a child's problem behavior of calling out answers in class. The problem behavior was at a relatively high and fairly constant level during the baseline phase. It then fell to progressively lower levels through the month following treatment implementation. At the time of the last data recording, the behavior had reached the desired goal of only once or twice per day.

An important decision that must be made during the plan evaluation interview is whether to maintain, modify, or terminate the treatment. If it appears that the client is making significant progress but has not yet achieved the ultimate goal, the usual choice is to maintain the treatment and continue the consultation process. If it appears that the client has not achieved the ultimate goal and is making little progress toward it, two options are available: (1) the treatment may be

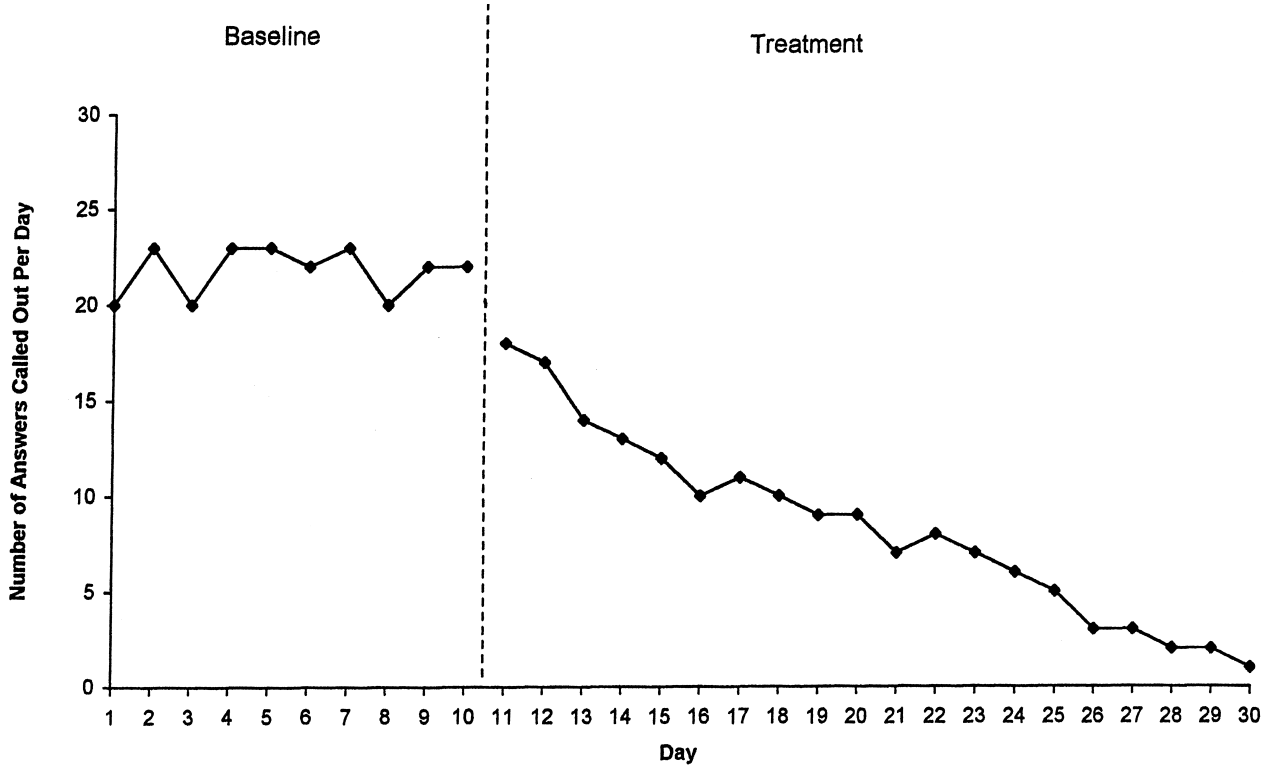

FIGURE 1 Sample graph showing baseline and treatment phases of a successful treatment for calling out answers. Baseline refers to data collected before the treatment was implemented. Treatment refers to data collected after the treatment was implemented.

substantially modified, or (2) consultation may be terminated and other treatment modalities pursued. If, on the other hand, the client has achieved the target goal, it may be appropriate to terminate the program. Generally, the most desirable outcome of consultation is for the client to continue at the newly achieved behavior level without special support. In the ideal case, there will be naturally occurring, positive consequences for appropriate behavior—such as parent and teacher approval, academic success, or maintenance of good peer relationships—which do not involve specially designed contingencies and will continue to reinforce the client's new behavior in the absence of special rewards. In practice, however, abruptly terminating the treatment may result in the return of the problem behavior, especially in cases that did not involve teaching the client new skills. One recommended solution to this dilemma is gradually fading out the treatment. For example, the client continues to receive reinforcement for maintaining appropriate behavior, but the amount or—more commonly—frequency of reinforcement is gradually decreased. In this way, the importance of the reinforcers associated with the treatment is gradually decreased, allowing the natural, positive consequences of appropriate behavior to become more salient to the client. Also, the client learns to perform the desired behavior for fewer special rewards. Eventually, the special support becomes unimportant, and the client will continue to perform the desired behavior without it.

To this point, the focus of consultation has been on improving client behavior. In the plan evaluation stage, however, it is also important for the consultant to help the consultee recognize and generalize the skills they have learned and used through the consultation process. At least two types of generalization may occur. The consultant should help the consultee realize that similar treatments might work with other clients with similar problems. In addition, the consultant should help the consultee realize that they can apply the same problem-solving steps used in consultation to many kinds of behavior problems displayed by different clients—either on their own or through additional work with a consultant, if necessary. Thus, plan evaluation not only serves the needs of the client

in the current case, but also prepares the consultee to achieve greater success in handling future behavior problems with other children.

II. THEORETICAL BASES

As the name implies, behavioral consultation historically has been associated most strongly with behavioral schools of psychology. The theory underlying traditional behavioral consultation involves direct adaptation of behavioral principles, particularly principles of operant learning. Generally, it is assumed that inappropriate behavior is learned and maintained by reinforcement received for performing the behavior. Two types of reinforcement may be distinguished. Positive reinforcement occurs when the client obtains some desired object. The desired objects may be tangible, such as food or toys, or intangible, such as attention. Negative reinforcement occurs when something undesirable is removed from the environment as a result of inappropriate client behavior. For instance, children may be excused from doing chores, or from solving math problems, if they have a temper tantrum. It is important to distinguish negative reinforcement from punishment, which is the application of some undesirable consequence for inappropriate behavior.

Drawing on operant principles, the treatment strategy most commonly adopted in behavioral consultation is to modify the reinforcing contingencies which occur in the client's environment. The reinforcing contingencies associated with the problem behavior are removed, as far as possible. Reinforcing contingencies are added for alternative, positive behaviors. The end result is that clients will learn the alternative, positive behavior because there is no longer any gain associated with the problem behavior, and they may obtain new reinforcement by behaving appropriately.

Operant learning theory also recognizes that behaviors are triggered by antecedent conditions. The individual may learn that a particular behavior is reinforced only under specific conditions—that is, when certain antecedents are present. (Providing reinforcement under only specific conditions is known as "differential reinforcement.") For instance, a child may learn that dawdling is negatively reinforced when the teacher says it's time to do math, but not when the teacher says it's time for recess. Thus, the child performs the behavior when—and only when—those antecedents are present. This principle leads to another strategy that is often used in consultation: changing of antecedents, or "stimulus control." Those antecedents that trigger the behavior are removed from the environment. Conversely, antecedents that trigger appropriate behaviors may be added to the client's environment. For instance, a child may be allowed to play only with "good" friends with whom he or she behaves appropriately.

One intriguing implication of traditional behavioral theory applied to consultation is that if the process is pursued properly, it must eventually meet with success. If clients do not initially terminate their inappropriate behavior and replace it with the desired positive behavior, it is because the contingencies involved in learning and maintaining the behaviors were not adequately addressed in the initial treatment plan. It is possible that all the contingencies maintaining the problem behavior were not removed, or the rewards for alternative positive behavior were not sufficiently desirable to the client. In either case, the plan may be reformulated, and the treatment may be attempted again. In theory, it is always possible to remove the contingencies associated with the problem behavior and to institute sufficiently reinforcing contingencies to support the alternative positive behavior. The only difficulties (which may be considerable) lie in the practical aspects of correctly identifying and removing all the reinforcing contingencies for the problem behavior, and providing sufficiently reinforcing contingencies for the positive behavior.

A number of additions and elaborations have been made to these fundamentals of behavior theory applied to consultation. One important addition is the concept of the extinction burst. Observations of clients who have been treated using behavioral methods indicate that when the treatment is first put into effect, the occurrence of the problem behavior actually may increase. This phenomenon may be particularly evident if the treatment plan calls for ignoring the problem behavior rather than giving the client attention for it. In such cases, almost all clients initially attempt to obtain their usual reinforcement by increasing the severity or duration of the problem behavior. This "extinction burst" occurs because the client has not yet broken the old associations between the behavior problem and its reinforcing contingencies, or has not made the new associations between the alternative positive behavior and its reinforcing contingencies. In practice, the consultee must simply continue to carry out the treatment plan, despite the temporary increase in the client's problem behavior. If the consultee continues with the plan, and the plan adequately addresses reinforcing contingencies for the

old and new behaviors, the extinction burst will soon fade, and the problem behavior will be replaced.

In recent years, several expansions have been made that go beyond application of traditional behavioral principles to the practice of consultation. It has been recognized that changing the contingencies associated with various behaviors may not be sufficient to cause clients to improve their behavior. Clients may not possess the skills necessary to perform any positive, alternative behaviors to the problem behavior. In this case, even if clients are motivated to change, it may be impossible for them to alter their behavior because they do not know what else to do. The remedy in these situations is to provide the client with skill training. Skill training serves to teach clients what positive, alternative behaviors they should perform, and how they should carry out those behaviors in practice. At times, skill training can be a lengthy process, especially for clients with significant cognitive or emotional challenges.

In a similar vein, it has been recognized that consultees also may need training in methods of providing the appropriate consequences agreed upon during plan design. Sometimes consultees are unfamiliar with the techniques of providing positive reinforcement to clients. For instance, consultees may need training and practice in providing specific verbal praise for positive client behaviors. Conversely, consultees may lack skill in promptly and calmly enforcing consequences for inappropriate behavior, such as making the child go to his or her room after a single warning.

There also has been interest recently in incorporating additional forms of treatment with those derived from traditional behavioral principles. For instance, literature on effective teaching is replete with techniques for teachers to maximize their instructional effectiveness. Strategies drawn from this body of literature may facilitate improved client behavior in the classroom and may be incorporated into consultation treatments. These strategies typically bear some relation to behavioral antecedents and consequents, but do not derive from traditional behavior theory.

Another important movement is to include empirically supported treatments in the consultation program. A number of mediator-based treatments have been found to be effective with certain types of behavior problems. There is a growing body of empirical literature documenting appropriate matches between particular treatments and specific behavior problems. A recent focus in consultation is selecting treatments that have been shown to match particular behavior problems. These treatment procedures are often derived from diverse theoretical orientations, including behavior therapy.

In current work in problem-solving consultation, treatments drawn from various branches of psychology other than traditional behavior theory have been incorporated into what has been traditional behavioral consultation. For instance, cognitive techniques in which the client stops or alters the thought processes that lead to inappropriate behavior have been used in the treatment programs. In future work, the fundamental stages of consultation—initiation of the relationship, problem identification, problem analysis, treatment application, and plan evaluation—may continue to provide a framework for the consultative process, while treatment design is expanded to incorporate additional techniques from nonbehavioral schools of psychology.

In sum, it is clear that traditional behavioral consultation is strongly grounded in traditional behavior theory, particularly theories of operant learning. Fundamental principles of operant learning continue to guide the practice of behavioral consultation. Nonetheless, the field of behavior consultation is clearly evolving to incorporate new advances in psychology, as already witnessed by the inclusion of empirically supported treatments and skill training approaches for both clients and consultees.

III. APPLICATIONS AND EXCLUSIONS

One of the great strengths of behavioral consultation is its range of applicability. In theory, behavior consultation can be used with any client with any identifiable behavior problem. Moreover, as long as appropriate reinforcing contingencies can be addressed, appropriate skill training is supplied to the client and consultee, and the treatment is faithfully applied by the consultee, a successful outcome is anticipated. In this sense, behavior consultation represents an especially promising treatment delivery option.

Another great advantage of behavioral consultation derives from the indirect nature of the process. As emphasized earlier, the consultee is primarily responsible for administering the treatment to the client, which is the most time-consuming phase of the process. Thus, consultation can be an extremely efficient means of service delivery from the standpoint of consumption of professional consultant time and resources. A psychologist may be able to work on several consultation cases

in the same time that would be required to conduct a single direct treatment.

There are also considerable advantages to treatment by having the consultee act as the primary treatment agent. Because the consultee is typically a caregiver for the client, the consultee usually spends substantial periods of time with the client on most days. Thus, the client can receive continuous and ongoing treatment. In addition, the treatment usually takes place in the natural setting, where the problem behavior actually occurs. This context permits immediate, on-the-spot application of the strategies developed in the treatment plan. Finally, because the consultee can readily observe the client's behavior in the natural setting, the consultee can collect extensive data on client behavior, which permits thorough evaluation of plan effectiveness.

It is clear that behavioral consultation has a wide range of applicability and offers a means to efficiently use both consultant and consultee resources. Nonetheless, there are certain challenges that must be faced in the process. One of these challenges has already been discussed: it can be difficult to identify correctly and change all the relevant antecedents and consequences for the behavior problem, and to provide sufficiently motivating rewards for performance of alternative, desirable behaviors.

Two other challenges that can disrupt the consultation process deserve special mention. The first is the problem of treatment acceptability, which refers to consultee willingness to implement the treatment. If the consultee is very willing to implement the treatment, it has a high degree of acceptability; if the consultee is not willing to implement the treatment, it has a low degree of acceptability. Research has indicated that treatments with a high degree of acceptability are more likely to be implemented by the consultee. Treatments with a low degree of acceptability probably will not be implemented by the consultee and will provide no benefit to the client. The issue facing the consultant is how to facilitate the design of treatments with a high degree of acceptability.

A number of factors that influence acceptability have been identified. Time required for the treatment appears to be a major factor. Treatments that require less time are preferred over those that require more time. Other important concerns include whether the treatment is positive or negative (i.e., emphasizes rewards for good behavior vs. punishment for bad behavior), the complexity of the treatment, and fairness to other children in the setting. In general, it appears that positive treatments are more acceptable than negative ones, more complex treatments are more acceptable for more severe problems, and treatments are more acceptable if they are perceived as fair to all children in the setting. The most critical point to remember, however, is that the treatment must be acceptable to the particular consultee who will administer the treatment to the client. Thus, the personal perspective and concerns of the consultee must be taken into account during treatment planning; otherwise, no treatment will occur, and the problem will persist. It is important for the consultant to ask the consultee during the planning phase whether he or she finds the treatment acceptable. If the consultee indicates that the treatment is not acceptable, it must be modified before any attempt at implementation is made.

The issue of acceptability must be distinguished from another challenge associated with consultation: the problem of treatment integrity. Treatment integrity refers to whether the treatment is implemented as planned. Unlike the issue of acceptability, integrity does not involve consultee attitude toward the treatment, or consultee intention. Treatment integrity refers to what actually happens during the plan implementation stage. If the treatment is implemented as intended, it has a high degree of integrity. If it is not implemented as intended, it has a low degree of integrity. Treatment integrity represents a considerable challenge to the efficacy of consultation. In one study, only half the consultees who verbally agreed to implement a treatment actually carried the plan through to completion.

A number of factors affect treatment integrity. Some of the factors are identical to those that influence treatment acceptability. Time involved appears to be the major determinant of both integrity and acceptability. Treatments that require large amounts of consultee time typically have a low degree of integrity, as well as a low level of acceptability. Other important factors related to integrity include the complexity of the treatment, the number of treatment agents, and the perceived effectiveness of the treatment. In general, it appears that more complex treatments have lower integrity. Adding to the number of treatment agents also seems to lower integrity, while obtaining information that supports the effectiveness of the treatment increases integrity. The most important point, however, is that the consultant needs to work with the consultee to identify possible detriments to treatment integrity for the specific plan under consideration. The consultant also needs to develop ways to overcome those obstacles before any attempt is made to implement the plan.

The upshot of these considerations is that although consultation has a nearly unlimited range of applicability in theory, there are critical practical considerations that may interfere with its use in any real-world case. It is vital that consultants be aware of issues of treatment acceptability and integrity, and work with consultees to develop treatments that are highly acceptable and likely to possess a high degree of integrity. These issues may be addressed while planning the treatment by talking openly with consultees about whether the treatment is acceptable to them and problem solving about obstacles that may interfere with implementation (i.e., reduce treatment integrity). If issues of acceptability and integrity can be resolved, there is a good chance that the plan will be carried out faithfully, and the client will receive ongoing treatment for the behavior problem, when and where it occurs.

IV. EMPIRICAL STUDIES

A number of studies have been conducted to document the effectiveness of consultation. Several different variables have been examined to evaluate separate aspects of the consultation process.

As previously discussed, the two main goals of behavioral consultation are improving the client's behavior and enhancing the consultee's knowledge and ability to handle children's challenging behaviors. From reviews of studies reported in the literature, it appears that in most cases, some or all aspects of the client's behavior improve significantly with behavioral consultation. It also appears that in most cases, some or all aspects of consultee knowledge and ability improve significantly with consultation. Additional research has revealed that most teachers who have participated in consultation cases believe that their own professional skills have improved as a result of consultation. Moreover, teachers in schools with consultants tend to view children's behavior problems as less severe than teachers in schools without consultants. Referral rates among teachers who have participated in consultation drop rapidly after four to five years, suggesting that these teachers may gain the confidence and ability to handle children's behavior problems on their own. Notably, teachers and administrators rate consultation as one of the most important services provided by school psychologists, and school psychologists rate consultation as one of their most preferred professional activities.

These findings suggest that consultation is a very beneficial and highly regarded treatment modality. Interestingly, however, most of the research on the effectiveness of consultation was completed in the late 1970s or early 1980s, rendering the results somewhat dated. In addition, some of the outcome research appears to suffer from certain methodological shortcomings. In fact, recent commentaries have noted that solid evidence is lacking for certain supposed positive results of behavioral consultation, such as the ability of consultees to apply the skills they have learned to other cases. In addition, there is contradictory evidence on other points, such as the need for equality in the relationship between the consultant and consultee. In sum, although the preponderance of existing evidence indicates that behavioral consultation is an effective and desirable treatment modality, further studies are needed to evaluate the efficacy of traditional consultation strategies and methods.

V. CASE ILLUSTRATION

To describe the elements of behavioral consultation, we will consider the hypothetical, somewhat ideal case of "Jimmy." Jimmy is a third grade student. His teacher, Ms. Thompson, has reported that Jimmy often "acts out" in class and that his behavior is disruptive to other students. Jimmy often spends so much time acting out that he completes very little of his work. She believes that Jimmy has attention deficit hyperactivity disorder (ADHD), and has asked the school psychologist what can be done about Jimmy's behavior.

To successfully initiate the consulting relationship, it is important for the school psychologist to begin by listening to Ms. Thompson's concerns about Jimmy. One of the first steps that the psychologist needs to take after hearing Ms. Thompson's account of the situation is to discuss the nature of the consultative process, the stages of consultation, and the roles and responsibilities of each participant at each stage. Ms. Thompson appears to believe that the psychologist will either work directly with Jimmy to "cure" his disorder or will provide her with a "quick fix" solution that will promptly eliminate the behavior problem. Such beliefs can be common among consultees who have not participated in the consultation process before and do not understand the indirect nature of service delivery. The consultant must make clear that he and Ms. Thompson will collaborate on developing a treatment to improve Jimmy's behavior, which Ms. Thompson will implement in the classroom. Contrary to traditional, direct service models, that consultant probably will not conduct individual therapy

with Jimmy, nor will he simply give a one-step solution to Ms. Thompson. The consultant needs to describe the stages of the consultation process (e.g., problem identification, problem analysis, plan implementation, and plan evaluation) so that Ms. Thompson is aware that she and the consultant will work together, and that a certain amount of time and effort will be required before Jimmy's behavior can be effectively treated. The consultant also needs to emphasize that he brings professional training in behavior principles to the relationship, while Ms. Thompson contributes her knowledge of Jimmy, her classroom expertise, and her knowledge of effective instructional techniques. Thus, the consultant can work with Ms. Thompson to identify behaviors for treatment, develop a treatment plan, and monitor treatment effectiveness. Ms. Thompson, however, will implement the plan in the classroom setting and will act as the primary agent of change.

Once Ms. Thompson understands the nature and stages of consultation, problem identification may be started. Ms. Thompson's early statements that Jimmy "acts out" give some indication of the type of behavior problem but do not describe the behavior in a clear way. The consultant begins by asking Ms. Thompson to describe exactly what Jimmy does when he "acts out." Ms. Thompson reports that Jimmy will rock in his chair, fidget, play with items from his desk, get out of his seat, and wander around the room.

The consultant pursues further description of the behavior by asking how often Jimmy displays these behaviors, how long they go on for, and how severe they are. Ms. Thompson replies that the behaviors seem to occur in streaks of 15 to 30 minutes, occurring two or three times per day. The behaviors are sufficiently severe that Jimmy only gets about one-quarter of his work done, and other students have complained to Ms. Thompson that they cannot concentrate when Jimmy is acting up.

The consultant now has a reasonably clear picture of Jimmy's problem behaviors. In the consultant's professional knowledge, Ms. Thompson's concerns about Jimmy fall into the category of "academic-engaged" behavior. At this point, however, there is no information that might indicate what triggers Jimmy's "nonengaged" behavior or what reinforces its occurrence. The consultant proceeds to ask important "W" questions: when the behaviors occur, in what setting they occur, who is present when they occur, and what happens after Jimmy performs the behaviors.

Ms. Thompson reports that Jimmy's challenging behaviors seem to occur when the class begins new seatwork assignments. Knowing that there are different types of seatwork, the consultant asks for additional clarification about what types of seatwork assignments Jimmy is doing when the behavior occurs. Also, there are typically more than two or three periods of seatwork per day in most third grade classes, so it seems that something else must be triggering Jimmy's behavior in certain situations. Ms. Thompson indicates, however, that she is not aware of any particular work types associated with the behavior at the moment. Moreover, the setting (Ms. Thompson's classroom) and the people present are consistently the same.

The consultant now turns to what happens once Jimmy begins to display the nonengaged behaviors. Ms. Thompson reports that she attempts to direct Jimmy to sit still and do his work. She indicates that she gives verbal directions, or verbal reprimands, or stands next to him until he settles down and starts working. The consultant asks how Jimmy responds to these attempts to make him work. Ms. Thompson indicates that Jimmy may start his work but soon begins some other nonengaged behavior. The consultant asks if any other treatments have been tried with Jimmy, and Ms. Thompson indicates not.

The consultant now has a fairly clear understanding of the antecedents, behavior, and consequences regarding Jimmy's behavior problem, as far as Ms. Thompson can describe them during this interview. The antecedent appears to be starting seatwork assignments. The behavior includes a variety of nonengaged activities, such as rocking in the chair, rummaging through his desk, fidgeting, and getting out of his seat. The consequences seem to be that Jimmy receives a fair amount of attention from Ms. Thompson and does not do much of his work.

The consultant and Ms. Thompson discuss goals for Jimmy. Ms. Thompson at first indicates that she wants Jimmy to work like the other children in her class. The consultant pursues further clarification of her statement in order to obtain a specific description (e.g., an operational definition) of the desired behavior. In operational terms, Ms. Thompson wishes to increase Jimmy's on-task behavior to the same level as that of the other students, and to increase his work completion to the same level as other students, although she cannot describe more specifically what levels of on-task behavior and work completion she desires at the moment.

Finally, the consultant requests that Ms. Thompson record data on Jimmy's behavior for a two-week period. Ms. Thompson is understandably impatient to begin treatment, so the consultant explains the importance of

obtaining baseline data for treatment evaluation. With this understanding of the significance of behavior observation, Ms. Thompson agrees.

The consultant knows that in most circumstances, the most informative type of data to have on academic behavior is the amount of time spent working on academic tasks, relative to the amount of time spent off-task. The consultant suggests that Ms. Thompson observe Jimmy during representative seatwork assignments and record the amount of time he is engaged in academic work. Ms. Thompson indicates, however, that she does not think she has time to make such detailed observations. The consultant, aware that Ms. Thompson is unlikely to carry out any procedure that requires too much time, discusses with her alternative strategies for data collection. They agree that she will go over Jimmy's seatwork assignments, and they note the amount of work completed. Although this technique does not directly address the problem of engaged behavior, it certainly addresses the problem of work completion. Moreover, work completion is likely correlated with Jimmy's on-task behavior, so this technique represents a reasonable compromise for data collection.

The consultant also realizes that the current understanding of antecedents for Jimmy's behavior is incomplete, as is the current understanding of the desired behavior level. The consultant asks Ms. Thompson to make further notes of when Jimmy's behavior occurs (including time of day and specific seatwork tasks), as well as to note the level of work completion by other children in the class, so that a specific goal for Jimmy may be formulated. Ms. Thompson agrees.

The problem identification interview is now concluded. Ms. Thompson's willingness to collect behavior observations indicates that good rapport has been established between the consultant and consultee. A generally clear description of the ABCs of the behavior has been obtained; where vagaries remain, the consultant has arranged for Ms. Thompson to collect additional relevant information. The availability of baseline data will ensure accurate assessment of treatment effectiveness, at least with respect to work completion. Because only two specific behavior problems have been identified, problem-centered consultation appears to represent a more appropriate treatment modality for Jimmy than developmental consultation at the present time.

The consultant and Ms. Thompson meet two weeks later for the problem analysis interview, after Ms. Thompson has collected the baseline data. The interview begins with a review of the data collected. Complete data for the entire consultation period are displayed in Figure 2; at the time of the problem analysis interview, only the data in the "baseline" region of the graph actually would be available. The data generally confirm Ms. Thompson's initial reports that Jimmy completes only about one-fourth of his work. With respect to the times of occurrence, Ms. Thompson reports that Jimmy's behavior occurs at various times of the day. Hence, time does not appear to be an important factor in determining Jimmy's behavior. Ms. Thompson notes, however, that Jimmy's behavior occurs whenever the seatwork assignments involve writing. The consultant realizes that this is an important additional specification to the antecedent conditions for Jimmy's problem behavior.

Ms. Thompson also reports the level of work completion among other children in her class whom she regards as good students. These children completed approximately 90% of their seatwork.

The consultant and consultee now conduct a functional assessment of the conditions that trigger and maintain Jimmy's behavior. Considering what has been learned about the ABCs of Jimmy's behavior, they hypothesize that Jimmy's behavior is related to working on writing assignments. They hypothesize further that his off-task behavior is both positively and negatively reinforced. It is negatively reinforced in that he is able to avoid doing writing assignments, which he dislikes. It is positively reinforced in that he receives considerable attention from Ms. Thompson when he engages in these behaviors.

Using this information, the consultant and consultee now work to formulate a treatment plan. They decide on a plan that involves several components. Ms.Thompson will no longer pay attention to Jimmy when he displays off-task behavior. Instead, she will provide praise to Jimmy when he is appropriately engaged in his seatwork. In addition, Jimmy will earn rewards for work completion involving writing. He will be awarded stickers for completing a specified amount of his work. When he earns five stickers, he also will receive a prize from Ms. Thompson's selection of rewards that she uses with her class on special occasions. Jimmy will be allowed to pick the reward he wants to work for in advance. Ms. Thompson indicates that the treatment plan is very acceptable to her, and she does not anticipate significant difficulties with implementation—indicating that treatment integrity is likely to be high.

This treatment plan has a number of desirable features. It is a "positive" plan, in the sense that Jimmy has

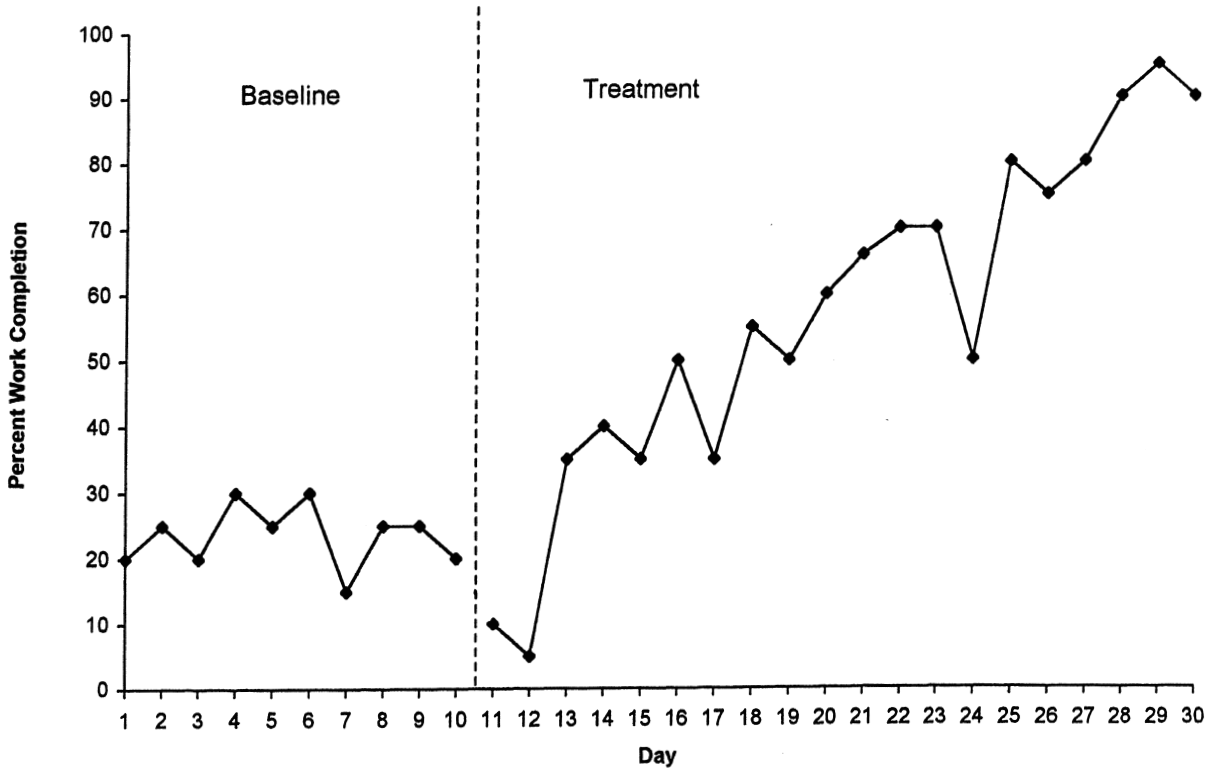

FIGURE 2 Jimmy's work completion.

the opportunity to earn rewards rather than working to avoid punishment. It is also positive in that desirable, positive behaviors (staying engaged and achieving work completion), which are alternatives to Jimmy's problem behaviors, are specified. It is easily implemented because the rewards are easy to give; providing verbal praise as the desired behavior is occurring requires little effort and can be very motivating. In fact, the use of verbal praise seems especially promising in this case, since there is already evidence that Jimmy is motivated by teacher attention. It is also easy for Ms. Thompson to check Jimmy's work completion; indeed, this task is one she performs on an informal basis for all students. Giving stickers is an easy, commonly utilized procedure, and using rewards that are already available and in use in Ms. Thompson's classroom is a straightforward matter. Allowing Jimmy to pick rewards in advance helps to ensure that he will find something motivating to work for and will have a clear awareness of what he can gain by behaving appropriately. Also, allowing Jimmy to pick from a selection of rewards helps to ensure that he will not burn out or "satiate" on one particular reward. All of these factors contribute to the high degree of acceptability, and anticipated integrity, of the treatment.

The final step in problem analysis is to determine goals for Jimmy. Ms. Thompson has decided that she wants Jimmy to attain 90% work completion on writing seatwork, like other good students do. She believes that Jimmy's off-task behavior will decrease as his work production increases; therefore, she wants to focus on increasing his work completion. The consultant agrees that this approach is a reasonable one and is supported by research. Now the consultant and Ms. Thompson must determine an attainable initial goal. Because Jimmy is completing only about one-fourth of his writing seatwork at the present, it is too much to expect that he will achieve full work completion immediately. Instead, the consultant and Ms. Thompson agree that an initial goal of one-third of the work is reasonable. Jimmy will receive a sticker every day when he completes one-third of his work. Once this goal has been consistently attained, it will be raised to half his work, then two thirds, three quarters, and finally 90% of his work. In addition, Ms. Thompson will praise Jimmy when she notices him on task.

At the conclusion of the interview, Ms. Thompson agrees to start the treatment at the beginning of the following week. She will continue to collect data on work completion as during baseline, so that baseline and treatment stages may be compared. The consultant and Ms. Thompson agree to meet briefly twice per week to review Jimmy's progress and to determine whether changes are needed in the treatment plan.

Ms. Thompson proceeds to implement the treatment. She explains the new reward system to Jimmy, and she allows him to pick a reward to work for during the first week.

Data from the first two days, as depicted in Figure 2, show an immediate decrease in Jimmy's work completion. Ms. Thompson also reports that Jimmy's nonengaged behavior increased considerably during this time. This increase in problematic behavior, and the corresponding decrease in work production, is probably an extinction burst, which the psychologist anticipates. Although Ms. Thompson is initially discouraged by this worsening in Jimmy's behavior, the psychologist explains the phenomenon to her and encourages her to continue the treatment.

On the third day there is a sudden improvement in Jimmy's behavior, and he earns his first sticker for completing one-third of his work. He is learning that he will no longer receive attention for his inappropriate behavior and that positive consequences are now associated with engaged behavior and work completion. As a result, his on-task behavior and work completion increase significantly. Ms. Thompson and the consultant, however, decide to maintain the same goal until Jimmy has earned stickers for three days in row, to ensure that he has firmly associated his new behavior with success. After earning three stickers in a row, the goal is raised to completing one-half of his seatwork.

Over the next few weeks, Jimmy attains higher and higher behavior goals. Goals are raised after Jimmy earns stickers for three days in a row. As the goals are slowly raised, his behavior improves to meet them. Full data on Jimmy's work completion are displayed in Figure 2. Occasionally, Jimmy has off days when he does not earn stickers (such as Days 17 and 24), but the treatment program is continued as planned because he is able to achieve his goals fairly regularly. If some point had been reached where Jimmy consistently failed to achieve his goal, the consultant and Ms. Thompson would have met to discuss possible causes for the difficulty and develop appropriate modifications to the treatment plan.

After the fourth week, the consultant and Ms. Thompson meet for the plan evaluation interview. They review the data collected through treatment, and they conclude that Jimmy has attained the desired behavior level determined during the problem identification interview. Ms. Thompson, however, wonders whether suddenly discontinuing the treatment program will bring a return of the problem behavior. The consultant applauds Ms. Thompson's awareness of the potential danger of abruptly terminating the treatment procedure. He indicates that it is usually best to use some sort of fading procedure in which the frequency of rewards is gradually decreased while Jimmy continues the appropriate behavior. In this way, Jimmy's appropriate behavior becomes less dependent on special reward contingencies. The consultant and Ms. Thompson decide to require two days of 90% work completion to earn stickers, then three days, and finally up to one week. If he maintains appropriate behavior at that point, it seems likely that Jimmy will no longer require special rewards for the behavior, and the treatment program will be ended.

In the plan evaluation interview, the consultant also asks Ms. Thompson whether she believes similar treatments might work with other children. Ms. Thompson indicates that she believes so and is able to name other situations where she would use similar methods. The consultant also asks if Ms. Thompson believes she could use the problem-solving steps they have used in consultation to address other challenging behaviors displayed by other children. Ms. Thompson expresses confidence in her ability to do so. The consultant and Ms. Thompson agree that Ms. Thompson is capable of finishing the fading portion of the treatment without additional consultant input. At this point, the consultative relationship may be ended, because it appears that both client and consultee have achieved maximum benefit.

It is important to note what has not been addressed through the consultation process. Ms. Thompson's initial impression, that Jimmy suffers from ADHD, was not addressed because a short list of only two specific related behavior problems (nonengaged behavior and failure to complete work) was generated. These behaviors were adequately treated through the problem-centered consultation process, and Ms. Thompson reports no other concerns about Jimmy. Thus, there seems to be no need to pursue developmental consultation to address wide-ranging ADHD issues at this time. If Ms. Thompson's list of concerns about Jimmy had included a wider variety of problems which appeared, in the

consultant's professional knowledge, to be related to ADHD, a developmental consultation approach might have been used to address issues of broad psychological dysfunction.

VI. SUMMARY

Behavioral consultation represents a unique form of therapy with many positive features. Because it is an indirect form of service delivery, the professional time and resources of the consultant can be used with particular efficiency. The knowledge and skills of the consultant and consultee are combined through the consultative process to design the best treatment possible. Because consultation has a very specific, problem-solving focus, the most problematic behaviors exhibited by the client are given full attention. In addition, solid grounding in behavioral principles and treatments supported in the empirical literature ensures that a wide range of sound treatment strategies are available. Focusing on the specific behavior exhibited by a single client, however, permits individualized treatment. Moreover, implementation of the treatment by a caregiver in the natural setting promotes the success of the treatment. The focus on a specific behavior also permits extensive data collection and thorough evaluation of treatment effectiveness. Finally, by involving the consultee in the entire process, the consultee learns principles of problem resolution, which may be applied to the challenging behaviors exhibited by other children.

Consultation brings its own challenges as well. It can be difficult to accurately identify all the antecedent and consequent conditions that contribute to the behavior problem. Conducting a thorough and labor-intensive functional assessment increases the chance that all relevant conditions will be correctly identified on the first attempt, but participants must recognize that in some cases, initial problem analysis may not yield all relevant information. Without such knowledge, it can be difficult to design effective treatments. In addition, problems of treatment acceptability and treatment integrity must be addressed. Because the consultee is the primary treatment provider, the treatment plan must meet with the consultee's approval and must be sufficiently easy to implement in practice in the natural setting. It is well known that consultees often balk at the time, effort, or other interfering factors associated with otherwise potentially useful treatments. Thus, consultants must work diligently to see that the consultee's perspective and situation are taken into account through the consultation process. With appropriate consultant skill and effort, however, great benefits may accrue to both the client and the consultee through the process of behavioral consultation.

See Also the Following Articles

Behavioral Assessment ■ Behavioral Group Therapy ■ Behavioral Therapy Instructions ■ Behavior Therapy: Historical Perspective and Overview ■ Behavior Therapy: Theoretical Bases ■ Primary-Care Behavioral Pediatrics

Further Reading

Bergan, J. R., & Kratochwill, T. R. (1990). *Behavioral consultation and therapy.* New York: Plenum Press.

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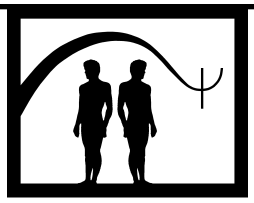

Behavioral Contracting

Brad Donohue and Lisa Solomon Weissman

University of Nevada, Las Vegas

I. Overview of Contingency Contracting
II. Developing the Behavioral Contract
III. Theory
IV. Applications and Exclusions
V. Case Illustration
VI. Summary
Further Reading

GLOSSARY

behavioral contract A verbal or written agreement that specifies contingencies of behavior between two or more persons or parties for a specified duration.

reward A desired action or product that is provided to an individual contingent on adequate performance of a target behavior.

target behavior An action that is the focus of change in a contingency contract.

Behavioral contracting, or contingency management, is a therapeutic tool used by mental health practitioners to facilitate a desired change in identified unacceptable behaviors. The following sections underscore the basic tenets of contingency contracting, including its conceptual framework, methodology, and application.

I. OVERVIEW OF CONTINGENCY CONTRACTING

A behavioral contract is a verbal or written agreement that specifies the relationship of behavior between two or more persons for a specified duration. The behavioral contract is typically initiated by mental health professionals in therapeutic settings as a means of motivating patients to initiate and maintain desired behavior. In utilizing behavioral contracting, it is assumed that the patient has the abilities to perform the behaviors that are specified in the contract. There are two general methods of contracting, quid pro quo, and good faith.[1] In the quid pro quo method, a contingency is established between two or more individuals such that the performance of a specified behavior by one participant is contingent on the performance of a specified behavior by the other participant. For instance, if a married couple is dissatisfied with the cleanliness of their kitchen, a husband might agree to dry and put the dishes in the cabinet if the wife agrees to wash the dishes. This method of contracting is best utilized when there is equal status among its participants (e.g., married couple, friends).

In a good faith contract, significant others of the patient agree to provide the patient with a desired product or action (i.e., reward), but only on the patient's

[1] Some consider the good faith contract a quid pro quo arrangement.

successful completion of the respective target behavior. Significant others are usually persons who are of higher authority status than the patient (e.g., parent, employer, supervisor). An example of this method of contracting would be a parent permitting his bed-wetting 6 year old to view television from 5 to 7 p.m. if the child evidences continence during the preceding night.

Although verbal contracts may be implemented when contingencies are unsophisticated, the terms of a behavioral contract are usually specified in a written record. It is common to have all involved parties, and ideally, a neutral witness (e.g., therapist), acknowledge their support of the contract by signing the document. It is also customary to include an ongoing record of the performance of target behavior, and provision of agreed on consequences. This behavioral exchange is reviewed regularly so that target behaviors are accurately monitored, and earned consequences are provided in a timely manner. To strengthen the contingency relationship specified in the contract, some contracts specify that tokens (e.g., small chips) be provided to patients immediately after the target behavior is performed. These tokens may be exchanged at a later time for specified rewards. This "token economy" system is particularly effective with children, psychotic individuals, or those persons who evidence dementia or mental retardation, because these individuals sometimes experience problems with their memory and often evince difficulties delaying their gratification. Point systems are similar in that the performance of each target behavior is assigned a point value, and each reward requires the exchange of a specified number of points. For instance, an adolescent male might earn three points for washing the car, and later exchange these three points to obtain a ride to the park from his parent.

II. DEVELOPING THE BEHAVIORAL CONTRACT

Five stages are involved in establishing a behavioral contract: (1) identifying the target behaviors, (2) identifying the rewards, (3) negotiating the contingency plan, (4) establishing and role playing the monitoring process, and (5) and ongoing review of the behavioral exchange. The following sections underscore generic applications involved in the implementation of a good faith contract following these stages.

A. Identification of Target Behaviors

Identified patients are usually the individuals who are expected to improve their behavior, as these individuals are the persons who seek treatment for their problems, or are brought to treatment because their problems negatively affect themselves or others. Target behaviors are usually elicited from friends or family members of the patient, or from external sources (e.g., staff member, therapist, behavior problem checklist). However, when patients are insightful of their problem behavior, they should be involved in generating their own target behaviors, particularly when they are motivated to improve their behavior.

Target behaviors may be identified during clinical interviews (e.g., "What chores would you like your son to do more often?"), or "which lists" (e.g., "List the three most important things you would like your husband to do, ideally."). It is imperative that target behaviors are well defined, because vaguely defined behaviors are susceptible to misinterpretation and disagreement among participants. For instance, a father's initial request to have his son "take the trash to the street curb regularly" might be further specified in the contract to include the specific actions desired, when and where the actions would need to be performed, and for how long (e.g., "Bring the contents of all waste baskets in the house to the end of the driveway every Friday at 7 a.m. for 6 months."). Along a similar vein, participants must be able to monitor target behaviors so that appropriate consequences may be provided. Indeed, if a mother is incapable of recognizing her daughter's use of illicit drugs, drug use should not be targeted in the behavioral contract. Rather, the contract should include target behaviors that are more identifiable, and that have been associated with the girl's use of illicit drugs (e.g., coming home immediately after work in the evening, attending classes at school).

Of course, the patient must be capable of performing the target behavior. If not, the patient must be taught to perform the behavior, or the behavior must be modified or excluded from contractual consideration. For instance, if a child is incapable of studying 2 consecutive hours due to problems associated with inattention, study time may be distributed across several occasions (e.g., four study periods of 30-min duration, with each study period being separated by 1 hr of playtime). As an alternative, overall study time could be reduced initially and later increased gradually as study skills improved. Last, the behavioral contract should include only those target behaviors that are expected to be functional, or reinforcing, to the patient after the contract is discontinued.

B. Identification of Rewards

Rewards are provided to patients after target behaviors are adequately performed, and it is imperative that

the patient strongly desires the rewards that are specified for use in the contract. As with the elicitation of target behaviors, potential rewards may be obtained from significant others of the patient, the patient, or external sources. The patient is relied on as the primary source of rewards, as this individual must ultimately decide if the reward will provide sufficient external motivation to perform the target behaviors that are specified in the behavioral contract. Rewards are typically elicited from patients during clinical interviews, or from the administration of reinforcer menus (a list of age-appropriate rewards), and wish lists (i.e., "If you could make three wishes, what would you wish for?"). In generating potential rewards, a significant other may be instructed to specify what the patient has been observed to do in the patient's free time so that access to these activities can be made contingent on performance of target behaviors. However, it is more common to simply ask the significant other what the patient would probably like as rewards. As might be expected, the patient must confirm potential rewards that are generated from significant others or external sources. This allows the patient to determine all rewards that are utilized in the contract and also provides the patient an opportunity to enhance each reward (e.g., use of mother's car on the weekdays may not be desired, although use of the car during the weekend may be extremely desired). The relative strength of rewards is often determined by instructing the patient to rate the desirability of each potential reward, utilizing a Likert-type scale (e.g., 0 = *not desired at all,* 6 = *extremely desired*).

When significant others are responsible for the contingent provision of rewards, the rewards must be under the control of the significant other. If the patient did not earn the reward as specified in the contract, the significant other must have the ability to restrict the patient from experiencing the reward. Similarly, if the patient has earned the reward, the significant other must provide the reward in a timely manner, and as delineated in the contract. Indeed, compliance with contingencies set forth in the behavioral contract assists in establishing trust between all involved parties.

C. Negotiating the Contingency Plan

Once target behaviors and rewards are identified, a contingency plan is negotiated with the mental health professional assuming the role of an arbitrator. In this process, the mental health professional reviews the identified target behaviors and rewards with the patient only and instructs the patient to determine a fair contingency plan. The patient's initial contingency plan is brought to the significant other for approval, or modification. If changes are desired by the significant other, modifications are performed, and the revised plan is presented to the patient for approval, or modification. Contingency plans go back and forth in this manner until a plan is mutually adopted by both parties. At any time in the aforementioned negotiation process, a therapist may bring both parties together to expedite compromise. If the patient refuses to participate in the negotiation process, or if the patient is incapable of participating in the negotiation process, the significant other solely determines the contingency plan.

D. Establishing and Role Playing the Monitoring Process

After the contingency plan is adopted, the monitoring process is established and practiced. The patient and significant other agree to get together at a mutually satisfactory time to review, and record, all target behaviors that were performed during that day, including rewards that were earned and provided. This meeting time is usually anchored to a fairly reliable event (e.g., immediately prior to retiring for the evening) and occurs daily at a convenient location in the patient's residence.

It is very important that the behavioral exchange process is role played prior to its implementation in the patient's environment. The role-play process is best initiated as soon as the contract contingencies are established during the initial session. The behavioral exchange process consists of reviewing the monitoring of target behaviors, and the provision of earned rewards. In this endeavor, the mental health professional initially models the role of the significant other in reviewing the contingency contract (i.e., simulates the role of a significant other in initiating the review of the behavioral contingencies at home). In addition to demonstrating the review process, modeling helps to determine if target behaviors are too difficult, or if problems are likely to occur in the contract. In modeling the role of the significant other, the mental health professional reviews the list of target behaviors and descriptively praises the patient for having performed target behaviors that day. The completion and/or noncompletion of target behaviors are recorded, and the patient is provided rewards that were earned that day. Modeling continues until all target behaviors are reviewed, and there is no confusion among the participants. The patient and significant other are then asked to role play the contingency review for the same day. Feedback is given by the mental health professional during this role play to assist the monitoring and behavioral exchange

process. Last, participants are instructed to review the contract in the patient's environment on a daily basis until the next intervention session.

E. Ongoing Review of the Behavioral Exchange

Future intervention sessions focus on praising the patient for the performance of outstanding target behaviors, ensuring that the contract is implemented fairly, and modifying the contract, as needed. The mental health professional attempts to determine if the significant other monitored targeted behaviors adequately, and if rewards were provided as specified in the contract. The mental health professional also determines that no unearned rewards were obtained by the patient. The most frequently occurring modifications to the contract involve the addition and deletion of target behaviors, and the addition of rewards.

III. THEORY

Behavioral contracting owes much of its theoretical underpinnings to the tenets of B.F. Skinner's operant conditioning. Indeed, it has been established that if a given behavior increases in frequency consequent to the application of a stimulus, the stimulus is deemed a positive reinforcer. Thus, in behavioral contracting there is an attempt to modify the patient's environment such that the patient's positive reinforcers will only be available on successful completion of target behaviors. If the target behaviors are truly functional to the patient, the contingent rewards may be gradually eliminated as the patient begins to experience naturally occurring reinforcers. For example, the frequency of a child's completed homework assignments may increase consequent to the child's receipt of a dime per each completed assignment. However, the child's homework may continue to be performed long after the dime is discontinued because natural reinforcers for the completion of homework would probably begin to occur within the duration of the contract (e.g., praise from teacher and parents, respect from other students, personal pride, school awards). Moreover, on practicing homework repeatedly, this behavior may become habitual, and an expected way of acting. As Aaron Beck's self-regulation theory posits, the child would identify himself as an individual who regularly performs homework well. If behaviors occurred that were inconsistent with this child's homework completion, the child would be inclined to regulate his behavior to be consistent with his beliefs (i.e., an individual who performs homework well).

IV. APPLICATIONS AND EXCLUSIONS

As mentioned earlier, behavioral contracting may be utilized by therapists, psychologists, and other mental health professionals to facilitate improvement in the behaviors of their patients. Persons entering into the contract are usually the identified patient, and those who are interested in the patient's welfare (i.e., staff members, teachers, family members, friends, employers). Behavioral contracting procedures are appropriate across ethnicity and gender, and usually are appropriate for children who are 3 or more years of age, or the developmental equivalent. Contracting procedures may be implemented in a variety of settings, including medical and psychiatric hospitals, outpatient mental health clinics, residential drug rehabilitation centers, schools, camps, and detention centers.

A self-monitoring contract, may be implemented when significant others are unavailable, and the patient is motivated to contingently reinforce her/himself only for the performance of target behaviors. However, this type of contracting suffers from inherent problems, most notably the patient's lack of objectivity in monitoring target behaviors, and failure to comply with contingencies due to forgetting and lack of willpower. Therefore, behavioral contracting is best utilized when significant others are available to monitor target behaviors, and enforce the agreed on contingencies.

V. CASE ILLUSTRATION

The following case illustration, the details of which were obtained from a study conducted by the first author, underscores the importance of utilizing contingency contracting as a motivational tool. Karen, a 12-year-old, Hispanic female, presented to an outpatient psychology clinic with a 5-month history of eating only stage II baby food and frozen yogurt. She complained that her throat was too constricted to swallow solid foods. The onset of her refusal to eat solid foods occurred after she choked on a piece of steak. She was reported to be 106 pounds at that time (i.e., the 50th percentile in weight for a girl her age). During the initial assessment session, Karen weighed 85.5 lbs., and

appeared to be losing about .5 lb. per week. A psychological examination revealed that Karen evidenced conversion disorder. This disorder is indicated when the individual believes deficits in voluntary motor or sensory functioning are present that suggest a neurological or medical condition. However, the symptoms have no identifiable organic etiology.

The first four intervention sessions focused on encouraging Karen to eat solid foods, encouraging family support, and encouraging her to eat foods of increasing viscosity during the intervention sessions. Karen was taught to focus on relaxing her throat muscles during meals. The aforementioned interventions resulted in an initial increase of about 1.5 lbs. However, after only 1 week of intervention, she refused to attempt new foods and evidenced no further gains in her weight for 3 weeks.

In an effort to reinstate her motivation to attempt lumpier foods, and consequently gain more weight, the therapist added contingency contracting to the intervention plan. Specifically, if Karen gained 1 lb. per week, and continued to attempt foods with greater viscosity, she maintained "green status." Green status meant that she would receive one therapy session per week instead of two sessions, eat home meals in a room of her choice instead of being restricted to the dining room, be able to make long distance phone calls to her brother to report treatment gains, be able to leave the dinner table as soon as her meal was consumed instead of being restricted to the table for about 40 min, and be able to go to the grocery store with her mother to choose her favorite foods. She was provided a bonus opportunity that included a plane ticket to visit her out-of-state brother if she gained 5 lbs. Her parents also planned surprise celebration activities with Karen and bought her new clothes, when she was on green status. If she failed to gain 1 lb. per week, she was put on "red status," which meant that Karen did not have an opportunity to earn the preceding rewards.

Contingency contracting resulted in her attempts to eat with foods of greater viscosity, and immediate and sustained weight gain (i.e., approximately 1 lb. per week during 6 weeks of contingency contracting). At the 10-month follow-up assessment, she reportedly weighed 100 lbs. an increase of 14 lbs. since contingency contracting was implemented. During the follow-up interview, Karen's mother revealed that Karen was eating a variety of nutritious foods fairly regularly, although she was described by her mother as a "light eater."

VI. SUMMARY

A behavioral contract is a verbal or written agreement that specifies the relationship of behavior between two or more persons for a specified duration. The behavioral contract is most often initiated by mental health professionals in therapeutic settings to motivate patients to perform desired behaviors. In quid pro quo contracting, the performance of a specified behavior by one participant is contingent on the performance of a specified behavior by the other participant. Good faith contracting requires a participant to provide rewards to another participant for the completion of target behaviors. Establishing a behavioral contract involves identification of target behaviors and rewards, negotiating a contingency plan, establishing and role playing the monitoring process, and conducting an ongoing review of the behavioral exchange.

See Also the Following Articles

Behavioral Weight Control Therapies ■ Contingency Management ■ Good Behavior Game ■ Neuropsychological Assessment ■ Operant Conditioning ■ Token Economy

Further Reading

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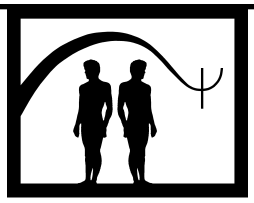

Behavioral Group Therapy

Brian J. Cox
University of Manitoba

Steven Taylor
University of British Columbia

I. Description of Treatment
II. Theoretical Bases
III. Case Illustrations
IV. Applications and Exclusions
V. Empirical Studies
VI. Summary
Further Reading

GLOSSARY

automatic thoughts The content of one's stream of consciousness, consisting of thoughts or images that may be positive (e.g., "I can deal with this situation") or negative ("I'm a loser").

cognitive distortions Distortions in the way information is processed such as the tendency to exaggerate the aversiveness of unpleasant events (catastrophizing) or the tendency to classify events in black and white categories (e.g., "success" vs. "failure"). Cognitive distortions can arise from dysfunctional beliefs.

diaphragmatic breathing Paced breathing exercises used in panic control treatment to counter hyperventilation and physiologic hyperarousal.

dysfunctional beliefs Basic assumptions the person holds about the self, world, or future (e.g., "I am fundamentally flawed," "The world is a dangerous place," "My life will never improve"). Such assumptions are considered to be dysfunctional if they impair the person's life or give rise to emotional problems.

interoceptive exposure Systematically confronting feared bodily sensations (e.g., accelerated heart rate) that serve as interoceptive fear cues.

in vivo exposure Systematically confronting "real life" feared situations, conducted repeatedly in a graded fashion.

subjective units of distress A rating scale used by the therapist and group members to record and communicate degree of distress anticipated or experienced during exposure tasks. The scale ranges from 0 (no fear or distress) to 100 (extreme fear or distress).

I. DESCRIPTION OF TREATMENT

Behavioral group therapy (BGT) is an effective, efficient psychotherapy that has been successfully adapted to treat a wide variety of psychological disorders, and occasionally to address psychosocial aspects of physical ailments (e.g., irritable bowel syndrome). BGT shares some characteristics with other forms of group psychotherapy and is not simply a didactic, classroom-style approach to skills acquisition. At the same time, it is also a unique group therapy in several respects. The content is structured, both within and across sessions. Compared to group therapy in general, the design of BGT is specific toward the target problem, even in some of the more "generic" forms of BGT that tackle groups of problems. BGT is multimodal in nature whereby a package of treatment components is assembled to address the multidimensional nature of most forms of psychopathology. Finally, the number of sessions is generally fixed and the duration of treatment is measured in weeks rather than months. BGT uses closed groups of medium size (e.g., 6 to 8 individuals),

and is often preceded by one-on-one interviews with prospective group members and one of the therapists in order to establish diagnoses and assess suitability for group therapy. Following formal treatment, a more informal group open to "graduates" of the BGT program is often useful to provide booster sessions for those who require it.

There are important advantages to offering behavior therapy in a group setting. The first reason is efficiency. More people can be helped with less therapist time, although it can require more administrative coordination and scheduling. In the case of relatively homogeneous groups that are organized around the primary disorder, there comes the reassuring sense of common, shared experience for many individuals. Perhaps the most important advantage of the group format is that the role of the therapist can be systematically decentralized and instead a self-help approach is encouraged. Group members can act as supportive coaches in reviewing and engaging in exposure exercises, and can work together in cognitive restructuring. Group cohesion and a self-help orientation can promote self-reliance and ultimately self-efficacy and mastery. Accordingly, terms like "program" may be preferable to "therapy," and "group member" may be preferable to "patient."

The next section provides a theoretical overview of BGT. Immediately following this overview we present two case illustrations of BGT. The first involves a protocol for panic disorder with agoraphobia, and serves to highlight different types of exposure techniques in BGT. The second BGT protocol has more cognitive components and is designed to treat generalized social phobia. The chapter concludes with a brief discussion of applications and exclusions for BGT, along with a summary of the current empirical knowledge base.

II. THEORETICAL BASES

BGT is based on contemporary conditioning and cognitive theories of emotional disturbance. Current conditioning models assume that emotional reactions can be learned in multiple ways, including classical conditioning, transmission of information from one person to another, and observing other people react emotionally to stimuli. Classical conditioning, as conceived in contemporary models, is a process of learning to associate a stimulus with a particular outcome. In other words, it is a process whereby the person develops expectations about the consequences of a particular stimulus. The experience of being mauled by a dog can lead the person to associate dogs with harm. This expectancy thereby gives rise to fear and avoidance of dogs.

Contemporary cognitive theories of emotional disturbance have their origins in the pioneering work of Aaron Beck and Albert Ellis. These models posit that emotional problems are not directly caused by aversive events, but are the result of the person's beliefs about the event. Thus, a given event (e.g., a canceled visit from one's mother-in-law) could elicit any number of emotional responses (e.g., disappointment, joy, annoyance) depending on the person's interpretation of the event. Cognitive theories propose that dysfunctional beliefs are prime sources of emotional disorders. A person who held the belief that "My world must always be predictable" would become distressed at the mother-in-law's canceled visit. In comparison, a person who believed that "You have to expect the unexpected" may react with mild disappointment.

Dysfunctional beliefs give rise to automatic thoughts, which form part of the person's stream of consciousness. A person who believed that "I am a failure as a person" might have a stream of negative automatic thoughts such as "Nobody likes me," "What's the point in trying," and "I'll never succeed." Such thoughts arise when particular life events occur that are relevant to the person's dysfunctional beliefs. A person who believed that "My worth depends on my ability to be a good mother" might not become terribly upset if she lost her job, but would become profoundly despondent if somebody criticized her child-rearing practices. Thus, emotional problems arise when particular life events interact with particular dysfunctional beliefs.

Dysfunctional beliefs also give rise to a variety of cognitive distortions, which are aberrations in the processing of information. A person who believed that "People are always trying to exploit me" would be concerned about being taken advantage of, and therefore vigilant for such occurrences. As a result, the person would tend to overlook the altruistic acts of others. This is an example of overfocusing on the negatives. Other examples of cognitive distortions are shown in Table 1. Cognitive restructuring exercises, as described elsewhere in this chapter, are used to replace dysfunctional cognitions (thoughts, beliefs, and distorted information processing) with more adaptive forms of thinking.

How do cognitive and conditioning theories fit together? It might seem that these are two completely different ways of conceptualizing emotional problems. However, the two theories are quite compatible, and

TABLE 1
Examples of Cognitive Distortions

Distortion	*Description*
All-or-nothing thinking	Classifying events in black and white categories; e.g., regarding some as either "good" or "bad"; appraising your performance as either "perfect" or "a complete failure."
Overfocusing on negatives	Focusing on negative events to the exclusion of positive events; e.g., focusing on all the times that you have failed, and ignoring the times you succeeded.
Catastrophizing	Exaggerating the aversiveness of unpleasant events; e.g., regarding your anxiety as "excruciating and never ending" rather than "unpleasant and short-lived."
Demandingness	Imposing rigid rules and demands on oneself or others; e.g., "people *should* take care of me"; "I *must* be a success at my career."
Personalization	Taking personal responsibility for events where there is insufficient evidence that you were responsible; e.g., when a friend fails to phone, you interpret this as due to some personal failing ("I'm boring to talk to") instead of considering the other possibilities ("She didn't call because she had a migraine").

have been synthesized in the emotional processing model (developed by Edna Foa and Michael Kozak). According to this model, emotions are represented in networks (structures) stored in long-term memory. Consider, for example, the network underlying a person's social phobia. The network contains stimulus information (e.g., authority figures, oneself as a social object), response information (e.g., representations of one trembling, sweating, blushing, and fleeing), and meaning information (e.g., concepts such as "danger" and "threatening"). The elements of information are linked together. For our social phobic, "authority figures" is linked to "threatening" (a stimulus-meaning link); "self" is linked to "weak and ineffectual" (another stimulus-meaning link); "authority figures" is linked to "blush, trembling, and flee" (stimulus-response link); and "threatening" is linked to "fear" (meaning-response link). Thus, each emotional network consists of an interconnected matrix of stimulus, response, and meaning information. Stimulus-response links can be acquired by conditioning or other forms of learning, and stimulus-meaning or response-meaning links can represent dysfunctional beliefs (e.g., "Authority figures are threatening"). In this way the emotional networks combine elements of conditioning and cognitive theories.

Networks are activated by incoming stimuli that match its stimulus, response, or meaning information. Activation of the network evokes emotion and associated responses such as escape or avoidance. Networks underlying emotional problems are modified by, first, activating the network (via presenting the person with relevant stimuli) and then by incorporating corrective information. This is known as emotional processing. Exposure exercises and cognitive restructuring techniques are both methods of modifying networks underlying emotional problems. Skills training (e.g., assertiveness training) is another way of modifying the networks. As a result of emotional processing, links are changed and meaning information is modified. For example, the stimulus-meaning link might change from "authority figures are threatening" to "authority figures are generally benign." In summary, the interventions used in BGT aim to modify the patient's emotional networks so that the latter become more adaptive.

III. CASE ILLUSTRATIONS

A. Panic Disorder with Agoraphobia

Panic disorder with agoraphobia (PDA) is characterized by sudden, intense episodes of anxiety (panic attacks) that often occur unexpectedly. The attacks are usually associated with feelings of impending doom and are composed of physical symptoms (e.g., shortness of breath, dizziness, racing heart) along with catastrophic thoughts (e.g., thoughts that one is dying, going crazy, or losing control). Agoraphobia frequently accompanies panic disorder and is defined as a fear of being in places where escape may be difficult or help not forthcoming in the event of a panic attack. Situations that are either avoided or require the presence of a trusted companion include public transportation, being in crowds or lineups, and traveling long distances.

From a cognitive behavioral perspective, panic attacks are viewed as arising from catastrophic misinterpretations of bodily sensations, and phobic avoidance is seen as a conditioned response. BGT for PDA is composed of several modules delivered over 10 sessions and the protocol is a group adaptation of the individual treatment developed by David Barlow and colleagues. Because of space limitations, and to avoid redundancy with other chapters, we will highlight group adaptations rather than cognitive-behavior principles and techniques in general.

Session 1: The introductory session involves setting group members at ease. Some members may have difficulty being in a group setting or in not sitting next to the doorway. A brief explanation of a Subjective Units of Distress scale (SUDS) can give everyone a common meter to express their anxiety at that time, and there is often a relief that the high state anxiety is not an isolated experience. The scale ranges from 0 (no fear or distress) to 100 (extreme fear or distress). Following the introduction of therapists and some brief group rules about the importance of confidentiality, attendance, and homework assignments, a brief introduction and history from each group member is sought (e.g., location of first panic attack, treatment history). Listening to others' histories can be reassuring for many group participants, but some may become distressed for fear of "picking up" new variants of catastrophic "what if?" thoughts, and this can be addressed from a cognitive perspective. An effort is made to have every group member make at least some contribution, and this is true throughout the sessions. Group members are provided a schedule and overview of coming sessions. Using a blackboard or easel, more detailed descriptions of panic attacks are then solicited from group members. The attacks are broken down into component physical symptoms and associated cognitions. An informative exercise is to ask individuals about the worst thing that has happened during an attack, so that they can see that worst-case feared outcomes (e.g., loss of consciousness) are in fact extremely rare. Situations that people avoid are then listed (e.g., strenuous exercise, public transportation). Safety nets (e.g., availability of cellular phone) are also included. Using the information now listed the therapist can suggest thematic links between internal sensations, associated thoughts or interpretations and the role of escape, control, and phobic avoidance. In short, the cognitive behavioral model and rationale can be presented using the information provided by group members as illustration. At the end of the session SUDS ratings are again elicited from group members. In most cases there will have been a decrease over the 2 hours and this can be used as an example of *in vivo* exposure "in action." Homework consists of a self-directed, behavioral approach test to get an estimate of baseline functioning. This involves assignments where participants are asked to enter feared situations (e.g., travel five blocks by bus) and rate their peak SUDS levels during the exercise.

Session 2: This session contains much of the corrective psychoeducational information about panic (e.g., nature of fear and fight/flight response). Sensitivity to anxiety and other physical sensations and the process of catastrophic misinterpretation in panic attacks is included. Information about the role of escape, avoidance, and the maintenance of fear then follows, with the message that "what is learned can be unlearned." Wherever feasible, group members are called on to provide examples of the various components. Realistic goals are then discussed and targets identified. Homework consists of self-directed exposure of a mildly feared situation with the instruction to remain in the situation until anxiety has noticeably decreased. An example of diary construction is reviewed in order to record the situation, time, SUDS, and thoughts experienced during exposure tasks.

Session 3: Exposure exercises are reviewed for each group member. The theme of this session is the rationale and implementation of exposure. This might begin with drawing a graph showing gradual reduction of anxiety with repeated exposure exercises of sufficient duration. Implementation includes detailed construction of a hierarchy of feared situations in collaboration with group members. Handouts on techniques for coping with anxiety and panic are provided and reviewed. Examples of helpful coping self-statements are provided and also solicited from group members. The importance of graded, self-directed exposure is emphasized and at least three exposure exercises per week are encouraged. The involvement of spouse, significant other, or friend as a "coach" may be discussed. Finally, goals are set for the therapist-assisted exposure session in Session 4.

Session 4: This session involves therapist-assisted *in vivo* exposure. If two therapists are present the group is divided according to the theme of the situational exposure and it is certainly easier to implement group exposure if a co-therapist or assistant is available. However, a situation such as a shopping mall provides a number of different exposure opportunities that can accommodate most group members (e.g., escalators, elevators, lineups, heights). In addition to providing support, the therapist can work with individuals to identify and challenge "hot cognitions" (i.e., those occurring in the moment) and to

observe and correct problematic breathing (e.g., holding breath). Exposure to situations that can be followed up with self-directed exposure is encouraged.

Session 5: In vivo exposure tasks from Session 4 and from homework exercises are reviewed, and group members are called on to participate in solving problems that may arise (e.g., modification of exposure tasks, additional coping techniques). The remainder of the session is devoted to (1) interoceptive exposure, which involves confronting internal feared sensations and (2) exploring the nature of effective and ineffective breathing patterns, which include diaphragmatic, paced breathing and hyperventilation, respectively. A group approach to these behavioral techniques is particularly helpful because of the support of other group members, the ability to create a shared common experience, and the opportunity to solicit and to provide feedback from individuals other than the therapist. Similar to *in vivo* exposure, a repeated graded approach is utilized in interoceptive exposure. Of the various interoceptive exposure exercises, voluntary hyperventilation (with therapist participation) is one that is particularly appropriate to a group setting. Education and practice of diaphragmatic, paced breathing is conducted toward the end of the session. Most individuals find it to be a relaxing exercise, and they are asked to rehearse this coping skill to effectively acquire it for their antipanic arsenal. Homework exercises are outlined.

Session 6: It is roughly the halfway point in the course of treatment and considerable time is taken to check in with each group member to review progress and problem-solve as a group where necessary. If time permits, further interoceptive tasks can be conducted (e.g., spinning in a chair to induce dizziness). The session concludes with outlining self-directed exposure exercises and planning the next therapist-assisted exposure session.

Session 7: By this time, there is generally good group cohesion and many group members can help each other as coaches. For example, traveling on a crowded bus might prove challenging to some members whereas a shopping mall destination may prove challenging to others.

Session 8: Following a review of homework exercises, the session begins with progressive muscle relaxation. An audiotape is used and is available to group members. A taped version also allows the therapist(s) to participate alongside other group members. Relaxation strategies, including the paced breathing exercises, are reviewed. General and specific changes in attitudes and thinking styles are reviewed, especially in the context of challenging catastrophic interpretation of internal sensations. Thoughts and concerns about future group termination are discussed. The session concludes with outlining self-directed exposure exercises and planning the last therapist-assisted exposure session.

Session 9: The last *in vivo* session is more of a group exposure rather than a therapist-assisted exposure, and an attempt is made to keep therapist contact to a minimum. Subgroups might also be formed. For many individuals the goal is to encounter a very challenging event, often something that has been discussed for some time and also something that is entertaining (e.g., going to an amusement park, seeing a movie in a large theatre).

Session 10: The final session usually begins with a group discussion about the previous week's exposure session, and this allows a progression into a more general discussion about gains that have been made in the past several weeks. Remaining challenges and strategies for overcoming them are discussed. The importance of continued self-directed exposure in achieving long-term goals is highlighted. Members can provide feedback to each other on gains observed while in group and during group exposure sessions. Relapse prevention strategies are discussed. Self-help support groups for "graduates" of cognitive behavioral programs may be available. Appropriate self-help books for more general issues are recommended. Often the group concludes with coffee and doughnuts and this adds to the positive, "graduation" ambience.

B. Generalized Social Phobia

Generalized social phobia (GSP) is a common and disabling disorder that affects many areas of a person's life. Situations commonly avoided include presentations to small or large groups, being observed while eating or drinking, and many forms of social interaction (e.g., initiating a conversation). Dysfunctional attitudes and extreme negative thinking appear to play an important role in the etiology and maintenance of the disorder. Phobic avoidance is a major feature of GSP and so exposure therapy is indicated. However, because of the way that people with GSP interpret their social interactions, even seemingly successful social encounters can be perceived as failures through a critical dissection or "postmortem" ruminative process. Accordingly, cognitive restructuring is an important component of treatment. Behavioral group therapy for social phobia was pioneered by Richard Heimberg and colleagues and is arguably the nonpharmacologic treatment of choice for this condition. Because of the psychological complexity of GSP

this cognitive approach is more intensive, and requires more therapist skill and experience, than BGT for PDA. Groups are smaller (e.g., six members) and of longer duration (12 sessions). Within-session exposure sessions (role playing) accompanied by cognitive strategies are a major focus of the therapy. Individuals with severe social deficits are more appropriate for behavioral social skills training. Some individuals will have high levels of criticism toward others in addition to self-criticism, and their interpersonal style may be inappropriate for this type of group approach. Prior to the formal group treatment, one or two individual sessions with each member is conducted in order to explain the cognitive behavioral model and rationale, and to help alleviate anticipatory anxiety surrounding group therapy.

Session 1: The introduction and orientation is similar to BGT for PDA except that the state anxiety in the group is generally much higher. The therapist therefore takes a "go slow" approach and acknowledges the demands of the situation. Often the subjective, internal experience of anxiety will be disproportionately greater than outward, observable signs of anxiety, and it is useful to point this out. It helps address automatic thoughts such as "Everyone looks so calm and I'm falling apart—I'm not ready to be in a group," and also encourages group members to look at each other and make eye contact. These types of exercises can be done in a sensitive and humorous way and helps set group members at ease so that they are able to process the information provided. The therapist can also provide his or her own SUDS level, which is generally far above 0, and this can serve to highlight the adaptive functions of moderate anxiety. Individual experiences of symptoms, cognitions, and situations avoided are elicited, and again an attempt is made to call on every group member. The rationale for both cognitive and behavioral treatment components is reviewed using the specific examples provided by group members. As a cognitive exercise, members are asked to verbalize their negative automatic thoughts about the group program (e.g., "This may work for others, but it will never work for me"). A structured diary to record automatic thoughts is reviewed and distributed.

Session 2: After a brief review of CBT theory from the previous week, the diaries are discussed. Considerable time may be spent with each group member to begin the difficult process of identifying the nature and extent of negative thinking. Fears of negative evaluation may be linked to extreme self-criticism. Some group members may become tearful or may temporarily leave the room. When it becomes appropriate, the thoughts surrounding this experience should be reviewed and other group members can be called on to provide their thoughts and feelings to counter the automatic thoughts of the individual who became upset. Subsequently, other group members can be called on to elicit their own negative automatic thoughts (e.g., "Oh God, I should be doing something to help"). Compared to BGT for PDA, this group program spends more time in the present on within-group issues. More therapist effort is required to build group cohesion. Group members can be informed that it is important to identify all negative thinking before attempting to change it and that is a painful exercise at first. A list of cognitive distortions is provided and is reviewed using examples provided by group members.

Session 3: Diaries of automatic thoughts and associated cognitive distortions are reviewed. While the therapist might help each member uncover additional automatic thoughts, other group members can be called on to help identify appropriate cognitive distortions. Considerable time may still be required for each group member. The remainder of the session is devoted to the rationale and principles of exposure.

Session 4: Cognitively, the group now moves toward challenging the automatic thoughts once they are identified through a variety of cognitive restructuring techniques. This process will likely have already begun for some members following the awareness of cognitive restructuring. The goal is to challenge (e.g., "Do I know for certain that X will happen"), rather than to "replace" negative thinking. Behaviorally, exposure is now more formally incorporated in the construction of fear hierarchies for each member.

Session 5: Self-directed exposure assignments from the hierarchy are reviewed. Several "lessons" (information and skills acquisition) are presented. These lessons are brief (15 to 20 minutes) modules that are partly didactic and occasionally involve role playing on the part of the therapist (ideally two therapists can role play social interactions). The first lesson is on the role of fear of negative evaluation and its consequences (e.g., heightened self-focused attention) in social phobia. Cognitively, the challenging of automatic thoughts means that they are no longer uncritically accepted as valid, and members are now encouraged to generate reasonable (rational) responses to the automatic thoughts. An effort is made to make these responses reality-based with the recognition that they will likely not "feel" right at first and that this shift takes time. Group members are encouraged to generate additional possible reasonable responses for each other when weekly diaries are

reviewed. Exposure homework assignments are developed for implementation during the following week.

Sessions 6 through 9: The format of these sessions is to begin with a lesson. The remaining themes include effective conversation, perfectionism, anticipatory anxiety, assertiveness, and control. These exercises can involve the participation of group members. For example, the lesson on conversation begins by having the therapist allow a long silence. This "pregnant pause" is then used to elicit individuals' reactions and automatic thoughts around initiating and maintaining conversation. The remainder of each group session is devoted to cognitive restructuring. The process evolves from identifying and challenging automatic thoughts to understanding underlying dysfunctional belief systems. Self-directed exposure is continued based on the situations listed in the hierarchies.

Sessions 9 though 11: The bulk of these sessions is composed of *in vivo* exposures or "role-plays." The goal is to have two role-plays for each group member over the course of treatment. Role-plays will have been discussed with group members as early as the individual, pregroup interviews. Because it is a taxing exercise for many individuals it is reserved until the second half of the group therapy protocol. The simulated exposures are designed to be as realistic as possible and can include social interactions (e.g., initiating conversation at a party) and formal presentations (e.g., delivering a retirement speech). Props are used (e.g., drinking glasses) and furniture arranged to enhance realism. Immediately prior to the exposure the therapist meets with the central role-play member and rehearses the situation, assists in identifying all automatic thoughts, and gauges the SUDS rating of the anticipatory anxiety. Immediately following the exposure, a debriefing session occurs with all group members to discuss the role-play. Automatic thoughts are reviewed as well as the success of various methods of challenging them. The debriefing is very much a group exercise, because members can provide direct feedback to automatic thoughts (e.g., "Everyone can see how badly my hand is shaking—they think I am weak"). Unlike most social situations, the debriefing following the role-play allows all group members to find out what others were thinking, the strengths and shortcomings of their performance, how noticeable their anxiety was, and so forth. This type of feedback, especially because it is not coming solely from the therapist, can provide powerful evidence to counter the postmortem rumination that can occur after seemingly successful social encounters.

Session 12: The final session reviews the gains that each participant has made. Members are asked to reflect on how their perceptions of being in a group environment has changed from being a form of *in vivo* exposure to being in a safe place. Members can provide feedback to each other on changes observed over the course of the program. Remaining challenges are identified and necessary steps to achieve long-term goals are outlined. Most members have had significant social anxiety since adolescence or "as long as they can remember," and they can be reminded that the realistic goal of the group was "to launch, rather than to cure." Relapse prevention, support groups, and appropriate self-help books are also discussed. An informal period with coffee and doughnuts often concludes the group and serves both as a final group exposure and as a positive, "graduation" experience.

IV. APPLICATIONS AND EXCLUSIONS

Almost any behavioral therapy that is used in an individual (one-to-one) format can be implemented as a group therapy. Examples include behavioral treatments for mood disorders, anxiety disorders, eating disorders, and substance-use disorders. Group size, session duration, and session frequency can be adapted to fit the specific needs and resources of a given treatment setting. Groups typically consist of 8 to 10 patients and 1 to 2 therapists. Group sessions are typically 2 to 2.5 hours, and last from 10 to 14 weeks.

BGT can be either generic or problem-specific. Generic groups impart general skills, such as social skills training or cognitive restructuring techniques. Such groups can therefore contain patients with a variety of different problems. A group might consist of a mix of patients with mood and anxiety disorders. Generic groups are most effective when they impart skills relevant to all group members. Cognitive restructuring, for example, would be useful for most people with emotional disorders. Other interventions, such as exposure exercises, are useful for only some patients (e.g., those with phobias) and therefore are used sparingly in a generic group treatment.

Problem-specific programs treat more homogeneous groups of patients. Examples of panic disorder and social phobia programs were described earlier. Other examples include protocols specifically for depressed patients, and protocols specific for patients with bulimia nervosa. There has been little research on whether generic or specific programs are most effective. Patients with emotional disorders are likely to

have more than one problem. A patient with posttraumatic stress disorder, for instance, is also likely to have a comorbid mood disorder. These patients would benefit from a generic program, which teaches skills relevant to each of the person's problems. However, generic programs are not always sufficient. Sometimes it is important for the patient to receive specific treatment, focusing on his or her main problem.

There are several factors to bear in mind when deciding whether or not a patient is suitable for group rather than individual therapy. Patient preference and therapist resources are important considerations. For many treatment programs, the problem of long waiting lists has been addressed by conducting most treatment in groups, thereby increasing the number of patients that can be treated at a given time. Patients desiring individual treatment may have to wait longer for a therapist to become available. Group composition is another important consideration in selecting participants. Ideally, groups contain patients with approximately the same level of impairment. Patients who are functioning either at a much higher or much lower level than other group members may feel alienated from the group, and the interventions may not be optimal for the patient's problems. To illustrate, consider a group program for major depression, which would consist of behavioral exercises (distraction training, mastery and pleasure exercises) and cognitive restructuring. Patients with moderate depression tend to benefit from each of these interventions. Patients with severe depression are most likely to benefit from behavioral exercises. Accordingly, a patient with severe depression would not benefit from the interventions used in a group consisting mostly of patients with moderate depression. Such a patient would be best treated either individually or in a group of patients who are all severely depressed.

A related consideration in selecting group versus individual treatment concerns the interpersonal style of the patient. Patients who are very hostile or suspicious may prove to be too disruptive for inclusion in group therapy. For the most part, however, most patients suitable for individual therapy can be effectively treated in group therapy.

V. EMPIRICAL STUDIES

Few studies have directly compared the efficacy of group versus individual treatments. More often, these formats have been compared in meta-analyses, which are statistical methods for combining data from large numbers of outcome studies in order to evaluate the efficacy of various interventions. Research has revealed few differences between the efficacy of group versus individual protocols for treating specific disorders. The formats have been found to be equally effective for a variety of disorders, including social phobia, posttraumatic stress disorder, panic disorder, and other disorders. Thus, the average patient benefits as much from group as from individual therapy. Finally, although particular patients may benefit more from one format than another, research has revealed few ways of reliably identifying these patients. An important area for further research in CBT in general is the identification of individual differences in suitability for these treatment modalities.

VI. SUMMARY

BGT is an effective treatment strategy that can be applied to a number of different conditions and context. It is a structured approach that contains both generic and specific modules, depending on the nature of the target condition. Most forms of BGT include both exposure and cognitive restructuring. Homework exercises and review of activities outside of group are an important feature. BGT is a relatively short-term treatment and the number of sessions is fixed. An important goal is to impart effective coping skills and to promote self-efficacy. BGT is also an approach that transports well—in many instances it can be effectively delivered by paraprofessionals outside of specialty clinics.

See Also the Following Articles

Anxiety Disorders: Brief Intensive Group Cognitive Behavioral Therapy ■ Cognitive Behavior Group Therapy ■ Group Psychotherapy ■ Psychodynamic Group Psychotherapy ■ Self-Help Groups ■ Therapeutic Factors

Further Reading

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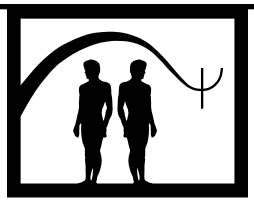

Behavioral Marital Therapy

Gary R. Birchler

University of California, San Diego

I. Description of Treatment
II. Theoretical Bases
III. Applications and Exclusions
IV. Empirical Studies
V. Case Illustration
VI. Summary
Further Reading

GLOSSARY

exchange theory The quality of social relationships is influenced by the interdependence of reinforcement and the reward–cost ratio of behaviors exchanged in these relationships.

social learning theory Interpersonal behavior is determined by controlling variables in the social environment and by individuals' cognitive-perceptual processess that are used to interpret these behaviors.

Behaviorial marital therapy (BMT) is a well-known and empirically validated psychoeducational approach to the assessment and treatment of marital distress. BMT originated in the late 1960s and has evolved into a comprehensive and systematic therapeutic approach that features multimethod assessment procedures and at least two primary intervention components: communication and problem-solving training and behavioral exchange techniques. Although focus on interpersonal behavior change is a hallmark of the approach, developments over the past decade have incorporated the evaluation and modification of cognitive and affective variables that may serve to mediate marital dysfunction.

I. DESCRIPTION OF TREATMENT

Since its inception in the late 1960s, behavioral marital therapy (BMT) has incorporated a multimethod assessment approach to the conceptualization and treatment of distressed marriages, followed by interventions inspired primarily by the tenets of social learning theory. The approach has been subjected to rigorous empirical investigations and, as a result, it has evolved over three decades to include not only behavioral variables, but also the investigation and incorporation of cognitive and affective variables. Moreover, the name of the approach itself, traditionally called behavioral marital therapy, has given way to behavioral couples therapy in many settings. The idea is that, in practice, the approach can be applied as effectively to treat nonmarital relationships (e.g., heterosexual couples living together, same-sex relationships, any adult dyad attempting to establish and maintain an intimate relationship), as well as to treat married couples.

A. Assessment

BMT has a fairly distinct tradition of beginning the couple evaluation process by employing three or four

different methods of gathering information to understand the problems and strengths of a given relationship and to plan various interventions to accomplish the therapeutic goals. First, there are a series of semistructured clinical interviews, typically 2 to 3 sessions, which often include separate meetings with each partner as well as meeting the couple in a conjoint format. In general, the objectives of these so-called assessment interviews are to (1) screen clients for the appropriateness of couple therapy, (2) determine the nature and course of events related to partners' presenting complaints, (3) determine the goals and objectives of the partners for couple therapy, (4) establish an effective therapeutic relationship, and (5) orient the couple to the therapist's orientation and approach to treatment.

Each partner has one or more reasons for initiating couple therapy. Typically, in the first meeting, the therapist will help the partners to develop a problem list, which indicates each person's perception of the various problems in the relationship. Problems can be categorized into matters of content and process. Problematic content areas often include finances, sex, dealing with in-laws, raising children, struggling with partners' annoying personality traits or mental illnesses, or coping with specific stresses that adversely impact the marriage, such as unemployment, major physical illnesses, or other traumatic events external to the couple relationship. Process concerns have to do with *how* the couple interacts. Typical complaints include ineffective ways of communicating with one another and discord regarding how they attempt to solve problems and manage marital conflicts.

It is also important during the evaluation stage to ascertain the partners' respective goals and expectations for couple therapy. For example, are they both committed to the relationship or is one partner planning separation or divorce? Are the identified problems negotiable for both partners? Are their goals and expectations realistic given partners' levels of competence and motivation? Before making a viable treatment plan, all these interpersonal competence and motivational issues must be considered. Finally, the initial interviews allow for the therapist to establish a therapeutic relationship with the couple. The therapist must gain sufficient credibility and trust and offer hope that the partners' pain, suffering, dissatisfaction, and distress can be addressed effectively. If this step is not accomplished, likely the couple will not continue with therapy. One way to aid in the accomplishment of this preliminary bonding is to explain in advance the purpose and value of the various evaluation and intervention procedures. What is expected from the clients? What are the role and responsibilities of the therapist? How will information be gathered and what is the prognosis for resolving their problems? An open discussion about what will be done and why is another hallmark of the BMT approach.

A second fairly unique assessment procedure used in BMT to gather diagnostic information about the couple is the administration of various questionnaires and inventories to learn about specific strengths and problem areas. The discussion of specific measures is beyond the scope of this article. Suffice it to say that there exist several standardized measures that are designed to assess one or more of the following variables: global relationship satisfaction; communication skills and deficits; areas of change requested by the partners; types of conflict; intensity levels of conflict and styles of conflict resolution; partners' cognitions, expectations, and beliefs about the relationship that may be causing problems; sexual function and dissatisfaction; participation in pleasurable events and rewarding social activities; and steps toward divorce. BMT practitioners typically ask the couple to complete a selected set of these instruments either before or at the very beginning of the evaluation process. Often feedback and interpretation of the results are given to the couple regarding their responses.

The third assessment procedure that is routinely associated with the practice of BMT is observation and analysis of a sample of *in vivo* marital conflict interaction. That is, couples are helped to identify an existing issue about which they have disagreement; they are asked to spend 10 to 15 minutes in the session talking together in a demonstration of just how they go about attempting to resolve an existing marital conflict. The therapist may or may not leave the room to less obtrusively observe and/or to videotape the communication sample for later review and analysis. The conflict resolution communication sample provides unique and important information regarding the level of problem-solving skill the couple possesses to resolve relationship conflicts and the extent to which improvement in these processes will become treatment goals.

In many programs associated with BMT, a fourth assessment procedure involves asking partners to collect data about events and interactions that occur in their home environments. In an attempt to obtain reliable information about the baseline (i.e., before treatment) frequency of certain events (e.g., arguments per week in which either partner loses one's temper), partners may be asked to observe and count the frequency of these events. Accordingly, later when treatment interventions are introduced, partners may again be asked

to count these events to determine if improvement has occurred. Some BMT programs gather these data as part of the assessment stage; others may postpone this so-called spouse observation procedure until the formal intervention stage of treatment.

In conclusion, the multimethod assessment procedures employed by BMT practitioners provide both converging and diverging types of information that are used in a systematic manner to conceptualize relationship dysfunction (and relationship strengths) and to formulate a treatment plan (i.e., interventions).

B. Interventions

From its inception, the traditional interventions associated with BMT have included communication and problem-solving skills training and behavioral exchange techniques. Over the years, in many empirical studies, both interventions have been shown to be highly correlated with marital satisfaction. Although "communication problem" is probably the number one complaint of couples seeking therapy and most therapy approaches work on improving communication between partners in some manner, the hallmark of BMT has been direct training in skill acquisition. The therapist is likely to employ a basic communication training manual, such as *We Can Work It Out,* written by Clifford Notarius and Howard Markman in 1993. Throughout the course of treatment, the therapist employs any number of the following types of interventions to help couples modify their patterns of miscommunication and to acquire improved problem-solving skills: didactic instruction, behavioral rehearsal, coaching and feedback about practicing the skills, videotape feedback, and regular homework assignments to support generalization of the new skills into the home environment. Often, the couple learns to improve basic expressive and listening skills first and then is taught how to apply these skills progressively to the various problems in their relationship. Thus, a second phase of communication training emphasizes skills related to problem-solving and conflict management. Typically, some variation of the universal problem-solving model is taught, which includes five remedial steps that are designed to modify the couple's maladaptive interaction patterns: agenda building, mutual definition of the problem, brainstorming, implementing the solution, and evaluation or modification of the initial plan.

Usually concurrent with the communication and problem-solving interventions is the introduction of behavioral exchange techniques. Based on the principles of social learning theory and exchange theory, emphasis is placed on helping partners to define and instigate increases in positive behaviors and to reduce negative behaviors that are exchanged by partners in their home environment. A technique called contingency contracting may be employed, where partners enter into written behavioral contracts to increase or decrease certain targeted behaviors. If the behavioral goal is accomplished, a reward for the individual or couple may be earned; if failure to perform the agreed-on behavior occurs, a punishment may be invoked. More recently, using a bank account analogy, practitioners of BMT have helped distressed couples to reduce or eliminate what either partner might experience as withdrawals from the relationship bank account (e.g., criticisms, starting arguments, inconsiderate or disliked behaviors) and to make positive deposits into the relationship account (e.g., initiate quality activities together, increase caring behaviors or other behaviors that partners find pleasing). Over the course of couple therapy, a systematic approach is employed whereby at first the easiest changes are made, followed by work on the more difficult areas of partner interaction and compatibility. Unlike the communication and problem-solving interventions, which take place largely within the therapy sessions, behavioral exchange assignments are carried out in the couples' home environments. Much emphasis is placed on developing homework assignments that are likely to be successful and that achieve the couples' desired goals.

As a therapeutic approach, BMT also is known for applying the same two basic interventions described above to specific areas of interaction with which distressed couples often have to contend. For example, several sessions may be devoted to systematically enhancing communication about and designing home-based behavioral interventions for parent training, sexual dysfunction, financial management, and mild cases of domestic violence. BMT also has been effectively applied as a concurrent or secondary treatment to manage partner's individual problems, especially when these problems adversely affect the relationship or the quality of the relationship causes or exacerbates these individual problems. Examples of individual problems often treated, in part, with BMT include anger management, depression and anxiety management, and substance abuse.

Finally, during the past decade, in particular, many clinical investigators have developed models of couple therapy that have expanded the traditional BMT approach to incorporate the identification and modification of important cognitive and affective variables. That is, part of the communication and problem-solving training

that is done during BMT may well include helping partners to recognize and alter certain maladaptive cognitions that interfere with the well-being of the relationship. For example, if partners have unrealistic expectations or beliefs about their partners or the relationship, or if they have certain biases, prejudices, or make faulty attributions, then these cognitive variables may appropriately be targets of therapeutic intervention. Partners can be taught to recognize these beliefs or persistent themes both in the treatment sessions and at home, to determine their accuracy and influence on the relationship, and to make modifications if appropriate. Similarly, it is recognized that affective variables (i.e., feeling reactions) often developed over time within the individual partners may be playing important roles in causing or maintaining relationship distress. Primarily within therapy sessions, partners can be helped to explore the origins of certain negative, disruptive, or intimacy-inhibiting feelings. For example, fears of rejection or abandonment, avoidance of conflict, and anger outbursts that occur out of proportion to the present situation are all feeling states that can serve to influence the relationship negatively. Clients may be helped to consider the possibility of learning how to understand and manage these types of feelings more constructively.

In summary, over three decades of development, BMT has offered a psychoeducational, behaviorally oriented approach to the assessment and treatment of couple distress that has been expanded to include interventions targeting maladaptive behaviors, cognitions, and affective variables and instigating positive changes in these modes of function for the betterment of the couple relationship.

II. THEORETICAL BASES

BMT has generally been defined as the application of social learning theory and behavioral exchange principles to the treatment of marital distress. During the past decade, BMT has expanded to include an analysis of cognitive and affective variables that influence or control behavior. Social learning theory posits that interpersonal behavior is determined by a combination of variables related to what happens in an individual's social environment and to one's cognitions and perceptions about these events. Accordingly, as regards marital interaction and satisfaction, the social or interpersonal environment is a primary determinant. If these theories suggest that behavior is a function of its antecedents and consequences and that the perceived quality of a relationship is primarily a function of the behaviors exchanged between partners, then interventions designed to promote rewarding (i.e., positively perceived) behaviors and to reduce or eliminate punishing (i.e., negatively perceived) behaviors would help improve partners' satisfaction with the marriage.

Cognitive and perceptual processes have been theorized to mediate between overt behavioral exchanges. Partners' personal interpretations or attributions regarding the occurrence and/or meaning of the behaviors can be critical regarding their value in the relationship. For example, if a wife has a desperate fear and prevailing belief that her husband does not love her, it may be that otherwise positive behaviors emitted by the husband will not be appropriately recognized by her. Moreover, if his intended positive value is not received, she may even criticize or discredit him for offering the behavior. Additionally, affect as experienced by the partners is theorized to play an important role in controlling both functional and dysfunctional processes in intimate relationships. For example, if the husband was neglected emotionally as a child, he may have learned to experience a disproportionate negative emotional response when his wife attempts to be more independent and self-sustaining than is comfortable for him. Helping both partners to discover and to understand this emotional connection between his family-of-origin upbringing and their marital events may facilitate attitudinal and/or behavioral changes that can help to improve the situation.

Taking principles of social learning theory toward a theory of therapeutic change in couple therapy means assessing which attitudes, behaviors, and related problems constitute the complaints and target variables for intervention. The goal is to increase the rewarding and to decrease the punishing behaviors exchanged between partners and to identify and improve the nature of any cognitive and affective mediating variables that may influence the occurrence and interpretation of these behaviors.

III. APPLICATIONS AND EXCLUSIONS

Generally speaking, BMT is most appropriately considered when couple distress is the primary problem or when certain nonrelationship factors have caused significant relationship distress, and the couple, as a unit, needs therapeutic attention. There are no known restrictions in the application of BMT to diverse ethnic, racial, national, age, gender, or socioeconomic groups. However, regarding couple-specific features, BMT is thought to be most effective when the partners possess

the abilities to collaborate toward mutual objectives of change, to offer support and accommodation to one another while addressing the problems at hand, and, when necessary, to compromise with one another in resolving their defined problems. When these criteria are met, a combined emphasis on behavior exchange and communication/problem-solving interventions has been quite effective. In comparison, because BMT is fundamentally change-oriented, the approach may be less effective when the couple's level of relationship distress is very high, one or both partners' commitment to the marriage is low, the issues in conflict are unlikely to change, the couple is invested in maintaining traditional sex roles, or the couple is unable or unwilling to collaborate, accommodate, or compromise with one another. In these cases, while couple therapy may be indicated, an approach less focused on behavior change probably would be more effective (e.g., integrative behavioral couple therapy, emotion-focused couple therapy, insight-oriented couple therapy).

Of course, in terms of exclusions, there are a number of situations where couple therapy, in general, is not the treatment of choice—at least initially. If either partner's level of individual psychopathology is too severe to be managed or treated in conjoint therapy, alternative treatments should be considered (e.g., hospital inpatient milieu, individual or group psychotherapy, and/or pharmacotherapy). For example, certain personality disorders (i.e., antisocial personality disorder, ASPD) may include a predisposition and learning history regarding the use of physical violence to gain or maintain control of someone. Cases featuring domestic violence and including individuals with ASPD often are not appropriate for BMT. Similarly, therapists may encounter other instances of major individual psychopathology where BMT is excluded, at least as the primary treatment of choice, such as active psychoses, disabling disorders of depression, anxiety, or substance abuse. In such cases, the individual problems should be treated in lieu of BMT. If and when the individual problems are treated and they are improved at least to the point where a relationship focus is appropriate in therapy, then BMT may well be indicated as a concurrent or secondary treatment approach.

IV. EMPIRICAL STUDIES

In a review of the empirical literature on BMT in 1998, Donald Baucom and his associates indicated that over two dozen well-controlled studies have been performed evaluating the efficacy and effectiveness of BMT. BMT is the most widely evaluated form of marital treatment. For the past three decades, many direct studies and several meta-analytic investigations of multiple studies have confirmed that BMT, as an integrated approach, is a statistically and clinically efficacious treatment when compared to waiting list control groups and nonspecific treatment or placebo control groups. In general, the research has not found the specific components of BMT (i.e., behavioral exchange vs. communication/problem-solving training) to be differentially effective, nor has BMT been demonstrably more or less effective than other marital therapy approaches to which it has been compared directly.

Regarding the impact of BMT on couples' lives, reviews of multiple studies suggested that based on various relationship assessment scores obtained pre- and posttreatment, 56 to 66% of the couples treated with BMT improved significantly and 35 to 54% reported that their levels of marital satisfaction changed from the clinically distressed to the nondistressed scoring ranges. Follow-up outcome data from these studies suggest that most couples maintain these gains for 6 months to a year, with some relapse indicated 2 to 4 years following treatment. Finally, given the limited data available, it appears that over 90% of couples treated with BMT find the approach worthwhile and would recommend it to a friend in need; the couple dropout rate for couples entering BMT has been estimated at only 6%. In conclusion, in many empirical studies completed over 30 years of investigation, BMT has been shown to be a valid, efficacious, and effective treatment for marital distress.

V. CASE ILLUSTRATION

A. Intake Session and Inventory Assessments

A friend referred Cindy and Bob to the clinic. They were in their early thirties, had been married for 6 years, and had two daughters, aged 2 and 4. It was the second marriage for Bob, a boiler repairman and mechanical engineer, and the first for Cindy, who was occupied as a housewife and mother. During the initial clinical interview the co-therapist team asked about presenting complaints and the precipitating event leading to the initiation of therapy. When asked, "Why are you seeking help now?" Bob said that he had recently admitted to having an affair with a young woman he had met during his rather extensive car racing activities. Bob claimed that since the birth of their second

child Cindy's role had become almost exclusively one of mothering instead of being a wife (i.e., a loving sexual partner). With their relationship and sex life faltering, Bob became more involved with car racing activities, met an attractive, seductive girl, and succumbed to the affair over a period of several months. Beset with guilt and the frustration regarding spouses' increasingly incompatible roles, however, he finally told Cindy about the affair.

Cindy, claiming that management of the young children and house required a huge amount of her time, asserted that Bob did not appreciate her responsibilities. He was very unhelpful with these tasks and, while spending less and less time at home, he became more and more demanding and resentful about their lack of sexual activity. Cindy, in a fairly unemotional presentation, indicated that she felt hurt, angry, and abused regarding the affair. Nevertheless, the decision to seek professional help was primarily Bob's in that he wanted to "make or break" the marriage in order to relieve his ambivalence and frustration.

To summarize the content of the first session, the presenting complaints from Bob were inability as yet to emotionally divorce himself from his lover, lack of affection and sex from Cindy, Cindy's tendency to spend more money than they had, and Cindy's excessive attention to children and house. Current relationship strengths that Bob noted were their ability to be effective, loving parents and a basic caring and love for one another. Cindy cited the major problem areas as Bob's general lack of commitment to her and the family, the quantity and quality of sexual interaction, and a desire for a reduction in the one or two nights each week and most of every other full weekend that Bob devoted to racing. Strengths noted by Cindy were their mutual caring for one another, good senses of humor, and being good parents. At the end of the initial session an agreement was made to complete the marriage evaluation process. A marital relationship assessment battery was distributed and the baseline results, obtained within 1 week, are listed in Table 1. The posttherapy scores also are tabulated for later reference.

Very briefly, the pretherapy data in Table 1 indicated that both partners are distressed and dissatisfied with the relationship, Bob significantly more than Cindy (Inventory #1). Bob has seriously entertained the idea of separation and divorce and has initiated certain discussions outside the relationship; Cindy has taken significantly fewer steps toward divorce (Inventory #2). In terms of self-attributions of self-esteem, psychological tension and anxiety, and physical symptoms (Inventory #3), Bob

TABLE 1
Marital Relationship Assessment Battery: Pre- and Posttherapy Scores

	Pretherapy		*Posttherapy*	
Inventory	*Bob*	*Cindy*	*Bob*	*Cindy*
1. Locke–Wallace MAS	47	85	104	116
2. Marital Status Inventory	7	3	7	3
3. Self-Description Inventory				
Self-esteem	6.4	4.3	6.1	5.6
Psychological distress	1.4	3.4	1.8	2.4
Physical symptoms	0.4	1.2	0.5	0.8
4. Areas of Change Questionnaire	16	10	9	4
5. Response to Conflict Scale				
Self-appraisal	2.8	1.0	1.9	0.7
Spouse appraisal	1.4	3.1	1.2	2.1
6. Inventory of Rewarding Activities				
Proportion of activities alone	55%	25%	27%	15%
With spouse only	12%	28%	31%	35%
With spouse and other adults	13%	18%	14%	14%
With family	2%	21%	17%	20%
With other adults, not spouse	18%	8%	11%	12%
Time distribution				
Working	24%	5%	24%	10%
Sleeping	25%	33%	28%	35%
Rewarding activites	32%	9%	22%	21%
Neutral or nonrewarding	20%	52%	26%	34%
7. Sexual Activity				
Worry about sex (0–8 scale)	0	5	2	3
Frequency of intercourse (Past month)	3	7	8	9
Want spouse to initiate sex (–3 to +3)	3	–1	2	0

Note: While quantitative inventories are an important part of BMT, detailed description of the inventories is beyond the scope of this article. Briefly, however, Inventory (Inv.) #1 measures global marital satisfaction; a score of 100 discriminates happy from unhappy couples. Inv. #2 measures steps toward divorce, range 0–14, a score of 4 or greater indicates significant risk. Inv. #3 measures the three named variables regarding individual function; range is 0–8. Inv. #4 measures conflict potential in domestic activities; happy couples average 7 total and unhappy 28 total for husband plus wife scores. Inv. #5 measures spouses' perceptions of maladaptive conflict responses, 0–8 scale; happy couples average 1.35 per person, unhappy couples average 2.77. Inv. #6 measures proportion of rewarding activities each partner engages in, in five social formats. Happy couples endorse a balance of activities across all formats, including about 35% activities with spouse only. Inv. #7 measures various aspects of sexuality: worry, frequency, and initiative.

demonstrated a pattern that strongly suggested denial and minimization of the negative aspects of these dimensions. Generally, such a pattern suggests one is likely to deny or rationalize one's own contribution to marital difficulties and to emphasize the faults of one's partner. In contrast, Cindy's results suggested mild-moderately-low self-esteem, psychological distress, and physical symptoms. The Areas of Change Questionnaire scores (Inventory #4), which total 26 for the couple, fell within the range for distressed couples. Bob's potential conflict score was higher than Cindy's, reflecting his withdrawal from the domestic environment. The Response to Conflict Scale (Inventory #5) indicated that both partners viewed Cindy's responses to conflict as within the normal range, whereas they perceived Bob as responding in a more intense and maladaptive fashion. The Inventory of Rewarding Activities (Inventory #6) can be interpreted in several ways. The gross indicators are, however, that during the past month, Bob has engaged in a majority of elective activities alone and a relatively high proportion with other adults, excluding his spouse. His profile suggested relative deficiencies in elective activities with spouse and family. This pattern was largely the consequence of Bob's long-term withdrawal from the family and his increased outside activities with his racing friends. Cindy's proportions of elective activities were more generally appropriate for a satisfied marriage. Regarding time distribution, in a typical 168-hour week, note that Bob slept an average of only 6 hours a night. He also claimed a solid proportion of rewarding activities. In stark contrast to Bob and consistent with other available data, Cindy indicated very little rewarding time and an overwhelming amount of neutral or nonrewarding activities: 78% of her waking hours! Finally, data about sexual activity (Inventory #7) confirmed that sex was a major problem area. Whereas Bob characteristically denied that sex was a personal concern, he nevertheless indicated a low monthly frequency and called for significantly more initiation by Cindy. In contrast, Cindy did admit to worrying about sex, indicated a desire for Bob to initiate requests less frequently, and reported a higher monthly frequency. In summary, the inventories documented the level and nature of marital dysfunction in many areas. For this couple, there was certainly sufficient self-reported distress to warrant marital therapy.

B. Communication Sample

The 10-minute videotaped communication sample was obtained at the outset of the second evaluation session. The conflict issue selected for problem-solving was Bob's involvement in car racing activities. Here is a representative sample of their interaction.

> Bob: What is it about my racing?
>
> Cindy: It's just that you spend so much time at it. Last night you worked on the car, tonight you have a meeting and then you will be gone all weekend.
>
> B: Yes, but this is an important race and then there won't be another one until Long Beach. [3 weeks later.] Besides you're invited to come.
>
> C: I know, but I am not able to manage those kids all day by myself and at night you would rather party anyway than be with us. Last time you said you would be home by six and you got home at midnight.
>
> B: I know. I already told you I'm sorry about that? We get so wired all day that it's hard to leave without having a few beers and winding down. What's wrong with that?
>
> C: Nothing! I want you to have a good time, but you promised you would come home early. And when you come home that late you are too tired the next day to do anything with us.
>
> B: [Said with disgust.] Well, maybe I should quit racing, but it's the only fun thing I do!
>
> C: [With resignation.] No … you need an outlet, but the kids and I need some time with you too.

At this point, the pattern was set. The remainder of the discussion went similarly round and round. This couple is conflict-avoidant. Little direct anger was expressed throughout the interaction; however, they concurred during debriefing that they probably would not have carried on such a discussion at all at home. As it was, they spent most of their time describing the problem and summarizing their own positions. There was minimal evidence of understanding one another, expression of feelings, or problem solution statements. Unlike many couples, however, they did manage to stay on the topic, they shared the talk time, and they demonstrated fair-to-good nonverbal sending and listening skills. Unfortunately, their natural pattern at home was to withdraw from potential conflict discussions even before reaching the level of wheel-spinning problem description evident in the observed sample.

C. Treatment Goals and Interventions

By the end of the evaluation period, good rapport had been established between therapists and clients, there was a consensus on the problems and goals of therapy, and a treatment contract was set for 10 sessions. Goals

and intervention methods are indicated in Table 2 in the tentative order of sequence.

D. Treatment Progress

At the outset both Bob and Cindy seemed motivated to improve their marriage. While admitting to some emotional ambivalence about being with wife versus lover, Bob indicated that he wanted to stay with the family and make the marriage more rewarding. He had terminated contacts with his lover. Bob and Cindy made very good early progress. In fact, with only an average amount of direction, encouragement, repeated assignments, and reinforcement by the therapists, they did quite well through the beginning stage of therapy and part way through the middle stage.

The difficulties arose when goal 7 (in Table 2) was broached through explicit focus on treatment goal 8. Treatment session number six had ended with an assignment extending goal 2 into sexual interaction. The therapists designed the assignment carefully so it would be successful. On a given day, Bob agreed to come home by 5 P.M., to shower, and to help Cindy feed and bed the kids by 8 P.M. That would leave about 3 hours for them to have a nice, jointly prepared dinner, to relax for awhile, and then to engage in a pleasurable sexual encounter. The therapists suspected that if major resistance were going to emerge, it would be associated with movement toward increased intimacy (i.e., confronting the risk of rejection) through a sexually oriented assignment. Their concerns were well founded. Possibly giving off mixed signals, after dinner the two combined to fail the assignment. Bob started to watch the news on TV waiting for Cindy to initiate the romance; she thought he was too comfortable and not interested in having sex and got involved in a different activity. During the therapy session, exploration of cognitions and feelings indicated that Cindy was still a little unsure of herself as a competent sexual partner and thus was reluctant to initiate affectionate interaction. At the same time, she became aware of lingering, if unexpressed, resentment about Bob's affair. She wanted to be given special attention and to be seduced. In Bob's case, he was still vulnerable to their old interaction pattern and his self-defeating thinking style: "If Cindy really cares about me, knowing that I want sex and affection, she will initiate it; I'm tired of always having to be the initiator." In addition, Bob admitted that although he had no contact with his girlfriend, he still occasionally experienced strong feelings for her. The therapists pointed out that such expectations and mixed emotions were likely to be self and relationship defeating, particularly when left nonverbal (i.e., as hidden agenda). The remainder of the session was devoted to the careful design of another romantic evening together with encouragement to explicitly discuss their ongoing expectations and feelings.

TABLE 2
Treatment Plan for Bob and Cindy

Goals	*Interventions*
1. Establish collaborative set	Persuasion and didactic instruction in systems thinking; homework assignments that require and reward couple collaboration; therapist reinforcement for teamwork
2. Increase contact time for Bob and Cindy; Bob and family	Negotiation, structured homework assignments, e.g., caring activities, mutually rewarding couple and family activities
3. Increase couple communication	Basic communication skills training in session; graded assignments at home—assigned reading, discussion, and exercises.
4. Increase Cindy's independent rewarding activities	Negotiated resource allocation, e.g., money for babysitters; homework assignments
5. Increase problem-solving and conflict-resolution skills	In-session training in problem solving and conflict-management skills; structured homework
6. Resolve financial management issues	Apply problem-solving skills; establish budget
7. Increase Bob's father role and decrease his "sex-deprived, errant husband" role; increase Cindy's wife role and decrease her "overburdened mother-housewife" role	Systematic assignments above that foster one role over the other; therapist reinforcement of role shifts; techniques of dealing with blocks to progress
8. Increase quality of sexual interaction	Graded assignments, e.g., caring activities; structured exercises, e.g., sensate focusing; communication skills about sexual interaction
9. Resolve Bob's ambivalence concerning wife versus lover	A planned and eventual consequence of all the above

Over the final few sessions, with much more open communication, they were able to reconstruct a better sex life. The therapeutic emphasis was on mutual responsibility for initiation of and response to sexual behaviors. Bob learned that in exchange for less frequency (e.g., two to three rather than five encounters per week) that quality could be improved in terms of Cindy's responsiveness, enthusiasm, and active participation. Moreover, with modest decreases in Bob's working late and racing activities, there was increased contact time available for the full gamut of family and relationship business. This included sex and affection sometimes initiated by Cindy.

E. Posttherapy Assessment and Follow-Up

The posttreatment communication sample reflected increased collaboration and assertiveness during conflict resolution by both partners. The Marital Relationship Assessment Battery posttherapy results are presented in Table 1. These data suggested significant improvements in many of the relationship indicators. At 6-week follow-up, both partners claimed that they had maintained the improvement in marital satisfaction.

VI. SUMMARY

Behavioral marital therapy consists of fairly distinct assessment and intervention phases. First, a multimethod assessment of the behavioral problems and strengths of the distressed relationship is accomplished through the use of semistructured clinical interviews, standardized marital inventories, observed samples of problem-solving conflict resolution in the clinic, and possibly information derived from spouse observation in the home environment. Based on the results for a given couple, a treatment plan is devised that typically includes at least two major interventions designed to improve presenting complaints: communication and problem-solving training and behavioral exchange assignments. In this context, couples learn how to improve the ratio of pleasing-to-displeasing behaviors, how to be more open and effective in communicating about important relationship issues, and how to more effectively solve problems and manage their marital conflicts. The primary focus is on applying interpersonal behavior change technology. However, partners' cognitions and affective states also are considered and may be targeted for intervention. After a typically brief course of therapy (i.e., 12 to 20 sessions), posttherapy assessments are repeated and one or more follow-up sessions are planned to assess and to help maintain gains made in treatment.

See Also the Following Articles

Behavioral Group Therapy ■ Couples Therapy: Insight Oriented ■ Family Therapy ■ Psychodynamic Couples Therapy ■ Spouse-Aided Therapy

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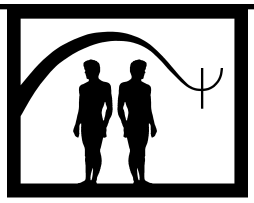

Behavioral Therapy Instructions

Amy M. Combs-Lane, Joanne L. Davis, Adrienne E. Fricker, and Ron Acierno

Medical University of South Carolina

I. Description of Treatment
II. Theoretical Bases
III. Empirical Studies
IV. Summary
Further Reading

GLOSSARY

antecedent variable An environmental stimulus that cues a particular behavioral response, including both emotional or physiological responses (e.g., sadness, fear, panic) and instrumental responses (e.g., escape in response to a feared stimulus). An antecedent event for a spider phobic would be seeing a spider.

consequent variable Reinforcement or punishment that follows a particular behavioral response (e.g., praise, approval, attention, monetary reward, removal of privilege).

modeling Learning that occurs from the observation of others and observation of the consequences of another's behavior, as well as any imitative change in behavior that follows.

psychoeducation Educational materials designed to explain the manner in which psychological phenomena occur and to provide a rationale for specific treatment approaches.

role-playing Acting out ways of handling real-life situations for the purpose of modifying maladaptive ways of responding and replacing them with more adaptive ones, or for learning and practicing a newly acquired skill. Also referred to as behavioral rehearsal.

Instructions for behavioral therapy encompass a variety of methods that behavior therapists employ to convey information and provide direction to clients in the context of making behavioral changes. This article will provide a detailed description of instructions for behavioral therapy and a review of theory and empirical studies pertaining to the manner in which instructions are provided by behavior therapists.

I. DESCRIPTION OF TREATMENT

In behavioral therapy, instructions to clients tend to be specific, structured, and directive. Behavior therapists maintain a focus on specific problems, as opposed to underlying causes or traits, and assess the antecedents, consequences, and maintaining factors for behavior. Although goals for treatment are often developed in collaboration with clients, behavior therapists take primary responsibility for the direction of therapy sessions, establishing the agenda and structuring the session. Instructions are conveyed through psychoeducation, direct feedback, homework assignments, and specific techniques.

A. Psychoeducation

Behavior therapists provide information that is designed to educate clients about therapeutic processes, including conceptualization of the target problem, procedures to be used, effectiveness of a given procedure, likelihood of change, and the respective roles of therapist and client in achieving behavioral change.

In educating clients about the conceptualization of a problem, behavior therapists provide explanations of presenting symptoms from a learning theory perspective, focusing on factors that serve to maintain problem behaviors. Concrete examples are often provided, and clients are encouraged to think of prior learning experiences that illustrate specific concepts. For instance, in explaining factors that often serve to maintain a fear of public speaking, the therapist may ask the client to recall past experiences with public speaking in order to identify maladaptive cognitions (e.g., "I am making a fool of myself") and behaviors (e.g., talking quickly, leaving the situation in order to avoid speaking) that were present.

Behavior therapists rely on the empirical literature to guide treatment choices and provide explanations of the rationale for treatment. In addition to providing verbal explanations of a problem's causes and subsequent rationale for treatment, clients are often provided with educational materials in written form, and asked to read the materials as homework assignments. The ultimate goal of educating clients about the conceptualization of the problem and treatment procedures is to arrive at a consensus regarding the treatment plan and implementation.

Considerable attention has been devoted to the study of a client's expectations of change and the roles of client and therapist in bringing about change. In general, behavior therapists attempt to understand the client's expectations of therapy, to correct misperceptions, to educate clients about the rationale for selecting certain procedures, and to motivate clients to have positive expectations for change.

B. Direct Feedback

Behavior therapists provide instructions through direct feedback. Target behaviors are assessed on an ongoing basis and feedback is provided regularly throughout treatment. In-session observations provide a sample of behavior and may indicate progress toward specific goals. Specific suggestions are made regarding behavioral changes. For example, in working with an individual with depressed mood, a behavior therapist may provide feedback that decreased activity and withdrawal from others are contributing to the client's depression. Therefore, behavioral activation strategies may be recommended, and in collaboration with the client, a specific plan established for ways to increase activity level.

C. Homework Assignments

Behavior therapists incorporate homework assignments in treatment in order to bring about change and encourage generalization of behaviors to environmental contexts outside of the therapy session. Examples of homework assignments include practicing a relaxation exercise two times per day, engaging in daily *in vivo* exposure practices, and completing a writing assignment. Specific instructions are provided regarding how to complete homework assignments. The parameters for assignments may include the duration and frequency of tasks, how to structure the environment, and efforts to anticipate factors that may interfere with successful completion of the assignment. Often, monitoring forms are provided so that clients can record the occurrence of specific behaviors between sessions, as well as provide documentation of completed exercises. For example, clients may be asked to monitor daily mood and anxiety levels using a 10-point scale or to record cognitions that occurred in the context of specific tasks.

D. Specific Techniques

Behavioral therapists provide instructions through a variety of methods. Throughout treatment, teaching, modeling, and role-playing may be used to instruct clients in how to engage in particular behaviors. The following three techniques are often combined in a single session.

1. Didactic Teaching

Behavior therapy relies on didactic teaching to explain behavioral concepts and to instruct clients in how to complete exercises. Individuals are often presented with psychoeducational materials in both verbal and written formats, with the aim of informing them of the various factors that are maintaining maladaptive behaviors. For instance, in presenting information regarding diaphragmatic breathing to individuals with a history of panic attacks, behavior therapists may provide a description of the physiology of panic, followed by an explanation of how certain cognitive and behavioral responses, such as hyperventilation, serve to maintain and increase physiological responses. The therapist may then proceed to explain the rationale for diaphragmatic breathing and demonstrate this technique in session.

2. Modeling

Therapists employ modeling to demonstrate appropriate performance of certain behaviors. With

modeling instructions may be presented both verbally and visually. Although it is possible to utilize a videotaped or imagined model, often the therapist serves as the model in session, demonstrating a specific technique, then asking the client to imitate the behavior. Using diaphragmatic breathing as an example, the therapist may first describe the procedure, ask the client to watch while the technique is demonstrated, and then have the client perform the procedure. Feedback is then given to clients regarding their performance. Specific criteria are often established for the client to ensure the procedure is being performed properly. For instance, in behavior therapy designed to improve the interaction between parent and child, parents are instructed to demonstrate a certain number of descriptive statements and praises in an allotted time frame.

3. Role-Playing

Role-playing is employed in behavior therapy to modify maladaptive responses and replace them with new responses. Role-playing may also be used to instruct clients in how to perform a newly acquired behavior or to engage in a behavior in a given context. Therefore, role-playing is an example of behavioral rehearsal in that behaviors are repeatedly acted out until they become part of the individual's behavioral repertoire. This type of instruction is most commonly applied with interpersonal difficulties, especially when problems are associated with assertiveness or social skills.

Role-playing allows the therapist to teach a behavior, to observe the client performing the behavior, and to have the client perform the behavior in the presence of stimulus cues that are likely to be present in real-life situations. For example, a therapist may demonstrate ways of responding assertively to a controlling and demanding spouse. The client may then anticipate certain reactions the spouse may have and the therapist can role-play these reactions so as to provide a closer approximation to real-life circumstances.

II. THEORETICAL BASES

Behavioral therapy represents an approach that is empirically based and strongly rooted in learning theory. The direct and structured manner in which instructions are provided in behavioral therapy reflects a scientific approach. Therapists develop a hypothesis about factors that are maintaining maladaptive behavior, select a method of modifying the behavior, provide instruction in how to achieve behavioral change, monitor progress toward the stated goal, and ensure that behavioral change generalizes to appropriate contexts. Progress toward specific goals is assessed systematically over the course of therapy through monitoring exercises, observations of behavior in session, and information gathered from collateral sources, if pertinent.

III. EMPIRICAL STUDIES

There is a paucity of empirical investigations that have directly addressed the manner in which *instructions* per se are given in behavioral therapy. The closest approximation comes from studies that have evaluated nonspecific treatment effects, referred to as "placebo" effects, in evaluating the effectiveness of behavioral therapy in comparison to more traditional forms of psychotherapy. Nonspecific effects refer to those factors associated with the conduct, rather than content, of psychotherapy: the relationship between the therapist and client, expectations for improvement in the context of a helping relationship, a rationale that establishes the expectation of change, and procedures that involve the interaction of the therapist and client.

Hans Eysenck's work, spanning more than 40 years, has examined the placebo effect as it relates to the evaluation of psychotherapy outcomes. Eysenck has summarized research on psychotherapy effectiveness and concluded that behavior therapy, in comparison to traditional psychotherapies (e.g., psychodynamic, client-centered, Gestalt, rational–emotive), has evidenced greater effect sizes, over and above that which can be attributed to placebo. In current psychotherapy outcome research, there is an effort to differentiate active treatment components from nonspecific effects, holding nonspecific aspects constant across treatment conditions.

IV. SUMMARY

Instructions for behavioral therapy encompass a variety of methods and techniques that behavior therapists employ to provide direction to clients in order to achieve behavioral changes. Behavior therapists maintain a directive stance, establish a specific agenda for therapy sessions, and structure the course of therapy

toward the achievement of specific treatment goals. Behavior therapists utilize psychoeducation, direct feedback, homework assignments, and specific techniques, such as modeling and role-playing, to convey specific concepts and to assist clients in achieving behavioral change.

See Also the Following Articles

Behavioral Assessment ■ Behavioral Consultation and Therapy ■ Behavioral Group Therapy ■ Behavior Therapy: Historical Perspective and Overview ■ Behavior Therapy: Theoretical Bases ■ Role-Playing

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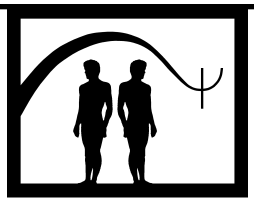

Behavioral Treatment of Insomnia

Jack D. Edinger

Veterans Affairs and Duke University Medical Centers

I. Nature and Significance of Insomnia
II. Theoretical Basis for Behavioral Insomnia Therapies
III. Description of Behavioral Insomnia Therapies
IV. Empirical Studies
V. Summary
Further Reading

GLOSSARY

cognitive-behavioral insomnia therapy A multifaceted treatment approach designed both to reduce dysfunctional beliefs about sleep and correct sleep-disruptive habits.

insomnia A form of sleep disturbance characterized by difficulty initiating or maintaining sleep or by chronically poor sleep quality. Accompanying the nocturnal sleep difficulty are daytime complaints (e.g., fatigue, poor concentration) and, at times, more serious signs (e.g., poor work performance, compromised social functioning) of dysfunction.

paradoxical intention A treatment strategy in which an individual is instructed to purposefully engage in a feared activity in order to reduce performance anxiety that confounds associated goal-directed behavior.

relaxation therapies A group of behavioral treatments that involve formal exercises, which when practiced repeatedly, lead to increased ability to lower psychological and physiological levels of arousal.

sleep restriction A behavioral strategy in which time in bed at night is restricted in order to encourage a more considated sleep pattern.

stimulus control A structured behavioral regimen designed to disassociate a problem behavior or conditioned autonomic response from a specific environmental setting.

treatment effect size A statistic that reflects the average amount of difference (expressed as a fraction of the pooled standard deviation) observed between a treated and untreated group of patients.

Insomnia is a highly prevalent and significant health concern resulting from varied causes. Often misconceptions about sleep and myriad sleep-disruptive habits serve important roles in perpetuating this type of sleep problem. In such cases, behavioral therapies designed specifically to address these perpetuating factors are often required to eradicate the observed sleep difficulties. This chapter briefly describes insomnia, considers the cognitive and behavioral anomalies that contribute to this condition, and reviews the most commonly employed behavioral insomnia therapies.

I. NATURE AND SIGNIFICANCE OF INSOMNIA

Insomnia, characterized by difficulty initiating, maintaining, or obtaining qualitatively satisfying sleep is a widespread health complaint. Like the common cold, most individuals have experienced at least transient bouts of nocturnal sleep difficulty due either to an impending stressful (e.g., final exam) or exciting (e.g., a long-awaited vacation trip) event or due to

acute medical or environmental factors. However, slightly over one-third of the adult population complains of recurring, intermittent sleep difficulties whereas 9 to 10% endure chronic, unrelenting insomnia problems. Although many health care professionals as well as the lay public may minimize its significance, insomnia may have notable short- and long-term consequences. At a minimum, insomnia results in daytime fatigue, decreased mood, and general malaise. In more protracted cases it may cause impaired occupational and social functioning. In addition, there is substantial evidence that insomnia dramatically increases risks for medical complaints, alcohol and drug abuse, and serious psychiatric illnesses. Moreover, insomnia alone contributes to increased health costs and utilization among affected individuals and, in turn, escalates health care costs for society in general. Indeed, insomnia sufferers may collectively spend well over $285 million per year for prescription sleeping pills whereas the projected annual direct, treatment-related costs of insomnia to the U.S. population may be as high as $92.5 billion. Thus, chronic insomnia represents a significant public health problem that warrants early detection and treatment.

II. THEORETICAL BASIS FOR BEHAVIORAL INSOMNIA THERAPIES

As might be surmised by the above discussion, sleeping pills remain the most popular treatment for those chronic insomnia suffers who report sleep complaints to their physicians. Indeed, as many as 50% of those patients who complain of insomnia to their physicians are treated with sedative hypnotics or sedating antidepressant medications to address such complaints. Although these agents may be useful in the management of transient insomnia, they generally fail to provide long-term relief for those with more chronic sleep disturbances. Patients who use hypnotics on a long-term basis often suffer such unwanted effects as drug tolerance, dependence, hangover, short-term memory loss, and a gradual return of their sleep problems. Side effects may be particularly problematic among elderly hypnotic users who are at increased risk for toxic drug interactions and serious falls resulting from oversedation. Although some recently developed sleeping pills hold the promise of reduced side effects, all currently available sleep medications represent only symptomatic treatments that fail to address the underlying factors sustaining insomnia. Thus, even the most recently developed sleeping pills often provide little lasting relief for those with chronic sleep disturbances.

Insomnia, as a symptom, often heralds underlying psychiatric, medical, or substance abuse disorders that require treatment before the sleep disturbance can be resolved. Nonetheless, effective and enduring insomnia treatment in many cases requires additional strategies designed to reestablish normal functioning of the human biologic sleep system. According to the 1988 theory of Wilse Webb, normal sleep functioning is regulated by homeostatic mechanisms that respond to increasing periods of wakefulness by increasing the propensity to sleep, circadian mechanisms that regulate the timing of sleep onset and offset, and environmental and behavioral factors that may serve to facilitate or inhibit the sleep process. Assuming adequate functioning of the homeostatic and circadian systems as well as sleep-conducive environmental/behavioral conditions, normal, subjectively satisfying sleep results. However, disruption of normal homeostatic or circadian functioning and/or disruptive environmental/behavioral conditions may contribute to sleep disturbances.

For many insomnia sufferers, normal sleep/wake functioning becomes chronically disrupted through the development of poor sleep habits and conditioned emotional responses that either interfere with normal homeostatic or circadian processes or serve as environmental/behavioral inhibitors to sleep. For example, daytime napping or spending extra time in bed in pursuit of elusive, unpredictable sleep may interfere with normal homeostatic sleep-controlling mechanisms and serve to reduce sleep drive on the ensuing night. Alternately, the habit of remaining in bed well beyond the normal rising time following a poor night's sleep may disrupt the circadian sleep-wake rhythm and make the subsequent night's sleep more difficult. Additionally, the repeated association of the bed with unsuccessful sleep attempts may eventually result in a conditioned arousal in the home sleeping environment. Finally, failure to discontinue mentally demanding work and allot sufficient wind down time before bed may make subsequent sleep initiation very difficult. Because any of these factors may contribute to and perpetuate sleep difficulty, behavioral/psychological interventions that correct these anomalies are often required to eradicate the chronic sleep difficulty.

III. DESCRIPTION OF BEHAVIORAL INSOMNIA THERAPIES

Formal applications of behavioral interventions to insomnia were first reported in the 1950s but such treatments did not gain much popularity until the 1970s. Over the past 30 years, various behavioral insomnia therapies have been developed, tested, and, at times, modified. The nature and specific focus of these treatments has varied significantly in that some are composed of fairly formalized "exercises" designed primarily to address sleep-related performance anxiety and excessive bedtime arousal, whereas others include fairly regimented behavioral prescriptions designed to eliminate sleep-disruptive habits. The following discussion provides brief descriptions of the most commonly employed behavioral insomnia therapies.

A. Relaxation Therapies

Since the late 1950s a host of formal relaxation therapies including progressive muscle relaxation training, autogenic training, imagery training, biofeedback, and hypnosis have all been used to treat insomnia. Common to these approaches is their focus on such factors as performance anxiety and bedtime arousal, which often perpetuate sleep difficulties. Regardless of the specific relaxation strategy employed, treatment entails teaching the insomnia sufferer a formal exercise or set of exercises designed to reduce anxiety and arousal at bedtime so that sleep initiation is facilitated. Typically multiple weekly or biweekly treatment sessions are required to teach relaxation skills that the patient is encouraged to practice at home in order to gain mastery and facility with self-relaxation. The goal of all such treatments is that of assisting the insomnia sufferer in achieving sufficient relaxation skills so that insomnia resulting from sleep-related performance anxiety and bedtime arousal can be minimized or eliminated.

B. Stimulus Control

This approach, introduced by Richard Bootzin in 1972, is based on the assumption that both the timing (bedtime) and setting (bed/bedroom) associated with repeated unsuccessful sleep attempts, over time, become conditioned cues that perpetuate insomnia. As a result, the goal of this treatment is that of reassociating the bed and bedroom with successful sleep attempts. Stimulus control achieves this endpoint by curtailing sleep-incompatible activities in the bed and bedroom and by enforcing a consistent sleep-wake schedule. In practice, stimulus control requires instructing the insomnia sufferer to (1) go to bed only when sleepy; (2) establish a standard wake-up time; (3) get out of bed whenever awake for more than 15 to 20 minutes; (4) avoid reading, watching TV, eating, worrying, and other sleep-incompatible behaviors in the bed and bedroom; and (5) refrain from daytime napping. From a theoretical perspective, it is probable that strict adherence to this regimen not only corrects aberrant, sleep-disruptive conditioning, but it also likely reestablishes a normal sleep drive and sleep-wake rhythm. From a practical viewpoint, this treatment has appeal since it is easily understood and usually can be administered in one visit. However, follow-up visits are usually conducted to ensure compliance and achieve optimal success.

C. Paradoxical Intention

As the name implies this treatment strategy employs a form of reverse psychology to address sleep difficulties. Designed mainly to address the excessive performance anxiety that contributes to sleep onset difficulties, this treatment instructs the insomnia sufferer to remain awake as long as possible after retiring to bed. In essence, the insomnia sufferer is placed in the paradoxical position of having to perform the activity of not sleeping when in bed. If the individual complies and genuinely tries to remain awake in bed, performance anxiety over not sleeping is alleviated and sleep becomes less difficult to initiate. Like the other treatments, an initial visit to provide treatment instructions and follow-up sessions to support the patient and ensure compliance are usually recommended when administering this intervention.

D. Sleep Restriction

Sleep restriction therapy (SRT) is a behavioral insomnia therapy wherein sleep improvements are achieved primarily by limiting or restricting the time allotted for sleep each night so that the time spent in bed closely matches the individual's actual sleep requirement. The treatment, first introduced by Arthur Spielman and colleagues in 1987, grew out of the observation that many insomnia sufferers spend excessive time in bed each night in efforts to obtain their elusive sleep. Indeed, many such patients may experience excessive time awake each night simply *because* they are allotting far too much time for sleep. Typically this treatment begins by having the insomnia sufferer maintain a sleep log on

which a record of each night's sleep is kept. After the insomnia sufferer has maintained a sleep record for 2 to 3 weeks, the average total sleep time (ATST) is calculated from the information recorded. Subsequently an initial time-in-bed (TIB) prescription may either be set at the ATST or at a value equal to the ATST plus an amount of time that is deemed to represent normal nocturnal wakefulness. However, unless there is persuasive evidence to suggest the individual has an unusually low sleep requirement, the initial TIB prescription is seldom set below 5 hours per night. Subsequently, the TIB prescription is increased by 15 to 20 minute increments following weeks the insomnia sufferer, on average, is sleeping greater than 85 or 90% of the TIB and continues to report daytime sleepiness. Conversely TIB is usually reduced by similar increments following weeks wherein the individual, on average, sleeps less that 80% of the time spent in bed. Since TIB adjustments are usually necessary, SRT typically entails an initial visit to introduce treatment instructions and follow-up visits to alter TIB prescriptions.

E. Cognitive Therapy

Underlying and supporting insomnia sufferers' performance anxiety and sleep-disruptive habits are a host of dysfunctional beliefs and attitudes about sleep. Beliefs that sleep is unpredictable and uncontrollable or that one must obtain 8 hours of sleep at night to function each day can add to anxiety about sleep and, in turn, interfere with the sleep process. Furthermore, insufficient knowledge about how one should respond to a night of poor sleep may lead to practices such as daytime napping or "sleeping in," which disrupt the ensuing night's sleep. Given increasing recognition of these types of sleep-related misconceptions, therapeutic strategies that specifically target these cognitions may be useful in insomnia treatment. Hence, cognitive therapy designed to correct these dysfunctional beliefs, either through formalized patient education modules or via the cognitive restructuring method similar to that commonly used in cognitive therapy with clinically depressed individuals, is often employed in the treatment of insomnia sufferers. Once again, usually multiple sessions of such treatments are provided in clinical applications of these cognitive therapies.

F. Cognitive-Behavioral Therapy

This treatment strategy might best be regarded as a second-generation behavioral insomnia treatment that evolved from the above described strategies. Cognitive-behavioral insomnia therapy or CBT typically consists of one of the cognitive therapy strategies used in combination with both stimulus control and sleep restriction therapies. One presumed advantage of this treatment is that it includes treatment components that address the range of cognitive and behavioral mechanisms that perpetuate insomnia. As a result, this treatment should be more universally effective across insomnia sufferers regardless of their presenting complaint (i.e., sleep onset complaints vs. sleep maintenance difficulty). Admittedly, CBT is a multicomponent and seemingly more complex treatment than those previously described. Nonetheless, in practice, this intervention usually requires no more therapist or patient treatment time than do the less complex first-generation treatments reviewed above. Often CBT's cognitive therapy and behavioral instructions can be provided in no more than eight sessions, but some CBT models utilize as few as 2 to 4 sessions in their clinical applications. However, most current CBT proponents employ multiple treatment sessions to provide those they treat sufficient support and follow-up.

IV. EMPIRICAL STUDIES

Since their emergence, the behavioral insomnia therapies have been studied extensively. Indeed, well over 100 published studies have tested one or more of these treatments. A critical review of this voluminous literature is a daunting task and well beyond the scope of this chapter. Fortunately, in 1995 Douglas Murtagh and Kenneth Greenwood conducted a critical review of this literature in order to determine the general and relative effectiveness of the various behavioral insomnia therapies. In this review, they employed special statistical procedures to estimate treatment effects sizes for the behavioral insomnia therapies in general and for each treatment considered individually. As used in these analyses, the term treatment effect size reflected the average amount of difference (expressed as a fraction of the pooled standard deviation) observed between treated and untreated insomnia sufferers. Hence, a hypothetical effect size of 0.5, expressed in such terms, would indicate that treated individuals, on average, showed a half standard deviation improvement greater than those who were not treated. In clinical treatment studies, effect sizes in the 0.2 range are considered small, those in the 0.5 range are considered medium, and those 0.8 or greater are considered large.

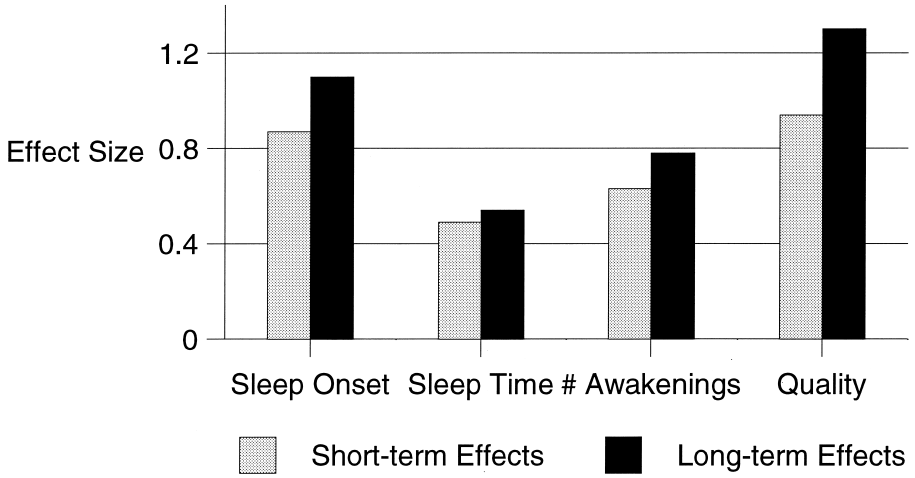

FIGURE 1 Short-term and long-term treatment effects for the behavioral insomnia therapies. [Adapted from Edinger, J., & Wohlgemuth, W. K. (1999). Sleep Med. Rev., *3,* 1–18, by permission of W. B. Saunders.]

Figure 1 shows the treatment effect sizes reported by Murtagh and Greenwood for the behavioral insomnia therapies in general. This figure shows both the short-term (i.e., at the conclusion of treatment) and long-term (i.e., at follow-up) effect sizes for the behavioral insomnia therapies, considered collectively, for a number of subjective (sleep log) measures including sleep onset latency, number of nocturnal awakenings, total sleep time, and subjective sleep quality. It should be noted that all of the treatment effect sizes shown are in the medium to high ranges. Furthermore, these data indicate that patients treated with the behavioral insomnia therapies tend to appreciate additional improvements through extended follow-up periods, which averaged 8 months in length for the studies Murtagh and Greenwood considered. Such findings are particularly encouraging inasmuch as the behavioral treatments are devoid of the previously mentioned side effects and lack of long-term effectiveness noted with many sleeping pills.

When comparing the behavioral insomnia therapies with each other, Murtagh and Greenwood noted that stimulus control therapy produced larger treatment effect sizes than did the other treatments particularly on measures reflecting difficulty falling asleep, the number of nocturnal awakenings noted, and overall perceived sleep quality. Relaxation therapies and treatment combinations that usually included stimulus control and relaxation techniques produced the largest improvements in nocturnal sleep time. It should be noted, however, that the studies considered in this critical review included highly screened and selected insomnia sufferers who generally had no accompanying medical or psychiatric illnesses. As a result, the effectiveness of these treatments in applied clinical settings with more "real world" patients remains questionable. Furthermore, most of these studies focused on sleep onset problems and excluded individuals who solely or primarily complained of sleep maintenance difficulties. This is particularly unfortunate because insomnia sufferers with sleep maintenance complaints far outnumber those who solely complain of a difficulty falling asleep. Finally, the relatively newer CBT approaches were not considered in this review because only in the last few years have well-controlled studies of this approach been reported. Hence, the findings reported by Murtagh and Greenwood leave several important questions about the behavioral insomnia therapies unanswered.

Over the past 5 years an increasing number of studies conducted to test CBT approaches have been published. This growing literature has shown that CBT is a promising insomnia treatment for a various types of insomnia sufferers. Specifically, these studies have shown that CBT produces clinically significant sleep improvements among those who suffer from either sleep onset or sleep maintenance difficulties. Furthermore, studies have shown that this modality is effective among insomnia patients who additionally suffer from significant sleep-confounding medical (e.g., chronic pain syndromes) and significant psychiatric (e.g., depression) disorders. Moreover, some very recent research has shown that paraprofessionals can be trained to administer effectively these treatments in "real world"

primary care settings. Finally, results of these studies generally show moderate to high treatment effect sizes across a variety of outcome measures. Although far from conclusive, these findings suggest that CBT is a promising behavioral insomnia therapy that likely represents an advancement over the first-generation therapies from whence it evolved.

V. SUMMARY

Chronic insomnia is a fairly prevalent and significant health concern that often is perpetuated by dysfunctional beliefs about sleep, heightened anxiety, and a host of sleep-disruptive compensatory practices. Whereas sleeping pills are often prescribed for this condition, such treatment may be encumbered with side effects and usually fails to address the psychological and behavioral anomalies sustaining the sleep problems. In contrast, the behavioral insomnia therapies are each specifically designed to address one or more of these perpetuating mechanisms. Research has shown that first-generation behavioral insomnia therapies such as stimulus control and relaxation training are moderately to highly effective particularly for ameliorating sleep onset difficulties with highly screened and perhaps clinically skewed samples. However, recent studies suggest that a multifaceted cognitive-behavioral therapy, which targets both dysfunctional sleep-related beliefs and sleep-disruptive habits, appears effective for sleep onset and sleep-maintenance insomnia. Furthermore, very recent studies suggest that this treatment is effective in applied clinical settings. These results are encouraging and suggest that behavioral insomnia therapy has a deserving and important niche in the management of those insomnia sufferers who seek treatment.

See Also the Following Articles

Applied Relaxation ■ Behavioral Weight Control Therapies ■ Cognitive Behavior Therapy ■ Paradoxical Intention ■ Progressive Relaxation ■ Relaxation Training ■ Self-Help Treatment for Insomnia

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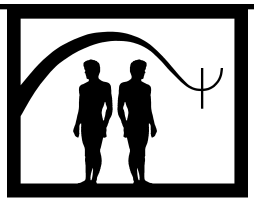

Behavioral Weight Control Therapies

Donald A. Williamson
Pennington Biomedical Research Center

Joy R. Kohlmaier and Marney A. White
Louisiana State University

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GLOSSARY

classical conditioning Pavlovian or respondent conditioning that involves pairing a neutral stimulus with a stimulus that elicits an unconditioned response to yield a conditioned response to the neutral stimulus.

follow-up A specific point in time (e.g.,3 month follow-up), after which treatment has been terminated, when the researcher evaluates the stability of the results of the treatment intervention.

genotype genetic site for a particular characteristic.

kg of weight (1) = 2.2046 pounds.

meta-analysis A statistical technique in which the findings from a number of studies are combined to determine whether significant trends emerge.

reinforcement Contingent positive and negative events that follow a behavior and serve to increase the likelihood that a behavior will be repeated in the future.

resistance training Weight-lifting.

self-monitoring Keeping records of daily food intake and physical activity.

shaping The process of gradually learning a complex behavior by breaking the behavior into smaller parts and learning the components in succession.

stimulus control A technique used to limit or decrease the number of environmental cues that are associated with eating.

very low calorie diets (VLCDs) Dietary prescription in which daily caloric intake is limited to less than 800 kcal.

The behavioral treatment of obesity focuses on altering lifestyle by modifying one's eating habits and physical activity in order to achieve weight loss. The goal of this treatment is to achieve a negative energy balance, which is achieved via burning more energy than is consumed by eating. This article will present an overview of the behavioral treatment of obesity including a description of treatment, the theoretical bases underlying treatment, the applications and exclusions of treatment, the empirical studies investigating the efficacy of treatment, and a case illustration demonstrating the treatment approach.

I. DESCRIPTION OF TREATMENT

A. Basic Philosophy of Treatment

As described in the next section, lifestyle behavior modification for obesity is based on changing eating habits and physical activity to yield negative energy balance, that is, burning more energy than is consumed via eating. During the initial phase of treatment (approximately 26 weeks), weight loss occurs at a rate of approximately 1 to 2 lb. (.5 to 1 kg) per week and

gradually tapers to a weight plateau. After this first phase, the goal of treatment is weight maintenance, where the person learns to balance energy intake and energy expenditure. This section describes the primary components of lifestyle behavior modification during these two phases of treatment.

B. Components of Behavioral Weight Loss Interventions

1. Self-Monitoring

A central feature of behavioral weight loss interventions is self-monitoring of eating and exercise habits. Self-monitoring generally involves recording food intake and intentional efforts to increase physical activity. This monitoring should occur at the time of each behavioral event, that is, at each meal or snack or immediately after a bout of exercise. Self-monitoring also generally involves recording (1) environmental events associated with eating and exercise (e.g., place and time of day), (2) cognitive and emotional reactions (e.g., eating in response to stress), and (3) hunger ratings before and after eating. Self-monitoring serves several purposes: (1) enhanced awareness of habits, patterns of behavior, and amount of food eaten at meals and snacks, (2) record of behavior that can be used to evaluate progress and to set goals for reinforcement, and (3) dietary record that can be analyzed for the adequacy of the person's nutritional intake across time.

2. Stimulus Control

Stimulus control procedures are designed to alter the relationship between antecedent stimuli and eating and exercise habits. Commonly used stimulus control procedures are (1) eating at the same time and place at each meal, (2) slowing eating by putting utensils down between bites, (3) eating on small plates, (4) resisting the urge to have seconds, (5) eating while seated, (6) leaving a small amount of food on one's plate, (7) serving small portions of food, and (8) exercising at the same time each day. These procedures serve several functions: (1) extinction of the conditioned association between certain environmental events and unhealthy eating or exercise habits, (2) conditioning of a three meal/day eating pattern that is associated with specific environmental cues, (3) slowing the pace of eating, and (4) developing a consistent pattern of physical activity that becomes habitual.

3. Reinforcement/Shaping

As noted in the next section, the natural consequences of eating (e.g., the good taste of food and reduction of hunger) facilitate the development of overeating habits, whereas the natural consequences of exercise (e.g., fatigue and muscle soreness) facilitate the development of a sedentary lifestyle. Furthermore, as a person gains weight, the natural consequences of exercise become even more aversive, resulting in less physical activity as obesity increases. Finally, the natural consequences of eating and exercise make conditioning of these habits highly probable. Unfortunately, alteration of the natural consequences of eating is essentially impossible without pharmacological or surgical intervention. On a more positive note, the development of healthy physical activity habits makes some of the natural consequences of exercise less aversive over time. Nevertheless, because these natural consequences are so difficult to modify, behavioral programs have typically tried to modify other reinforcers (e.g., social reinforcement or monetary rewards for behavior change).

The principle of shaping is generally employed when reinforcement contingencies are formulated. Shaping refers to setting small, but reasonable goals at first, and then gradually making them more challenging over the course of treatment.

4. Goal Setting

Behavioral weight control programs are generally very "goal oriented." Typically, the person will set a weight goal, a calorie goal, and an exercise goal. Also, individualized goals are usually established. These goals might include such things as cessation of eating certain types of foods (e.g., soft drinks), walking up stairs instead of using elevators, or modification of snacks (e.g., eating fruit instead of ice cream). As a general rule, the person is instructed to monitor success and failure in making these behavioral changes and this information is reviewed in each therapy session.

5. Behavioral Contracting

To enhance the person's motivation for achieving these goals, a procedure called behavioral contracting is often used. Behavioral contracting involves clearly specifying behavioral goals in terms of frequency, duration, or intensity (e.g., "I agree to walk at least 30 minutes per day for at least five days per week"). A behavioral contract generally includes some type of reinforcement contingency for successful attainment of the goal (e.g., "if I meet my exercise goal for this week, I will reward myself by purchasing a copy of my favorite magazine").

6. Meal Planning

Goals related to nutrient intake may take many forms (e.g., calories, fat grams, or dietary exchanges). In general, research has shown that explicit meal plans are

most effective for compliance. An explicit meal plan might include an actual menu to be followed each day. The use of portion-controlled foods that are prepackaged for use in diets can be quite useful for persons who have difficulty following a more general meal plan. Ideally, a dietitian should manage this aspect of the program.

7. Modification of Physical Activity

Programs to increase physical activity generally include increasing exercise and decreasing sedentary behavior. Research has found that aerobic exercise is the most effective form of exercise prescription and that compliance is best when the exercise program is incorporated into their normal lifestyle.

8. Problem-Solving

Formal training in problem-solving is a common component of most behavioral weight control programs. This type of training involves assisting the person to (1) identify problems that are obstacles to successful weight management; (2) define the problem in objective behavioral terms; (3) brainstorm about potential solutions to the problem; (4) conduct a cost/benefit analysis for each solution; (5) select a solution and develop a plan of action; and (6) evaluate the success or failure of the plan of action and revise it, based on this evaluation. This component of treatment is often useful in modifying obstacles that negatively impact compliance with the basic behavioral weight management program.

9. Social Support

Enhancement of social support for behavior change has been found to be a very important factor in successful weight management. Social support may be derived from a spouse, family member, or friends. In the treatment of childhood or adolescent obesity, involvement of the parents in the therapy program has been found to be very useful. Enhancement of social support is best accomplished by inviting family members and friends to attend some of the therapy sessions. In these sessions, support persons learn to reinforce healthy behavior change and are discouraged from engaging in actions that sabotage progress toward behavior change.

C. Components of Behavioral Weight Maintenance Programs

1. Relapse Prevention

Returning to old, unhealthy habits is a primary cause of relapse and regain of weight that has been lost. Relapse prevention programs generally assist in the identification of situations that place the person at risk for returning to old, unhealthy habits and to develop specific plans to manage these high-risk situations. For example, parties might be a high-risk situation for overeating. The person might develop a plan of action that involves healthy eating before going to the party to reduce hunger and standing or sitting in areas that are away from tempting foods. Relapse prevention programs also often include a discussion of the distinction between lapses and relapse. People often engage in "all-or-nothing" thinking so that when they deviate from the behavioral prescriptions of the program, they feel as though they have failed, resulting in loss of motivation and returning to old habits.

2. Booster Treatment

Booster treatment generally involves periodic therapeutic contact during the period of weight maintenance. This therapeutic contact may take many forms, including face-to-face sessions, scheduled telephone calls, or asynchronous internet exchanges. Because obesity is now viewed as a chronic illness, most experts believe that some type of booster treatment may be needed over the course of an entire lifetime, if weight loss is to be successfully maintained.

3. Tool-Box Approach

In recent years, there has been a growing trend toward individually tailoring treatment. To accomplish individualized treatment plans, the weight management therapist needs a "tool box" with many therapeutic "tools." For example, during the weight maintenance phase, the tools might include special programs to manage the holiday season or periodic portion-controlled diets to lose 5 to 10 pounds that have been regained.

II. THEORETICAL BASES

There is a significant genetic component to the development of obesity, and it is generally believed that some interaction of genetics and environment may predispose selected persons to gain weight. For example, one genotype may predispose someone who consumes a diet high in fat to become obese. Another genotype may predispose someone who consumes a high carbohydrate diet to become obese. The focus of a behavioral intervention incorporates modification of eating behaviors and physical activity to yield energy imbalance. Figure 1 illustrates the relationship between body weight and changes in energy intake and energy expenditure.

When the energy consumed exceeds the amount of energy burned, the long-term result is excess body

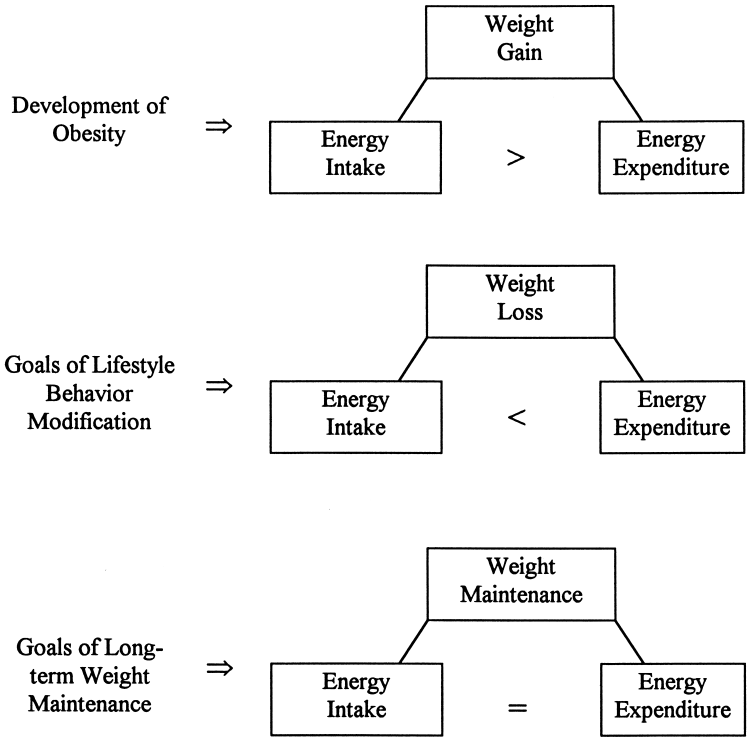

FIGURE 1 Body weight as a function of energy intake and energy expenditure.

weight caused by storage of "extra" energy in body fat stores. The primary source of energy consumption is the food (and beverages) that individuals consume. Energy expenditure, or the energy that individuals "burn" is derived from several sources: (1) physical activity (about 25%), (2) basal metabolic rate (about 70%), and (3) the thermic effect of food (about 5%). Metabolic rate and thermic properties of food are not easily altered by behavior. However, certain drugs can increase (or decrease) these metabolic responses. Therefore, behavioral weight loss programs generally focus on the modification of eating behavior and energy expenditure that results from increased physical activity.

The term positive reinforcement refers to environmental events that increase the likelihood that a behavior will be repeated. The reinforcing properties of eating may include the taste and pleasurable sensations associated with eating food, a feeling of wellness associated with eating or with physiological sensations of satiety. In general, individuals are likely to engage in a behaviors in order to achieve short-term, immediate reinforcement. As such, individuals who are highly motivated by the immediate consequences of eating may be prone to overeat. Conversely, the short-term consequences of physical activity may be somewhat unpleasant for some individuals; physical exercise may be associated with fatigue, muscle soreness, and boredom. When trying to motivate change of these habits, it is important to emphasize the long-term consequences of healthy eating and physical activity. The long-term consequences of healthy eating are weight loss and improved health; the long-term consequences of physical activity include increased energy, weight loss, and general health improvements. Indeed, once individuals engage in a regular physical activity regimen, it is likely that the short-term consequences of exercise will become rewarding (i.e., muscle soreness diminishes, and individuals may experience improved mood following exercise).

Classical conditioning refers to the set of circumstances by which cues in an individual's environment become associated with a particular behavior. When an environmental stimulus is repeatedly paired with a behavior, the stimulus itself becomes a "trigger" to elicit a behavioral reaction. In the case of eating behavior, many aspects of the environment may become associated with hunger sensations and with eating. The smell or sight of food may become conditioned stimuli to eating and therefore trigger hunger sensations. This association is

conditioned because the smell and sight of food are repeatedly paired with eating behavior. However, additional stimuli, when paired with eating, may become associated with feelings of hunger. For example, if an individual habitually eats while watching television, then hunger sensations can be elicited by watching TV (independently of physiological hunger). It is important to distinguish between physiological and psychological hunger. Physiological hunger refers to the physical process by which the body signals a need to eat. Psychological hunger refers to the perception of hunger, which may be independent of energy depletion. Psychological hunger is often the result of classical conditioning. For example, after repeatedly eating while watching TV, the television may become a conditioned stimulus for "hunger." In essence, television watching will elicit hunger sensations. In response to this type of conditioning,stimulus control procedures are implemented to limit the cues or stimuli in an individual's environment that are associated with eating.

Obesity is not a psychiatric disorder. However, it has been estimated that as many as 10 to 25% of individuals seeking obesity treatment engage in binge eating behavior. It is important to note, however, than not all obese individuals binge eat. As defined by the *American Psychiatric Association Diagnostic and Statistical Manual for Mental Disorders, 4th Edition,* binge eating occurs when one consumes an amount of food that is significantly larger than normal in a discrete period of time. During binge episodes, individuals report feelings of loss of control over their eating. Research indicates that binge eating frequently arises in response to dietary restraint; as individuals engage in strict dietary restriction, they experience strong physiological hunger, which then leads them to binge eat. Further, individuals with rigid rules about the kinds of foods they will allow themselves to eat may engage in binge eating once they have broken a rule about eating. Binge eating may also arise in response to negative emotions; because eating is a pleasurable activity for most people, the binge episode may serve to ease the negative mood. However, binge eating is frequently followed by feelings of extreme guilt and other negative emotions, which may therefore perpetuate the cycle of binge eating.

III. APPLICATIONS AND EXCLUSIONS

In general, behavioral weight control therapies should be matched to the individual. Because of the lifestyle behavior change required by the program, an individual's motivation for treatment and willingness to implement the behavioral changes required must be assessed. For example, certain individuals may not be willing to take medication or may be resistant to particular aspects of a behavioral program. Treatment effectiveness will be contingent upon the client's willingness and ability to engage in all aspects of the weight loss regimen.

Cultural issues may also influence a client's willingness and motivation to lose weight. For example, the stigma of obesity varies across cultures. Women, more than men, are likely to attempt weight loss for appearance reasons. Men are more likely to enter into obesity treatment programs when they believe that their overweight status has deleterious health effects. African Americans are less likely to experience social pressures to lose weight and may therefore be less motivated to seek treatment. For some people, it may be beneficial, therefore, to emphasize the health-related benefits of weight loss rather than the appearance-based reasons for weight loss.

In addition, an individual's physical health must be considered when prescribing caloric restriction and a physical activity regimen. A physician should be consulted to assess the safety of caloric restriction. Likewise, a dietitian or nutritionist should be consulted in formulating dietary recommendations. Individuals with Type II diabetes or cardiovascular disease may require special diets and medical monitoring throughout the course of any weight loss program. Further, overweight individuals may experience knee or other joint problems; in such cases physical activity may be limited. Consultation with a medical doctor, physical therapist, and/or exercise physiologist is indicated in such cases.

It is also important to consider the psychological sequelae of obesity. In American culture, there is a stigma associated with obesity. The "obesity stereotype" is that people who are overweight tend to be less socially competent, lazier, and less intelligent than normal weight individuals. In addition, most obese people have experienced various forms of discrimination and teasing about their weight. As a result, obese people often suffer from low self-esteem and may be very concerned about their body shape. In addition, many individuals may have attempted unsuccessfully to lose weight in the past, or they may have lost weight only to regain it later. A pattern of unsuccessful weight loss attempts frequently leads to frustration and lowered self-esteem. It is important that clinicians remain sensitive to these issues when treating obesity.

Finally, it is important to identify individuals with eating disorders. The most common type of eating disorder

associated with obesity is binge eating disorder. Binge eating disorder is characterized by recurrent episodes of binge eating in which the individual consumes large amounts of food and perceives a loss of control over eating. Unlike the pattern of behavior observed in bulimia nervosa, binge eating episodes in binge eating disorder do not occur with compensatory behaviors to prevent weight gain (e.g., fasting, purging, exercise). Binge eating disorder occurs in less than 2% of obese people, although binge eating as a behavioral symptom is much more common (10% to 25%). Other problems that are often observed include bulimia nervosa, nonpurging type and preoccupation with body size and shape, as the source of all of the person's problems. When such problems are identified, the treatment strategy should incorporate a component to reduce the frequency of binge episodes and overconcern with body size and shape. In addition, clinicians should carefully monitor the emergence of other eating disorder symptoms that may emerge over the course of treatment.

IV. EMPIRICAL STUDIES

A. Early Studies (1967–1990)

Behavioral methods for the treatment of obesity were first applied over 30 years ago. In 1967, Richard B. Stuart was among the first to describe the application of learning principles to the treatment of obesity. His first behavioral program successfully treated eight overweight women, who attained an average weight loss of 17 kg over a 12-month period. It was Stuart's early success story that sparked researchers' interest in this approach to the treatment of obesity.

The research studies that followed in the 1970s were modeled on Stuart's behavioral weight control program; however, there were some notable differences in the application of the treatment protocol. In Stuart's program, he used an individualized approach, tailoring the program to fit the needs of the individual patient. Treatment sessions took place three times per week for the first 4 to 5 weeks, then less frequently as treatment progressed. The studies of the 1970s that followed Stuart's early studies moved in a different direction. These studies delivered treatment to small groups of 6 to 10 persons and usually met once per week for 12 to 16 weeks. As noted by Don A. Williamson and Lori A. Perrin, in 1996, this approach to behavioral weight loss treatment resulted in less impressive results (average weight loss of about 4 to 5 kg).

Since the 1970s behavioral treatment programs for obesity have been intensified in terms of length and aggressiveness, yielding average weight losses of about 8.5 kg. However these weight losses usually occur in the short term and are not maintained in the long term, after treatment ends. Most persons who receive behavioral weight control regain much of the weight that was lost, although the regain of weight usually takes about 5 years. On average, most people reach their maximum point of weight loss about 6 months after the initiation of treatment. After treatment ends, weight regain ensues, and over a period of time, persons gradually regain the weight that was lost over the 6 months of treatment.

B. Intensive Lifestyle Behavior Modification (1990–2000)

1. Increased Duration of Treatment

After the trend of regaining weight was noted, behavioral researchers in the 1990s tried to identify more effective long-term strategies. One strategy was to increase the length of treatment. Treatment length increased from an average of 8 weeks in 1974 to an average of 21 weeks by the 1990s. Comparable increases in weight loss have occurred with increases in treatment duration. In 1974 the average weight loss associated with the 8-week treatment protocol was 3.8 kg, and in 1990, the average weight loss associated with a 21-week treatment protocol was 8.5 kg. In 2000, Robert W. Jeffery and colleagues estimated that average weight losses in behavioral treatment studies have increased by approximately 75% between 1974 and 1994, and that this approximate doubling of average weight loss has occurred in conjunction with the approximate doubling of treatment duration in the last 20 years. In 1989, M. Perri, A. Nezu, E. Patti, and K. McCann reported that treating participants for 40 weeks as opposed to 20 weeks was associated with more weight loss. In a review of this research in 1998, Perri concluded that extended contact with participants yielded better weight loss. Therefore, longer duration of treatment has been consistently associated with greater weight loss.

2. Very Low Calorie Diets and Meal Planning

One way of improving weight loss is to incorporate a very low calorie diet (VLCD), defined as less than 800 kcal/day, into the treatment protocol. Most behavioral

weight control programs have used low calorie diets (LCD), which usually consist of approximately 1200 to 1500 kcal/day. Thomas A. Wadden and Albert J. Stunkard's initial study, which was conducted in 1986, and studies that followed, consistently found that a VLCD combined with behavior therapy was more successful than a LCD combined with behavior therapy, in producing more initial weight loss (in the short term); however, this initial weight loss did not improve long-term outcome. Williamson and Perrin reported on the results of several studies, which used VLCDs in addition to behavior therapy. They noted that the addition of behavior therapy to a VLCD, in the active treatment phase, did not yield weight loss above that usually associated with VLCDs alone; however, the addition of behavior therapy did seem to slow the rate of weight regain.

In addition to VLCDs, diets that are more structured have also been emphasized. According to Rena Wing, food provision (actually providing the persons with the appropriate food) was effective in improving the amount of initial weight loss in one study, but was no more effective in the long term than was a condition that had a standard calorie goal of 1000 to 1500 kcal/day. Subsequent studies have found that the most important component of food provision is the provision of structured meal plans and grocery lists (not the provision of food, per se), which appear to exert their effects by assisting people in selecting healthy foods, and by creating a regular meal pattern (i.e., breakfast, lunch, dinner).

3. Exercise

Unlike the dietary approaches mentioned above, increased attention to exercise has been related not only to enhanced short-term weight loss, but also long-term weight loss. In fact, the benefit of exercise has been particularly effective in the long term. Recent research has focused on type of exercise that may produce the best weight losses. In 1995, R.E. Anderson and colleagues found no differences in treatment programs using aerobic exercise, resistance training (weight lifting), or the combination of aerobic exercise and resistance training (although all yielded significant weight losses). In 1985, Leonard Epstein and colleagues reported that lifestyle exercise (e.g., using stairs instead of an elevator), produced somewhat more weight loss in children than did aerobic exercise, although both of these types of exercise promoted far better weight maintenance than did calisthenics. Similarly, in 1995, these researchers found that children who were taught to decrease sedentary activities had greater decreases in percent overweight than the group that was taught to increase aerobic exercise. Kelly D. Brownell and Thomas A. Wadden, in 1992, speculated that exercise may be beneficial in the long term for physiological or psychological reasons. It is possible that exercise is effective in the long term because it increases lean body mass, elevates metabolic rates, or decreases appetite. With regard to the psychological effects of activity, the authors noted that even the smallest amounts of exercise (e.g., parking further away from a store) can have positive effects on mood and self-efficacy.

4. Social Support

Enhancement of social support has been tested as a means of improving long-term weight loss. The most common way to enhance social support has been to include spouses or significant others in the treatment process. A 1990 meta-analysis revealed that there are both short-term and long-term benefits to including spouses in obesity treatment. In 1999, Wing and Jeffery found similar results with the inclusion of friends in the treatment process, revealing that persons who entered treatment with friends had better success at maintaining weight losses 6 months after a 4-month behavioral treatment program.

5. Increased Therapist Contact During the Maintenance Phase

Obesity researchers have tested the impact of increasing therapist contact during the weight maintenance phase, as a means of facilitating long-term success. In 1984, Perri and colleagues found that the addition of posttreatment therapist contact via the telephone and mail significantly enhanced maintenance of weight loss for a group that received behavior therapy plus relapse prevention training. In the same year, Perri reported similar results with the use of booster sessions to enhance maintenance of weight loss. In 1989, Perri and colleagues reported that women in a behavioral weight control program that received 1 year of additional contact (biweekly treatment contacts of various sorts), maintained their weight losses better than the group of women who received no contact during the maintenance phase. In recent years the internet has been employed as a means of increasing therapist contact to improve long-term weight maintenance, and preliminary results of this approach are encouraging.

6. Relapse Prevention

Relapse prevention components have been tested as one means of achieving better long-term weight

maintenance. In 1996, Williamson and Perrin concluded that development of the skills to respond immediately to overeating or to a small weight gain is useful to prevent relapse. In 1995, Rita G. Drapkin, Rena R. Wing, and Shaul Shiffman reported that those subjects who were able to generate more coping responses to hypothetical high-risk situations were most successful in weight management.

7. Secondary Prevention

Secondary prevention of obesity, aimed at children, appears to be a promising approach for the treatment of obesity. In 1990, Leonard H. Epstein and colleagues found that when comparing a therapy program attended by both child and parent (in which both were reinforced for weight loss and behavior change), the children lost more weight than those children who attended a child only program, without a parent (in which only the child was reinforced for behavior change), or a nonspecific control treatment (which reinforced families for their attendance). At 5- and 10-year follow-ups, the children in the child and parent treatment program had significant decreases in overweight when compared to the nonspecific control group, and the children in the child only group were midway between these two groups. These findings suggest that early interventions with overweight children may be a useful method of preventing chronic obesity in adulthood. Because obese children are 6.3 times more likely to be overweight adults than are nonobese children, Wing has advocated secondary prevention targeting obese children as an important public health initiative.

8. Pharmacotherapy

Drug therapy has been used in conjunction with behavior therapy to improve weight loss and maintenance. Currently, there are three medications that can be used for short-term weight loss. These are (1) phentermine, (2) the combination of caffeine and ephedrine, and (3) phenylpropanolamine. In terms of long-term weight loss, Michael Weintraub, in 1992, conducted a 3-year trial of fenfluramine and phentermine ("fen-phen"). Although this drug combination appeared to be very promising and attracted widespread attention, "fen-phen" was found to be associated with heart valve damage in a substantial number of its users, and was abruptly taken off of the market in 1997. Despite this health scare, the enthusiasm for the possibility of new long-term drugs to aid in weight loss has not been lost. The Food and Drug Administration has now approved two weight loss medications for long-term use. In 1996, sibutramine (Meridia), a serotonin reuptake inhibitor, was approved and in 1999, orlistat (Xenical), a medication that inhibits digestion of dietary fat, was approved. Jeffery and colleagues assert that most weight control medications to date have shown maximum efficacy when combined with behavior modification programs. However, in general, the addition of behavior therapy does not seem to prevent the regaining of weight after medication is withdrawn. Thus, current research evidence indicates that neither medication, behavior therapy, nor the combination of the two "cures" obesity. Instead, this research suggests that obesity is best conceptualized as a chronic medical condition that requires continuous management.

9. Chronic Disease Concept

In 1998, the Obesity Education Initiative Expert Panel (of the National Institutes of Health) reported that obesity is now recognized as a chronic disorder that requires continuous care. Today, behavioral weight control therapies conceptualize the treatment of obesity in terms of a chronic disease. Behavioral weight control therapies for obesity are clearly effective treatments for weight loss, but like all other treatments for obesity (with the possible exception of surgery), behavior therapy does not lead to long-term maintenance of weight loss, after weight loss treatment is terminated, but behavior therapy plays many important roles in the management of obesity: (1) behavior therapy may be useful when used in a stepped care approach for the moderately obese, who have not been successful at losing weight without the help of a professional, (2) behavior therapy could be used with persons who are withdrawing from pharmacotherapy and who may benefit from behavior therapy in an effort to maintain weight loss, and (3) behavior therapy may be useful for persons who are able to maintain weight loss, by establishing behavior therapy support groups to provide social and therapeutic support for the long term. In order for such an approach to be effective, major centers would need to establish long-term counseling programs and make them available at little or no cost to obese patients. By using this public health approach, obesity could be addressed in an ongoing manner as a chronic illness, as opposed to an acute disease.

V. CASE ILLUSTRATION

Brian was a 20-year-old Caucasian male who weighed 323 lb. with a height of 6 ft 2 in. Brian had

been overweight since childhood. His identity was highly connected to being obese. For example, he delivered pizzas and took great pride in consuming multiple pizzas if they could not be delivered. His friends were amazed at his appetite and ability to consume very large quantities of food. He was enrolled in college, but was on the verge of flunking out of school at the time of the referral. He reported eating binges, but they were atypical in that they were not secretive and he did not experience guilt or negative feelings following the binges. He had never seriously attempted dieting to lose weight and he was very sedentary, but in generally good health other than his rather significant obesity. His family was intact, with a mother, father, and older brother, who had experienced problems related to substance abuse.

Brian was seen in individual therapy for over 2 years. Family therapy was also incorporated into the treatment plan. Treatment followed the protocol described by Williamson and colleagues in 1996. Initially Brian was seen once per week in individual therapy and the frequency of therapy sessions was gradually faded to biweekly and then once per month over the course of the first year. He was seen about once per month during the second year of therapy. All components of the behavioral management program (described earlier) were used in Brian's therapy program, including self-monitoring, stimulus control procedures, reinforcement/shaping, goal setting, behavioral contracting, problem-solving, meal planning, modification of physical activity, relapse prevention, and enhancement of social support. Toolbox approaches were used to individualize treatment. Behavioral therapy for binge eating was used to modify skipping meals and cognitive approaches were used to modify beliefs about the "benefits" of binge eating. Also, family therapy was used to alter the communication patterns of the family. Brian's parents and brother talked about Brian in terms of being the obese son with the big appetite. They gave him considerable attention for his "huge appetite" and mildly scolded him for engaging in dietary restraint. Family therapy was devoted to reverse the behaviors to which the family members attended so that they reinforced efforts to control eating. They learned to help Brian eat three healthy meals per day and did not attend to eating binges.

At first, Brian struggled with the behavioral weight management program. Over the course of the first 3 months, he lost only 4 pounds, primarily because he continued to engage in binge eating. However, from months 3 through 6, he was more successful and lost an additional 36 pounds. During the next 6 months, he began to substantially increase physical activity. He began running and lifting weights. During this 6-month period, he lost 40 more pounds. Over the second year, Brain consolidated most of the behavioral changes that he had made and continued to increase his physical activity. He eventually lost 100 pounds and weighed between 220 and 225 pounds. He graduated with a bachelor's degree in finance and eventually enlisted in the military. He is now a career officer in the military and has successfully maintained his weight loss for the past 10 years. He is married and has two children. He reports that he occasionally has urges to binge, but can control the urges with effort to direct his attention away from eating and by focusing upon engaging in exercise. He never developed symptoms indicative of an eating disorder although he clearly emphasizes the importance of exercise as a means of managing his body weight.

VI. SUMMARY

Behavioral weight control therapies involve two primary phases:(1) weight loss, and (2) weight maintenance. During the period of weight loss, energy intake via eating is reduced and energy expenditure due to physical activity is increased. A variety of therapeutic techniques are used to modify these habits. During the period of weight maintenance therapy, the person learns to match energy intake (eating habits) with energy expenditure (exercise). Research has found that long-term therapeutic support is often required for long-term weight maintenance.

See Also the Following Articles

Behavioral Contracting ■ Classical Conditioning ■ Controlled Drinking ■ Eating Disorders: Psychotherapy ■ Positive Reinforcement ■ Self-Control Therapy

Further Reading

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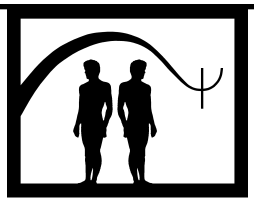

Behavior Rehearsal

Arnold A. Lazarus

Rutgers University and Center for Multimodal Psychological Services

I. Description of Treatment
II. Theoretical Bases
III. Empirical Studies
IV. Summary
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GLOSSARY

cognitive-behavior therapy This therapy involves a set of principles and techniques that stress the reciprocal relationship between thoughts and feelings. Its underpinnings rest on experimental psychology, particularly social learning theory. Most normal and abnormal behaviors are considered to be maintained and modified by environmental events. In treatment, the emphasis is primarily on current determinants of behavior. Direct problem solving is an integral part of this form of therapy.

modeling Basically, modeling consists of learning by observation. For example, a client may accompany the therapist to a store to observe the assertive return of faulty merchandise. Therapists may perform several target behaviors, which the client imitates and then adopts into his or her own repertoire.

role-playing There are many settings in which acting the part of another person for educational or therapeutic purposes proves helpful. For example, employees may be trained, via role-playing, to handle problems with customers, to present an impressive sales pitch, to learn how best to interact with their superiors or subordinates, and so forth. In therapy, clients may rehearse ways to cope with stress and family conflicts.

self-efficacy People estimate and judge their own capabilities of organizing and executing various courses of action. Their behaviors will be heavily influenced by whether or not they perceive themselves as capable of attaining specific goals. In many situations, to successfully accomplish a desired outcome, a person needs to be convinced of his her effectiveness, strength, or power to do so.

social learning theory A point of view that explains simple and complex behaviors by combining data derived from conditioning with known facts of cognitive mediation. Thus, there is emphasis on overt learning (e.g., habits), vicarious learning, and symbolic activity (e.g., language) to account for the development, maintenance, and modification of behavior.

social skills training Social skill is a construct that includes a broad array of interpersonal competencies including assertiveness, warmth, empathy, conversational facility, perceptiveness, good listening skills, and clarity of verbal expression. In therapy, where a deficit in any of the aforementioned factors is behind a client's distress, he or she will be trained (via role-playing, modeling, and didactic instruction) to try to remedy the situation.

I. DESCRIPTION OF TREATMENT

A. Definition

The term behavior rehearsal is used to describe a specific procedure that aims to replace deficient or inadequate social or interpersonal responses by efficient and effective behavior patterns. The patient or client

achieves this by practicing the desired forms of behavior under the direction of a therapist. Thus, before asking for a raise, an employee might be advised to rehearse exactly what to say and how to say it.

Cognitive-behavior therapy emphasizes that psychological problems may stem from misinformation (faulty reasoning, dysfunctional beliefs, erroneous ideas) and missing information (skill deficits, gaps in knowledge). Clients who do not know how to behave appropriately and effectively in specific situations must be taught the necessary skills. The therapist responds much like the director in a movie who coaches a character actor to master a role. Thus, take for example a man who is at a loss for words when receiving unfair criticism from his employer. Typically, the therapist will commence by playing the part of the employer, while the client endeavors to respond appropriately. The enactment is usually audiotaped or videotaped so that the client may analyze the playback. The client then assumes the role of his employer, while the therapist models an appropriate response to the criticism. Again, recorded playbacks may be reviewed. Special attention is paid to expressive elements (speech content, as well as paralinguistic factors such as voice, pace, pitch, and tone). In addition, nonverbal behavior is scrutinized, especially eye contact and facial expression. The client enacts the role again and again until he and the therapist are satisfied with his performance. At this stage, the client is encouraged to test his skills in the actual situation.

A brief account of an actual case history may clarify the foregoing:

A 32-year-old architect had consulted several therapists for help with his feelings of depression and anxiety. They discussed his childhood, interpreted his dreams, and one of his doctors prescribed antidepressant medication—all to no avail. The client had become aware of cognitive-behavior therapy and decided to consult a psychologist who was well versed in this approach.

During the first session, it became clear that his problems had developed soon after he became a fully fledged architect and started looking for a job. Although his grades in school had been excellent, he never obtained employment that matched or utilized his abilities. He was usually hired by small firms on a temporary basis and was given work to do that was beneath him. He had applied to many distinguished organizations, went on interviews, but was never hired.

What methods should be used to help this frustrated and unhappy man? Is there any evidence that his problems could best be resolved by delving into his past, interpreting his dreams, or simply encouraging him to ventilate his dissatisfactions? The answer is "No." Regrettably, many therapists still believe in and adhere to these old-fashioned methods. Yet moderm psychotherapy has come to regard the best treatment process as a form of education, where clients are trained to remedy gaps in their repertoires.

Therefore, after giving the architect some psychological tests and studying a detailed life history inventory that he had filled out—thereby obtaining an overview of his past and present functioning—the therapist was able to select a treatment strategy that made the most sense. One factor stood out. The client's communication style was extremely unimpressive. He mumbled, swallowed his words, spoke too softly, and made little eye contact—none of which inspired much confidence or respect. Given his unfortunate style and demeanor, it seemed likely that prospective employers would not be impressed. Thus, "behavior rehearsal" was administered.

Therapist and client role-played job interviews. The therapist pretended that he was a potential employer, and the client discussed his credentials and answered questions. A tape recorder was switched on. In listening to some five minutes of the simulated interview, it was evident that the client had undersold himself and had come across poorly. The therapist then switched roles—he was now the architect, and he demonstrated how the client could emphasize his excellent training and occupational strengths, make eye contact, project his voice, and speak clearly. Over four hour-long sessions that took place over two weeks, the therapist and client rehearsed different interviews, stressing nonverbal aspects such as eye contact, firm handshakes, and good posture, and they practiced exactly what the architect would say and how he would sound. Not surprisingly, the client then went on a real job interview and gained employment with a highly prestigious company at a salary that was indeed commensurate with his abilities. He no longer complained of depression or anxiety. At a followup interview a year later he described himself as "generally more confident" and said he was "doing extremely well."

II. THEORETICAL BASES

We have already alluded to the social learning theory paradigm as the base on which behavior rehearsal rests. In 1958, Joseph Wolpe, one of the pioneers of behavior therapy, borrowed the term psychodrama to describe role-playing scenarios that were used to encourage

unassertive clients to stand up for their rights. He emphasized that unlike Moreno's original psychodrama, it did not consist of encouraging clients to act out their underlying attitudes in relationships. Instead, with the therapist playing the role of someone to whom the client ordinarily reacted with excessive anxiety, he or she was directed to behave in a new, usually assertive manner. Wolpe's assumption was that this outward display of new (assertive) behavior would reciprocally inhibit the anxiety. He stressed that when the client is able to deal successfully with the "play" situations in the office, it is a steppingstone toward dealing with the real-life situation. Instead of calling this process "psychodrama," I pointed out that the play-acting of prescribed behavior might better be called behavior rehearsal, and this became the accepted term.

In a book that Wolpe and I co-authored in 1966, the following statement appears:

> Where the patient's reaction pattern is considered deficient or inappropriate, he is required to re-enact the incident while the therapist plays the role of the other person(s). The therapist may then switch roles and act the part of the patient, sometimes presenting a deliberately over-dramatized picture of assertion, thus affording the patient an opportunity for learning adaptive responses by imitation.

This perspective opened the door for behavior rehearsal to be construed as a process of social influence that transcended the reciprocal inhibition explanation that new behaviors control the underlying anxiety. It tied behavior rehearsal to the vast literature on role-playing, and it went beyond a focus on assertive training to the much broader realm of social skills training.

Today, self-efficacy as propounded by Albert Bandura may be the theoretical base that most aptly accounts for the value of behavior rehearsal. Before venturing into any course of action, a person first needs to feel capable of achieving success. Entering a situation unprepared, unrehearsed, and feeling unskilled is unlikely to yield a successful outcome. Individuals' beliefs about their own degree of efficacy will determine whether they feel optimistic or pessimistic, what courses of action to pursue, how much effort to expend in trying to achieve specific goals, and the degree of perseverance likely to be displayed in the face of impediments. Many studies have confirmed the significant role of perceived self-efficacy in human adaptation, coping, and change. These findings extend far beyond the consulting room or the clinic and include educational systems, business organizations, athletic teams, and even the power plays in urban neighborhoods with violent crime. In the clinical arena, it is not surprising that when clients are trained, rehearsed, coached, instructed, and guided towards a desired achievement or end, their sense of self-efficacy increases dramatically.

III. EMPIRICAL STUDIES

Behavior rehearsal is part of the general field of social skills training and a variety of role-playing techniques that have been developed. As already mentioned, the method has been widely used and includes areas that fall outside the clinical or psychotherapeutic arena. Thus, reports abound in which it has been applied to employees in business and industry (e.g., for handling problems with customers). Behavior rehearsal has been used extensively in helping people deal with stress in family conflicts. For example, it has been applied to marital situations where the partners' distress is a function of poor communication styles. The case has even been made for regarding the entire enterprise of psychotherapy in terms of skills training.

Many years ago (1966) I conducted a study in which behavior rehearsal was compared to nondirective therapy and advice in effecting behavior change. Clients with response deficits in assertiveness and other interpersonal transactions were randomly assigned to receive specific role-playing and behavior rehearsal procedures, they were treated via nondirective person-centered (Rogerian) reflection, or they were given advice on how to deal with their difficult situations.

If, for instance, a client complained that he felt resentful of his older brother's plans to admit their aged father to a nursing home without first discussing the matter with him, the person-centered therapy might have proceeded as follows:

> Therapist: So you are angry and perhaps hurt that you were not consulted in the matter.
>
> Client: Right. Frankly, I know of a far better facility, and I wish he had shown me the courtesy and respect of discussing it with me.
>
> Therapist: You feel disrespected.
>
> Client: Yes I do. It's as if my opinions do not count. I'm informed about it when the matter is fait accompli.
>
> Therapist: So it was too late for you to provide potentially helpful information.
>
> Client: Correct. I think I should share my feelings about this with my brother. But I'm not sure how to go about it.
>
> Therapist: You don't quite know what to say to him.

Client: I want to get my point across without making unnecessary waves.

Therapist: You're not quite sure how to go about it.

A client in the advice-receiving mode would be managed more or less as follows:

Therapist: I think it would be good for you to get it off your chest and tell him how you feel about it.

Client: I agree, but I wonder how I can do it without causing needless resentment:

Therapist: Well, when you bring up the topic, don't put him down, don't chastise him. Discuss your own feelings. Use "I feel" messages and not "You are" messages. Do you know what I mean by this?

Client: I think so.

Therapist: Well, in essence, do not say to him "You are wrong for not having discussed it with me." Rather say, "I feel hurt that I was left out of it."

Client: But how should I bring up the subject?

Therapist: You can always say something like, "I want to chat with you about the way I feel about the nursing home dad is in."

Client: Okay. I guess I could then say that Greenacres is a much better place for the elderly.

Therapist: Right. And then you could say that you wish he had discussed the matter with you before making a final decision.

Client: Sounds good to me.

Therapist: So when will you talk to him about it?

Client: Probably this week.

Therapist: Good. The sooner the better because it is playing on your mind.

The behavior rehearsal procedure would have been conducted along the following lines:

Therapist: Let's pretend that I'm your brother. I'll switch on the tape recorder, and we can have a little dialogue and then listen to it.

Client: Fine.

Therapist: Okay. Why don't you start?

Client: Actually, I'm not quite sure how to start the conversation.

Therapist: How about saying, "I want to discuss the nursing home dad is in?"

Client: (role-playing) There's something I need to talk to you about. I've been treated as if I'm chicken liver. You didn't even ask me for my opinion about which nursing home would be best for dad.

Therapist: Let's stop a moment. You have launched an attack. Let's just listen to that brief playback on the recorder. Don't you agree that it will put your brother on the defensive?

(Client and therapist review the brief opening salvo.)

Client: I see what you mean.

Therapist: Let me be you now, and let's put on the recorder again. (role-playing) I feel hurt and put down that I was never asked for any input re dad's future.

Client: I didn't think of asking you because you have never shown much interest in the matter. All I knew was that you'd prefer dad to be within commuting distance from us.

Therapist: (no longer role-playing) Is this what he'd say to you?

Client: Yes. I'm pretty sure of it.

Therapist: All right. How would you respond?

Client: I'd probably say, "That's garbage! I'm just as interested in dad as you are."

Therapist: You are still on the attack.

Client: Well, that's what I'm afraid of. I'm so mad at him. I'd probably just blow up.

Therapist: Then let me be you now. (role-playing) I'm very concerned about dad's comfort and his welfare. I want the best for him. I think there are far better facilities.

Client: Don't be such a jerk. How come you are suddenly such an expert on nursing homes?

Therapist: Let's not miss the point. All I am saying is that I feel entitled to be involved in the family decision making, and I am also asking if several places had been looked into.

Client: (no longer role-playing) I see what you're doing. You are simply sticking to the issues.

Therapist: Exactly. Now let's start from the beginning. Talk to your brother.

Client: (role-playing) I want to share some feelings with you about dad and the nursing home situation. In the first place, I am bothered that I was not consulted, and second, I wonder if he is now in the best vicinity around here.

Therapist: That's much better. But you were looking down at your feet. Try to look him in the eye. Now let's go over the entire conversation and see if you can avoid launching an attack.

It is perhaps not surprising that, at the following therapy session, clients who received behavior rehearsal are far more inclined to report having confronted the issue than those who received advice or nondirective therapy. When conducted in groups, behavior rehearsal is often even more robust. Role-playing in a group is apt to be more authentic. For example, a man who is awkward about asking women out on a date is more likely to benefit when role-playing in a group with an attractive woman than when the male therapist plays this particular role. Peer pressure in a group and the wider range of feedback available also tend to augment positive outcomes.

IV. SUMMARY

Social skills training is one of the important aspects of social learning approaches to clinical problems. The implication is that many people fail in their interpersonal dealings because they have response deficits—they do not know how best to approach others, how to make assertive rather than aggressive responses, and how to express their feelings in an adaptive manner. Coaching, training, and modeling are integral aspects of the specially focused role-playing procedures called behavior rehearsal. This technique has been widely applied within and outside clinical situations to include business organizations, athletic teams, and educational settings. When used in a group, behavior rehearsal tends to be especially effective.

See Also the Following Articles

Behavioral Group Therapy ■ Cognitive Behavior Therapy ■ Efficacy ■ Heterosocial Skills Training ■ Modeling ■ Role-Playing

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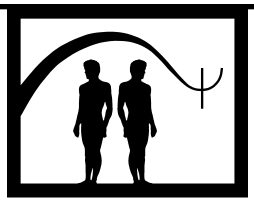

Behavior Therapy: Historical Perspective and Overview

John P. Forsyth and Jill Sabsevitz

University at Albany, State University of New York and the Center for Stress and Anxiety Disorders

I. Brief History of the Conceptual Evolution of Behavior Therapy
II. Conceptual Foundations of Behavior Therapy
III. The Science and Practice of Conceptually Driven Behavior Therapy
IV. Summary
Further Reading

GLOSSARY

applied behavior analysis Uses techniques derived from operant conditioning to modify behaviors of personal and social importance based on the notion that behavior is a function of its consequences.

behavior Behavior is what organisms do. With humans, behavior includes public or overt actions (e.g., walking, talking) and covert actions such as thinking, feeling, emoting, remembering, problem solving, self-observing, and the like. Some behavior therapists define behavior narrowly in terms of observable overt actions, whereas others consider all overt and covert actions as behavior.

behavior analysis An integrated basic and applied branch of psychology concerned with the prediction and control (influence) of behavior via identification and manipulation of consequences that follow behavior. This view is grounded in the philosophy of science known as radical behaviorism. The applied branch of behavior analysis is often used synonymously with behavior modification, and terms such as applied behavior analysis. Clinical behavior analysis is a newer branch of behavior analysis most closely affiliated with outpatient psychotherapy.

behaviorism A conceptual framework that is grounded in a unique view of human behavior and mental life: a framework that underlies a science of behavior, not the science itself. Behavioral science comprises findings, principles, laws, and theories resulting from behavioral research, whereas behaviorism entails the philosophy, ideology, assumptions, and values implicit in a science of behavior. Behavior therapy is part of behaviorism but is not synonymous with it.

behavior modification Set of procedures (e.g., contingency management, time out, positive reinforcement) that are derived largely, but not exclusively, from behavior analysis, operant learning principles, and theory.

behavior theory Refers to overarching conceptualizations of human behavior grounded in basic behavioral science and principles of learning. There are many behavior theories that more or less share this basic set of features.

behavior therapy Comprises the systematic application of operant and respondent learning principles and contemporary learning theory for the purposes of scientific understanding and the alleviation of human suffering in therapy. This approach values objectivity and demands that rigorous empirical standards of proof be applied to treatment development and ongoing evaluation of psychosocial treatment outcomes.

cognitive-behavior therapy A branch of behavior therapy that considers cognition as something other than behavior and therefore requires a unique conceptual system and procedures to account for it. Cognition is said to mediate or cause other behavior, and faulty cognitive processes are believed to contribute to the etiology, maintenance, and treatment of abnormal behavior. Traditional behavior therapists, who hold to the monistic assumption that cognition is behavior, regard the hyphenated term cognitive-behavioral as a redundancy.

contextualism A philosophical world view, most affiliated with the writings of Stephen Pepper and philosophy of sci-

ence known as radical behaviorism, that takes as its root metaphor the actions of the whole organism in its context.

epistemology A branch of philosophy concerned with the nature and origins of knowledge (e.g., what is known or knowable). Though behavior therapists are not generally committed to any single epistemological theory, they do generally adhere to an empiricistic epistemology.

mechanism A philosophical position that adopts as its root metaphor the machine and the parts that drive its operation. Mechanists uphold that the whole can be derived from the sum of its parts, and that discovery of the parts (e.g., thought, emotion, overt behavior) and the relations among parts are critical to explaining human behavior. Mechanists generally uphold a correspondence-based truth criterion and are generally nomothetic in their reasoning.

methodological behaviorism A normative theory about the scientific conduct of psychology and claims that psychology should concern itself with the observable behavior of organisms (human and nonhuman animals), not mental events such as thoughts, feelings, and other similar private constructions. The reason is that private events fail to meet the criterion of public agreement. In this view, reference to mental events adds nothing to explaining the variables controlling behavior. Mental events are private entities that, given the necessary publicity of science, do not form proper objects of empirical study. Methodological behaviorism is at the core of John B. Watson's (1878–1958) behaviorism, *not* Burhuss F. (B. F.) Skinner's (1904–1990) radical behaviorism.

monism A philosophical position that stipulates that what one observes and talks about is a real and physical world—one world of substance existing in space or time. Monism is at the core of behaviorism and a behavioristic world view and is reflected in the thesis that behavior (thoughts, physiological events, overt actions) is one stuff (i.e., physical) and situated in relation to a real physical world in space and/or time: a view that is the antithesis of Cartesian dualism, but not synonymous with reductionism.

pragmatism A view, espoused originally by Charles Pierce and later developed by William James, that focuses attention on practical goals and outcomes, or making a difference. The general pragmatist notion is that "a difference must make a difference to be a difference."

radical behaviorism A philosophy of science associated with the writings of B. F. Skinner and the activities of those operating within the basic and applied branches of behavior analysis. Radical behaviorism is a contextualistic, monistic, functionalistic, wholistic, and pragmatic philosophy of science: one that rejects the truth by agreement criterion of methodological behaviorism and considers events taking place in the private world within the skin. Private events are not called unobservable and are not dismissed as subjective but are to be interpreted and explained using the same scientific terms used to explain all other behavior. This is what is "radical" about radical behaviorism.

scientist–practitioner model Originated out of the 1949 conference in Boulder, Colorado. The model stipulated a framework for training clinical psychologists such that clinical psychologists should be *(a)* producers of scientific knowledge, *(b)* consumers of scientific knowledge, and *(c)* evaluators of knowledge via data-driven outcomes assessment in their work with those they serve.

social learning theory A theory, developed by Albert Bandura, proposing that the influence of environmental events on the acquisition and regulation of behavior is largely determined by cognitive processes. Expectancies and vicarious learning play a central role, and the person is viewed as an agent and an object of environmental influences.

vicarious learning Stipulates that humans can learn simply by observing others, and that such learning does not require positive or negative reinforcement.

Behavior therapy comprises a set of activities involving the systematic application of operant and respondent learning principles and contemporary behavior theory for the purposes of scientific understanding and the alleviation and prevention of human suffering. This should not be taken to mean that there is unanimity of voice among those calling themselves behavior therapists with regard to this view of behavior therapy. Long-standing disagreements exist over the very definition of behavior therapy, including the range of acceptable intervention methods and explanatory concepts that fall within its purview. Yet, the distinguishing foundational tenets of behavior therapy, remain rooted in behaviorism, learning principles, and behavior theory, and the science-based application of such principles, coupled with a strong empirical foundation, in therapy. Though not all behavior therapists ascribe to this view (in fact, many do not), those that do are practicing behavior therapy consistent with the original intent of the term.

Nowadays, the science and practice of behavior therapy are often equated with a range of intervention techniques (called behavioral, cognitive-behavioral, and sometimes cognitive only) aimed at modifying and changing problematic human behavior and fostering development of more adaptive functional behaviors. To be sure, an impressive array of empirically supported psychosocial intervention technologies emanated from the behavior therapy movement, and many such technologies now dominate the psychotherapy scene as treatments of choice for a wide range of problems. One could argue that practitioners from other psychotherapeutic orientations who employ such

interventions are, in fact, practicing behavior therapy. Yet, behavior therapy is more than the mere application of behavioral intervention technology, more than using an experimental approach, more than taking an empirical approach in working with clients, and certainly more than a focal interest in behavior. Indeed, this small set of intellectual commitments is shared somewhat by psychologists of varying persuasions, and particularly those that ascribe to the scientist–practitioner model. As is outlined, behavior therapy comprises a shared set of working conceptual assumptions and values that help frame answers to basic research and applied questions and ultimately is what behavior therapists do when attempting to alleviate an increasingly wide range of human suffering in individuals, couples, groups, organizations, communities, and so on. This approach is most uniquely and closely aligned philosophically, conceptually, and methodologically with behaviorism and an experimental approach to solving basic and applied problems rooted in principles of learning and behavior theory; hence the name "behavior" therapy is most aptly used to distinguish this approach to science and practice from other approaches that are data based and empirically driven but neither philosophically nor conceptually rooted in behaviorism and behavior theory. Our intent here is to elucidate the conceptual assumptions and behavioral values that are somewhat unique to the behavior therapy movement and to show how such conceptual assumptions guide the science and practice of behavior therapy. We begin with an overview of the evolution of behavior therapy as a unique approach to psychological science and practice.

I. BRIEF HISTORY OF THE CONCEPTUAL EVOLUTION OF BEHAVIOR THERAPY

Behavior therapy was conceived in a psychotherapeutic climate that was more than ready for it, but not quite ready to embrace it. At the time of behavior therapy's formal inception in the early 1950s, the mental health care scene was largely dominated by psychiatrists, many of whom where trained in medicine first, and second in classic psychoanalysis, or what was the then dominant Freudian or neo-Freudian psychoanalytic framework. Treatment focused largely on unearthing unconscious processes believed to be the real reasons for psychopathology and suffering. Therapy was long term, often taking years not weeks, and the disease model of the etiology, diagnosis, and treatment of psychological disorders served as the prevailing conceptual framework. Psychiatrists ruled the roost with regard to mental health care, and psychologists often played second fiddle to them. Persons in psychotherapy often devoted considerable time and resources to delve into their pasts to uncover unconscious and hidden conflicts believed to underlie their problems, with the hope that, in the hands of a skilled psychoanalyst, they would achieve insight (i.e., making the unconscious conflicts consciously accessible), and ultimately a cathartic cure. Treatment was also driven more by hunch and clinical intuition than by science and data. Empirical accountability, or treatment decisions supported and guided by data, was virtually nonexistent. Public mistrust about psychotherapy, including social stigma about mental disorders, was at an all time high. Something had to change, and the early behavior therapy pioneers were poised to offer an alternative approach that would forever revolutionize mental health care.

A. Early Developments and Precursors

Various theories and procedures common to contemporary behavior therapy were described before behavior therapy, or even psychology, was established as a scientific and professional discipline. For instance, in first-century Rome, Pliny the Elder placed spiders in the glasses of alcohol abusers to cure them of their addictions. Today, that technique is referred to as a form of aversive counterconditioning. A procedure similar to imaginal desensitization was outlined in 1644 by Sir Kenelm Digby and involved the association of aversive imagery with pleasing circumstances. John Locke in 1693 described in vivid detail a procedure for the treatment of an animal phobia that we would now call *in vivo* exposure therapy. In the 18th century, the "Wild Boy of Averyon" received an intervention that many would currently view as comprising positive reinforcement and modeling procedures. In his 1890 book, *Principles of Psychology,* William James described a case of a child who had become extremely fearful following an experience of being burned by a candle and, in so doing, showed a remarkable conceptual grasp of conditioning before conditioning had been formally introduced within American psychology. A point system or token economy, or what many would identify as an operant procedure, was implemented by Alexander Manconchi in the 1800s to prompt inmates at the Royal British penal colony to obey prison rules. As Isaac Marks noted in his 1981 text, *Cure and Care of Neuroses,* even Freud

and his followers periodically affirmed the role of exposure in treatment of fears and phobias, and other procedures, from diverse areas such as Chinese medicine, Zen Buddhism, Morita therapy, folk practices of aboriginal tribes in Malaysia, and psychotherapy practices resemble what many would call behavioral interventions. Though these and other examples are certainly of historic interest, none appears to have influenced the development of behavior therapy directly (if at all). The more direct antecedents of the behavior therapy originated from a confluence of factors occurring within early-20th-century psychology.

B. The Beginnings of a Behavioral Revolution within Psychology

Psychology in the early part of the 20th century was struggling with its own identity as a science. Psychology prior to 1913 was considered a science of mental life, and the chief method of studying mental life and experience was introspection. Introspection and its variants represented an attempt to systematically unearth the contents, structures, and functions of consciousness via complex and often convoluted methods of teaching research participants to accurately observe and report on their own private experiences. Introspectionism, as it came to be called, was essentially a doctrine that upheld that the hidden world of private mental life mattered and that consciousness was a worthy topic of psychology that distinguished it from other sciences as a science in its own right.

That all changed in 1913, with the publication of the first of two lectures John B. Watson delivered before the Columbia University Psychological Seminary, titled *Psychology as the Behaviorist Views It*. In the first of these lectures, which appeared in *Psychological Review* and became well known as the "behaviorist manifesto," Watson argued forcefully against consciousness as psychology's subject matter and introspection as psychology's method of choice. Instead, he maintained that psychology is and should be a purely objective experimental branch of natural science, whose theoretical goal is the prediction and control of behavior. In so doing, Watson tried to provide a coherent rationale to legitimize behavioral methods that had been in use since the 1870s with animals and humans and to redefine psychology's subject matter as observable behavior, not mind, with its chief methods being direct observation and measurement of behavior. In effect, Watson maintained that one could understand the mind by understanding relations between antecedent environmental stimuli (S) and reflexive or elicited behavioral responses (R); a view now familiar to many as an early form of stimulus–response, or S–R psychology.

John B. Watson's relatively short career in psychology and as an academic was indeed influential, and he can be credited for bringing the work of Russian physiologist Ivan Pavlov, and particularly Pavlov's work on the conditioned reflex, to American psychology and proselytizing its theoretical and applied importance. Indeed, by the early 1920s, Watson and his wife Rosalie Rayner had demonstrated the acquisition of conditioned fear of a white rat in the now-classic case study of Little Albert, and the subsequent generalization of such fear to other white furry objects. This demonstration was derived from conditioning procedures set forth originally by Ivan Pavlov: procedures that came to be known as Pavlovian or classical conditioning in the United States and abroad. By 1924, Mary Cover Jones went on to demonstrate how fears could be treated via social imitation (now known as modeling) and exposure to a feared stimulus without anticipated negative consequences: a procedure that extends basic knowledge of Pavlovian classical conditioning principles, such as extinction via nonreinforced exposure, to the applied realm. With this successful demonstration, the seeds of what would become behavior therapy were planted. Though it took about 25 years for Watson's ideas and those of his followers to catch on, by the early 1930s, Watsonian behaviorism—sometimes referred to as methodological behaviorism—and its variants had taken center stage within American psychology. Psychology had ceased to be the science of consciousness and had become the science of behavior *sine qua non* observable behavior.

C. Post-Watson Era of the 1930s and 1940s: Enter the Neobehaviorists

Few of Watson's ideas had survived intact in the 1930s, and many of his neobehaviorist contemporaries began to take psychology and behaviorism in new and quite different directions. Psychology as a science of behavior was retained during this period, and behaviorism flourished in academic departments around the United States. New theories of learning and conditioning revolved around major neobehaviorist figureheads, such as Clark Hull, Edwin Guthrie, Edward Thorndike, B. F. Skinner, and Edward Tolman. Each of these individuals, in turn, laid the conceptual and scientific groundwork for what would later become behavior therapy.

At the peak of his career Clark Hull was one of the, if not the, most influential behaviorists in the world and devoted most of his life to developing a sophisticated behavioral theory of adaptive behavior. His interest in mechanical devices and mathematics would become a metaphor for how to conceptualize the nature of human behavior and mental life. Like the other neobehaviorists to follow, Hull viewed consciousness as phenomena in need of explanation, not as explanatory devices in their own right. Indeed, Hull's behaviorism emerged from his view that Watsonian behaviorism was crude and seriously flawed. Hull gave close attention to Ivan Pavlov's work and saw in it a way to study conditioning as a means to achieve his goal of an experimental science of thought processes conceived as mental habits. Just as a machine operates according to relations among parts, Hull deduced that human behavior functions similarly via relations among habits that are established through associative conditioning processes. Indeed, Hull's thinking about human behavior as "machine-like" was a direct outgrowth of his interest in mechanical devices, and machine design became a model of theoretical structure to explain the human machine. Logic and deductive thinking were the cornerstones of Hull's psychology, and hierarchical theory building in terms of conditioned habits and habit chains the model of human action. Hull's theoretical system eventually collapsed under its own weight, but Hullian notions would play a large role in the conceptual thinking of early behavior therapists, particularly Hull's focus on precision and scientific rigor, rejection of subjectivity, conceptualization of Pavlovian conditioning in terms of habit formation and mediation, and use of the hypothetico-deductive method. Though Hull's emphasis on logic did not have any real import in the thinking of behavior therapists, his mechanistic view of psychological science and human behavior did. As we see shortly, mechanism is very much part of contemporary behavior therapy.

Edward Tolman is similarly important for his purposive behaviorism: a brand of behaviorism that was explicitly cognitive from the start and, in many respects, is the precursor of modern cognitive theory and the cognitive-behavioral movement within behavior therapy. Tolman identified himself as a behaviorist, eschewed introspection, downplayed Pavlov's reflexology, opposed the behaviorism of John B. Watson, outright rejected Thorndike's connectionism, and openly embraced Gestalt psychology and contextualism as a philosophy. In his 1932 classic, *Purposive Behavior in Animals and Men,* Tolman disputed the mechanistic picture of behavior presented by many versions of behaviorism and insisted that behavior is inherently purposive and cognitive, with purpose and cognition being part of the contextual behavioral whole as manifest in behavior, not as mentalistic entities apart from behavior. In this work Tolman foreshadowed the concept of what would be known as the intervening variable: a concept that represents an attempt to legitimize talk and inferences about cognitions, purposes, and the like by anchoring such inferences in terms of observable antecedent and consequent events. Eventually Tolman would move his thinking in the direction that knowledge about the world is mediated by cognitive representations of that world, and that purposes and cognitions would have to be assigned a hypothetical rather than observed status. Tolman adumbrated what would become a major source of conceptual disagreement in behavior therapy, with some behavior therapists emphasizing the causal status of cognition, while others maintaining that cognitions are not causes of behavior, but merely more behaviors in need of explanation.

Last, while the neo-behaviorists Edward C. Tolman and Clark L. Hull were vying for ascendancy within experimental psychology, a young student of animal behavior, B. F. Skinner was at work articulating the philosophy and science of a new brand of behaviorism that would forever revolutionize psychology and behavior therapy. Unlike his behaviorist contemporaries, Skinner argued that most animal and human learning is shaped and maintained by consequences following behavior; that behavior is both elicited (in a Pavlovian sense) and emitted (in an operant consequential learning sense) and must be understood in relation to environmental contextual variables; and that behavior is what organisms do, including thinking, feeling, emoting, problem solving, and what are traditionally referred to as cognitions. For Skinner, the skin was merely an arbitrary boundary between public and private events: a boundary that presented a particular challenge for a scientific account of private life, but not for the philosophy of that science. Indeed, unlike John B. Watson, Skinner's radical behaviorism was radical precisely because he maintained that a science of behavior must provide an adequate account of events occurring within the skin (e.g., cognitions, emotions) in a manner consistent with other known laws and principles used to account for other behavior (both private and publically observable). What Skinner rejected was the use of mentalistic lay terminology (e.g., anxiety, fear, creativity, joy) and hypothetical constructs as explanations in a science of behavior, not the very real phenomena to which such

terms may refer. In his 1938 book, *The Behavior of Organisms,* Skinner outlined the beginnings of this new research program with laboratory animals: a program that emphasized the scientific goals of prediction and control (one goal, not two) of behavior via intensive experimentation with individual organisms across time. This program, in turn, eventuated in what came to be known as operant psychology, or the field of basic and applied behavior analysis. It would be almost a decade later before Skinner's ideas would take hold in behavior therapy, and when they did, they were compartmentalized as falling under the aegises of behavior modification and applied behavior analysis.

By the end of the 1940s, behaviorism had reached its zenith within American academic psychology and was, in many respects, poised for a precipitous decline two decades later with the rise in popularity of cognitive theory and cognitive experimental psychology in the 1960s. Before such a decline would take place, behaviorism and behavioral thinking would first revolutionize the face of applied clinical psychology as an alternative to psychoanalysis. That revolution, became known as behavior therapy.

D. 1950s: The Dawn of Behavior Therapy across Three Continents

Behavior therapy emerged on the psychotherapeutic scene in the early 1950s as an applied extension of experimental psychology, which was still predominantly behavioristic in its approach. Applied psychology, on the other hand, was dominated largely by psychiatrists, and a disease model of psychopathology and human suffering. According to this model, abnormal behavior was considered symptomatic of an underlying mental illness, or a psychic disturbance or personality conflict similar to a medical disease. Clinical psychology, as a profession, was a newcomer having only been recognized formally in 1949 in the years shortly following World War II. Though early clinical psychologists, trained as they were within the scientist–practitioner model set forth by the delegation at the 1949 Conference in Boulder, Colorado, were poised to establish behaviorism in mental health care, and hence what came to be known as behavior therapy, they did not. Newly trained clinical psychologists during this period, though trained as scientists within the predominant experimental and behavioristic mold, turned to the then-dominant Freudian and neo-Freudian conceptual framework for their clinical inspiration as practitioners. Indeed, there was no real viable competing alternative framework for the practice of clinical psychology. Though Andrew Salter's 1949 book, *Conditioned Reflex Therapy,* describing human neurosis in Pavlovian conditioning terms had just come on the scene, and John Dollard and Neil Miller offered a compelling behavioral translation of Freudian concepts in 1950, neither text seemed to have any appreciable impact in producing a behavioral applied psychology anchored in behavioral science. In fact, Dollard and Miller's efforts to bring Freudian concepts in line with conditioning principles was predicated on the tenuous assumption that classic Freudian psychoanalysis was, indeed, efficacious as a treatment for psychological problems. This assumption, of course, was just that, an assumption without any hard data to support it. As controversy mounted regarding the efficacy of psychotherapy in general, many began to seek out alternatives. One such alternative that was about to emerge as a dominant player was behavior therapy.

Behavior therapy was established through the tenacious and somewhat independent efforts for several pioneers, including Joseph Wolpe and his student Arnold Lazarus in South Africa, the experimental and clinical work of Monty B. Shapiro and Hans J. Eysenck at the Maudsley Hospital in London, England, and efforts of Andrew Salter, O. R. Lindsley, and B. F. Skinner in the United States. All shared an interest in the extrapolation of experimental findings and principles from laboratory research with animals to explain human behavior, and predominantly—with the exception of Lindsley and Skinner—the acquisition and elimination of neurotic anxiety. The early pioneers shared a sense of unity, common purpose, and a revolutionary passion for the science itself and what the science could offer individuals, groups, and society at large. Most of the early founding members had one foot planted in the basic experimental science and one in the clinic and moved between both nimbly and with grace. The early behavior therapists understood behaviorism, behavior theory, behavior principles, and how to put them to use creatively to achieve practical purposes in therapy. Behavior therapy was, in many respects, considered the applied application of behavioral science, much as engineering represents the applied extension of physics. Early behavior therapy entailed a behavioral core: a core that was reflected in a rigorous scientific approach aimed at developing a science of human behavior and use of that knowledge to achieve practical therapeutic goals. Armed with only a handful of powerful theoretical ideas and treatment techniques, Wolpe, Lazarus, Eysenck, and Skinner, along with a few colleagues and students

(e.g., Cyril Franks, Andrew Salter, Stanley Rachman, Leo Reyna) took on the psychoanalytic and psychiatric establishment at universities and in applied clinical settings across three continents. In so doing, the pioneers of the behavior therapy grounded psychotherapy squarely in the context of behavioral science.

Two highly influential books also appeared during this time that helped to establish behavior therapy as a unique approach to the understanding and amelioration of human suffering in psychotherapy: namely Joseph Wolpe's (1953) *Psychotherapy by Reciprocal Inhibition,* and B. F. Skinner's (1958) *Science and Human Behavior.* Skinner's 1958 text showed how the principles of reinforcement and punishment could be put to practical use in understanding and modifying otherwise complex human behavior in and outside of therapy. Though Skinner was not a behavior therapist, he was tenacious throughout his long life in showing how the principles derived from basic behavioral science had broad practical relevance. Wolpe's 1953 book, on the other hand, offered a more narrow conceptualization of human neurosis in terms of Pavlovian and Hullian learning principles coupled with a dash of neurobiology, while also introducing new therapy techniques derived from such experimentally derived principles (i.e., systematic desensitization, assertion training), and impressive outcome data to back them up. To this day, Wolpe's carefully documented program of treatment development, a program that included his own basic laboratory research with cats and clinical outcome data on more than 100 individual cases, remains the largest single-case replication series in the history of psychology.

In the ensuing years, data supporting the efficacy of behavior therapy began to mount at a rapid rate. Soon others increasingly joined the behavioral inner circle and rallied together to promote a rigorous experimental epistemology with regard to treatment development and analysis of therapeutic processes and outcomes, and against what was perceived as a conceptually rich, but practically useless, psychoanalytic approach to psychotherapy and behavior change. Behavior therapy began to grow and with that growth came concern about the nature and meaning of the term *behavior therapy:* a term first coined in 1953 by Ogden Lindsley, B. F. Skinner, and Harry Solomon in a monograph describing the application of operant procedures in a psychiatric hospital setting. By 1958, Arnold Lazarus offered an explicit definition of behavior therapy as *the application of objective, laboratory-derived therapeutic techniques to the treatment of neurotic patients.* One year later, Hans Eysenck would define behavior therapy more broadly as *the application of modern learning theory to the treatment of psychiatric disorders.* The definition of what constitutes behavior therapy would continue to undergo substantial revision in the decades to follow such that the conceptual foundations of behavior therapy—rooted in behaviorism, learning theory, and principles of learning—would be replaced by the more general affiliation of behavior therapy with psychological science, empiricism, a data-driven approach to treatment, and a specific brand of therapy or therapeutic techniques. The dissolution of behavior therapy's behavioristic conceptual core began in earnest in the 1960s, and in many respects, has not recovered since.

E. The 1960s and Beyond: Behavior Therapy Comes of Age and Grows a Belly

By the 1960s, the behavioral revolution in mental health care was on its way to being won, and behavior therapy was considered a viable alternative framework to the prevailing psychiatric medical model of human suffering. Two behavior therapy journals, *Behaviour Research and Therapy* and *The Journal of Applied Behavior Analysis,* were established, and several highly influential anthologies outlining the fundamentals of this approach appeared, including Hans Eysenck's *Behavior Therapy and the Neuroses* and his later book *Experiments in Behavior Therapy,* and Leonard P. Ullmann and Leonard Krasner's *Case Studies in Behavior Modification,* and an edited volume by Cyril Franks titled *Behavior Therapy: Appraisal and Status.* Behavior therapy underwent substantial growth during the tumultuous 1960s, and with that growth came increasing diversification, internal dissent, and self-critical evaluation. It was the decade, as Cyril Franks recently put it, of oversimplification with regard to behavior theory and behavioral principles, grandiose claims regarding the effectiveness of behavior therapy, and intolerance from within and from without.

In 1966, the founders of behavior therapy established a professional organization, first named Association for Advancement of Behavior Therapies (plural), and later modified in 1968 to reflect the singular Association for Advancement of Behavior Therapy. The name change occurred, in part, to convey the sense that behavior therapy was primarily a conceptual approach to science and practice, not a collection of professionals united by an interest in behavior change technologies. Most behavior therapists shared a common, though by no means uniform, learning-theory orientation and interest in a general behavioral approach. Yet, many were attracted to

the promise of behavior therapy mostly for its pragmatic approach and its empiricism, particular as applied to treatment development and implementation, and data-driven therapy outcomes assessment. Behaviorism, as the conceptual core of behavior therapy, was gradually replaced by more pluralistic views, and behavior therapy came to be defined within much broader sociopsychological models. Such models emphasized empiricism and altering a person's behavior *directly* through the application of *general* psychological principles, not necessarily behavioral learning principles. Early behavioral approaches, grounded as they were in behavioristic thinking and animal research, were increasingly viewed as too narrow and simplistic to account for complex human behavior. Particularly controversial was the capacity of behaviorism and behavior theory to account for the role of cognition in relation to problematic behavior seen in outpatient clinics with highly verbal adults. This controversy was never satisfactorily resolved and came to a head with the 1969 publication of Albert Bandura's highly influential text, *Principles of Behavior Modification*. In that text, Bandura outlined his social learning theory approach, emphasizing the importance of vicarious learning, cognitive mediation, and the self-regulatory function of human behavior. Ironically, social learning and cognition were always part of post-Watsonian behaviorism and early behavior therapy, and particularly the writings of B. F. Skinner and Arthur Staats. Yet, the behavioral conception of cognition as behavior to be explained in terms of principles of learning was seen as limited; a view that persists to this day.

By the mid-1960s, behavior therapy had grown a belly and the song, bell, and hammer of the early days were replaced by increasing pluralism, numerous heterogeneous treatment procedures with different theoretical rationales, and open debate about the conceptual basis and methodological requirements of behavior therapy. Without a common enemy, behavior therapists began to fight battles with themselves about the very nature of behavior therapy and what constituted an adequate definition. Such criticisms, and even outright dissent, reached as far as the halls of Congress and state and local governments, resulting in withdrawal of research funding, forced abandonment of treatment programs, and legislation that otherwise banned some techniques used routinely by behavior therapists on the grounds that they violated the rights of patients and others. In turned out that much of the criticism was due, in large part, to public misunderstanding about behavior therapy, including poor understanding about behaviorism on the part of those calling themselves behavior therapists. Indeed, during this period, it was common for behavior therapy to be wrongly associated with sterilization programs applied to black persons with retardation, insulin shock therapy applied to psychotic patients in institutionalized settings and without their consent, the use of coercive procedures such as punishment or shock to control behavior, and general charges of manipulation and dehumanization. Even within psychology, behavior therapy was often viewed as mechanistic, in an inhumane coldhearted sense. Behavior therapists were likewise increasingly guilty of misunderstanding and misapplication of behaviorism, behavior theory, and behavioral principles in the applied arena. Most often this would take the form of simplistic and rigid extrapolations of behavioral learning principles from animal research to explain interesting and important facets of human behavior (e.g., thinking, emotion). The result of attempts to squeeze such principles into an analysis of problematic human behavior (e.g., cognition, emotion, self-control) was often met with frustration and frank failure. The same sort of misaligned extrapolation occurred with regard to behavioral theories in the context of psychotherapy, and often with similar poor results. Such difficulties served, in part, to foster the cause of the more ecumenical strands of behavior therapy that were increasingly becoming more popular, particularly Albert Bandura's social learning approach, Arnold Lazarus's multimodal therapy, Aron Beck's cognitive therapy, and eventually the perspective known as cognitive-behavior therapy.

By the mid 1970s and throughout the ensuing two decades, behavior therapy's behavioristic conceptual core had eroded, and few behavior therapists turned to behavioral thinking for their clinical inspiration. The unbridled enthusiasm of the late 1950s and 1960s was replaced by a more cautious optimism and concern by some that behavior therapy had lost its behavioristic conceptual moorings and, in so doing, had become indistinguishable from the rest of applied empirical psychology. Clinical scientists and practitioners were increasing drawn to behavior therapy for its empiricism, not for its behaviorism. Cognitive conceptualizations and cognitive-behavior therapy became the rule, and behavioristic behavior therapy the increasing exception. Behavior therapists began to incorporate empirical methods and concepts from experimental and social psychology, and psychological science more generally. Treatment development and implementation proliferated, numerous doctoral-level behavior therapy training programs were now well established. Behavior therapists' identity as empiricists disappeared as other

approaches to therapy began to participate in clinical trials. It gradually became apparent that empiricism could be exported to any approach, not just behavior therapy. Behavior therapists were left without a unique theoretical legacy, and gradually behavior therapy and cognitive-behavior therapy became one of many strands in mainstream clinical psychology: an approach without an overarching theory and one far removed from the behaviorism from which it initially emerged. In many respects, behavior therapy had become nothing more than the personification of the conceptually neutral scientist–practitioner model of clinical psychology.

F. Contemporary Behavior Therapy Nearing the Age of Fifty

Behavior therapy in the year 2001 looks quite different from the behavior therapy of the 1950s. Behavior therapists have long since won the fight for legitimacy in the mental health care arena; the success of behavior therapies for a wide range of problems is well established. Behavior therapies are in vogue, and behavior therapists have few real adversaries. Armed with data in hand, behavior therapists are leading the charge to demonstrate that psychosocial interventions work to alleviate a broad range of human suffering. Randomized clinical trials, efficacy, effectiveness, manualized treatments, dissemination, treatment outcomes assessment, accountability, time efficiency, cost containment, treatment quality and integrity, and managed care are now common buzz words. There are relatively few behavior therapists with one foot planted in basic behavioral science and the other foot in the clinic. Few of those calling themselves behavior therapists are thoroughly familiar with behaviorism and contemporary principles of learning from behavioral science, and even fewer look to behavior theory and behavioral principles for clinical inspiration. Ironically, it is precisely this approach that paved the way for behavior therapy's early successes: one that contemporary behavior therapy seems to have lost sight of, particularly judging the need for the thematic title—*Bridging the Gap from Science to Clinical Practice*—of the 1994 annual meeting of the Association for Advancement of Behavior Therapy. Most behavior therapists identify themselves loosely as cognitive-behavior therapists and do not see use of this hyphenated term as a conceptual redundancy. Novel treatment innovations are few and far between, and the modus operandi is to transport existing treatments almost whole cloth (e.g., relaxation training) to diagnostically dissimilar clinical conditions and test for their efficacy within large-scale randomized clinical trials. In many ways, behavior therapists have suffered from their own inadequate training in philosophy of science and have become radical empiricists, logical positivists, and, to use B. F. Skinner's terminology, methodological behaviorists. In doing so, behavior therapists have fallen into the trap of mechanistic thinking, of dualism, and of deemphasizing the importance of behavior principles and behavior theory. Behavior therapy's treatment technologies are now finding their way into the hands of nonbehavioral practitioners who, by virtue of their training, have little affiliation with behavior therapy, behavior principles that drive the treatment technology, and behaviorism. Though dissemination is an important and potentially beneficial development, it also illustrates that one need not be trained behaviorally to use a behavioral intervention successfully. Interest in the conceptual foundations of behavior therapy, and the practice of conceptually driven behavior therapy is, for the most part, seen as irrelevant for the successful implementation of behavioral intervention technologies. What is means to be a behavior therapist is now, more than ever, anyone's guess.

II. CONCEPTUAL FOUNDATIONS OF BEHAVIOR THERAPY

The conceptual foundations of behavior therapy owe much to the historic evolution of behaviorism, not in the sense of its impressive products vis-à-vis treatment interventions, but the development of a unique way of framing basic and applied problems. To use the term conceptual to describe the foundations of behavior therapy may, at first glance, appear like a contradiction. The reason has to do with the meaning of the adjective term conceptual: a term which is derived from the Latin words conceptus and later concipere that, when translated literally, means "the act of conceiving thought," or "existing or dealing with what exists only in the mind." This veiw, of course, was characteristic of introspectionism that dominated psychology in the late 19th and early 20th century: an approach that early behaviorists, and eventually behavior therapists, vociferously rejected. Antonyms of the word conceptual, such as practical, pragmatic, realistic, concrete, material, substantial, and tangible, more aptly describe the values shared by those calling themselves behavior therapists, or at least behavior therapists of the behavioristic stripe. Yet, use of the adjective "conceptual" in the context of behavior therapy is still useful, for it captures the

essence of behavior therapy as a loosely interconnected set of assumptions and values—ways of conceiving and understanding human behavior—that invariably influences the science and applied practice of behavior therapy. Conceptual is also useful as an acknowledgement that behavior therapy, like most branches of psychological science, is value laden, not value free. Whether we like it or not, conceptual values do play a role in how scientists and practitioners talk about behavior, what topics they deem worthy of their attention in research and therapy, the manner in which a therapist formulates a client's presenting problems in therapy, how one interprets data, and the criteria one adopts for truth and explanation, to name a few. These and other value-laden issues are at the core of all science and therapeutic practice and deserve our attention.

Gerald Zuriff, in his classic 1985 text, *Behaviorism: A Conceptual Reconstruction,* noted that behaviorism is not simply the science of behavior developed by behaviorists at the turn of the 19th century, but rather a conceptual framework underlying that science. Behaviorism is about the assumptions, values, and presuppositions implicit in a science of behavior, including applied practice. Behaviorism is certainly not a monolithic approach; there are many philosophical and conceptual strands of behaviorism. Today some behavior therapists share a strong family resemblance with behaviorism, but many more do not. In the purest sense of the term, behavior therapy refers to a conceptual view grounded in a science of behavior and principles of learning: one that values pragmatism, objectivity, prediction and control as mutually entailed scientific and practical goals, an empiricist epistemology, a monistic view of behavior, functionalism, structuralism, and either mechanism or contextualism as overarching philosophies.

The conceptual underpinnings of contemporary behavior therapy are more often implicit than explicit and are often mentioned by contemporary behavior therapists in passing as merely of historical interest only. Edwin Erwin, a philosopher by training, is the only person to have written a text devoted exclusively to the philosophical, conceptual, and moral foundations of behavior therapy, and that was in 1978. Almost a decade later, Rosemary Nelson and Steven Hayes edited a 1987 book devoted specifically to the conceptual foundations of behavioral assessment. Clarifying the conceptual foundations of behavior therapy should be of contemporary interest, if for no other reason than to understand more fully how such assumptions and values guide basic and applied activities, and more generally to dispel common misconceptions about what constitutes practicing as a behavior therapist. Indeed, it does appear that the tide is slowing shifting back to an interest in the conceptual core of behavior therapy, as indexed by the expansive content of articles written by three generations of behavior therapists that appeared in a 1997 two-part special series of the journal *Behavior Therapy* titled "Thirty Years of Behavior Therapy: Promises Kept, Promises Unfulfilled," and a 1999 edited monograph titled *From Behavior Theory to Behavior Therapy.* Our intent in the remaining sections is to make explicit the conceptual framework driving the activities of those calling themselves behavior therapists.

A. Core Conceptual Assumptions and Values

At the time of behavior therapy's initial development, psychology was largely behavioristic, experimental psychology was primarily, though not exclusively, behavioristic, and the pioneers of behavior therapy were aligned with what was the predominant behavioristic view in American psychology; though not entirely by training (e.g., Joseph Wolpe was trained as a psychiatrist in medicine and classic psychoanalysis). The core of behavior therapy's conceptual framework emerged out of behaviorism, not independently of it, and certainly not out of thin air in reaction to classic psychoanalysis. Behavior therapy's original identity was rooted squarely in behavioral thinking; the development and creative implementation of applied treatment technology represent two of several products of that thinking. The redundancy here in this logical historic syllogism is deliberate and is meant to clarify a conceptual confusion that permeates contemporary behavior therapy. The confusion rests with the meaning of the terms behavior therapy and behavior therapist. Early on both terms referred to a behavioral way of thinking: one grounded in the belief that behavioral science (not any brand of psychological science) would develop a rich conceptual network, set of laws and principles, and powerful intervention technologies that could be put to use to explain and alleviate, with precision and scope, a wide range of human suffering. As we have seen, behavior therapy and behavior therapist have come to mean a loose association with behavioral science and a psychology of learning, and a more general affinity with experimental approach, empiricism, cognitivism, treatment technologies, and the application of findings from psychological science more generally. Behavior therapy, in effect, has become what behavior therapists do, and what behavior therapists do has come to include just

about everything that has data to back it up. Though such issues are complex and certainly deserving of more discussion, we would like to turn our attention to conceptual issues that characterize behavioral strands of behavior therapy in the original sense of the term. Such strands, in turn, can be framed within two overarching philosophical frameworks: mechanism and contextualism, respectively.

B. Mechanistic and Contextualistic Strands of Behavior Therapy

1. Mechanism

Early forms of behavioral thinking were predominantly mechanistic and reductionistic, and so too was behavior therapy. A mechanistic philosophy takes as its goal the identification of essential building blocks that compose the fundamental structure. The parts are viewed as primary from which the whole is derived. Central to this view is that the parts of the machine reflect an objective reality awaiting discovery, and that the goal of the analyses is to elucidate principles, foundational laws, and theories that can be used to categorize the parts, relations among parts, and forces that together explain the functioning of the machine. Truth is based, in large part, on correspondence between objective reality and the belief in the presumed underlying mechanisms or structures, many of which are hypothesized but not observed directly. John B. Watson's original S–R reflex thesis was mechanistic, and so too were the S–R learning theories that predominated psychology through the middle part of the 20th century. Mechanistic models, emphasizing mediational links between stimulus–response and hypothetico-deductive theorizing, were in vogue until the 1960s when they were replaced by the equally mechanistic computer simulations and information processing models from cognitive psychology.

Contemporary behavior therapy, including much of psychology, has not liberated itself entirely from mechanistic thinking, examples of which include talk of stimulus and response as immutable events with fixed properties, misunderstanding of principles of learning (e.g., considering positive reinforcement as synonymous with the delivery of M&M candy or use of verbal praise), conceptualizing conditioning preparations as equivalent with conditioning processes (e.g., viewing laboratory Pavlovian conditioning preparations as the only way to establish respondent eliciting functions: a position that we now know is incorrect), or attempts to define behavior and learning principles structurally apart from context. More recent examples of such thinking in behavior therapy include the triple-response mode concept, in which abnormal behavior is conceptualized as a loosely organized system of partially independent relations between verbal-cognitive, physiological, and overt-motoric behavioral responses; symptom-focused and diagnosis-driven treatments, most of which are eliminative in nature (i.e., the symptoms are the problem, reduce or eliminate the symptoms, and thus fix the problem); and theoretical views that give causal or mediational primacy to cognitive activity as something other than behavior in explaining the origins, maintenance, and treatment of psychopathology and suffering. Added to this list would be a focus only on the topography of behavior, not its function or relation to contextual determinants; model building, and particularly models that speak of "structures" (i.e., parts) and their relations as composing explanation; and most nomothetic approaches based on aggregate groups of clients from whom inferences are made about the functioning of the human machine in the individual case. It should be noted that there is nothing inherently problematic with mechanistic thinking. The point is to recognize mechanistic thinking when one confronts it, including its assets and liabilities. Most mechanistic thinking has roots in early forms of behavioral thinking, particular the writings of John B. Watson, and the mediational neobehaviorists such as Clark Hull, Edward Tolman, Edwin Guthrie, O. B. Mower, but not B. F. Skinner.

2. Contextualism

Unlike mechanism, varieties of scientific contextualism (e.g., descriptive, functional, hermeneutic) take as their root metaphor the "act in context" or what one might think of behavior understood in and within an environmental context. It makes no sense for a contextualist to speak of parts from which the whole is derived, much as it makes no sense to speak of making love as reducible only to the actions of the genitalia, or the firing of neurons in the brain. The total unit of analysis is not reducible to mechanical collections of smaller units such as behaviors or symptoms. The unit of analysis is the whole organism in relation to its situated context: a view similar to the behavior analytic concept of the operant. What this means is that when one changes the context, one changes the organism—the event or behavioral whole—under consideration. Thus, contextualists anchor their analysis of behavior always in relation to the context and focus their interventions at the level of contextual variables that can be changed and influenced directly. Contextualists are

also inherently pragmatic and avoid claims about ultimate truth or reality. Accordingly, truth (with a small t) is judged not in any absolute sense, but rather by successful working. In other words, how well does the particular analysis help to achieve a priori practical goals? Knowledge claims, therefore, are dependent on achieving practical goals, and absolute Truth (with a capital T) held in conditional abeyance.

Modern incantations of contextualism, particularly functional contextualism, are most likely to be found within the branch of behavior therapy affiliated with the writings of B. F. Skinner and his philosophy of science known as radical behaviorism: namely applied behavior analysis and clinical behavior analysis. Contextualistic behavior therapists of the functional stripe prefer to talk about the function or purposes of behavior, rather than in terms of structures or behavioral topography only; are inherently practical and inductive in approach and method (i.e., doing what works in the most direct manner possible); eschew diagnostic thinking as a framework, but may use psychiatric diagnoses if they help achieve practical ends; are more likely to frame the analysis at the level of the individual case; and direct their interventions at changing those contextual variables of which behavior is a function. The aim of the functional contextualist is, as Tony Biglan and Steven C. Hayes noted in 1996, to develop an organized system of empirically based concepts and rules that allow behavioral phenomena to be predicted and influenced with precision, depth, and scope. Prediction and influence entail joint analytic goals: goals that are achieved when one can identify contextual variables that permit prediction of the behavior of interest, and when manipulation of such contextual features influences the nature and function of the behavior. Practically speaking, the independent variables of interest are understanding how the contextually situated actions of the therapist in therapy results in changes in the client's behavior in, and particularly outside, therapy where it really counts. Of course, the mechanistic branch of behavior therapy shares similar practical interests but adopts a different set of criteria for truth and explanation.

C. Behavior Therapy's Mixed Conceptualizations of Behavior

Two very different conceptualizations of behavior have permeated behavioral thinking. The traditional mechanistic view, owing much to John B. Watson, holds that behavior is what can be observed directly. This view, in turn, leads to a sort of dualism: behavior is what can be seen and objectively and independently observed by others, whereas what cannot be objectively observed by others is not behavior. As an example, walking would be considered behavior, but thinking about walking would not. This view creates obvious problems, particularly when dealing with how to talk about events occurring within the skin, such as thoughts, emotions, beliefs, and the like. As we have seen, the solution offered in the 1960s was to incorporate cognitive and social learning conceptualizations to address the word beneath the skin and to restrict behavioral conceptualizations for behavior that can be observed. This solution, in turn, created its own set of problems—a sort of conceptual dualism, for now cognition and emotion were considered something other than behavior and therefore required a unique conceptual system to account for them, while behavior would still be conceptualized as overt motor acts to be explained in terms of operant and respondent learning principles. Many behavior therapists still make such somewhat erroneous distinctions: distinctions that contributed, in part, to the view that behaviorism and a science of learning are of limited conceptual value in explaining human behavior. After all, a great deal of human behavior and suffering cannot be observed directly and occurs only privately to an audience of one—the individual experiencing the private events, but this fact alone does not obviate an adequate behavioral account of such events. This is precisely the point B. F. Skinner made repeatedly throughout his writings: a point that seems to have been lost in mainstream behavior therapy.

Applied and clinical behavior analysts conceptualize behavior quite differently than do most mainstream behavior therapists. Whereas mainstream behavior therapists conceptualize behavior as divided into three separate but related parts (cognition, physiology, and overt behavior), behavior analysts consider the organism as an integrated whole; cognition is behavior, just as physiology is behavior. Behavior is what people do, but behavior is not the focal interest of behavior analysts. Unlike mainstream behavior therapists who take the behavior-as-subject-matter view (including cognition, emotion, physiology), behavior analysts operating within a contextual framework take a behavior-in-relation-to-context view. This monistic position avoids the conceptual dualism by conceptualizing all actions as behavior, including those that cannot be observed directly. It also rejects the perspective that one dependent variable (e.g., a thought) could be conceptualized as a cause of another dependent variable (e.g., another thought, overt behavior, physiology): a view that should not be taken

to mean that such private events are unimportant, however. Rather, behavior analysts prefer to talk about events occurring within the skin using the same terms used to talk about behavior that can be observed directly: namely established principles of operant and respondent learning. No new terms are invented to describe and explain private events—private events are on equal status with all other behavior to be explained and are interpreted in a manner that permits prediction and influence with scope and precision.

D. Behavior Therapy's Conception of Causation and Explanation

A behavioral conception of causation and explanation is grounded in the view that the causes of behavior reside in the determinants of behavior, not the properties of behavior. The determiners of behavior, in turn, are viewed as ultimately residing outside the behaving person. Explanation of behavior, therefore, is cast in terms of both prediction and influence over those environmental variables of which behavior is a function.

This conception of behavioral causation and explanation has been subject to its fair share of criticism. Chief among the criticisms are that this view of behavioral causation ignores the role of free will, beliefs or expectations, purposes and intentions, perception, knowledge, memories, ideas, thoughts, and feelings in guiding human action. Most psychologists, including those affiliated with strands of behavior therapy, give causal or mediational primacy to such private events in explaining human behavior, and much of the psychiatric system of diagnosis is similarly construed in terms of private events as causes of human suffering. The mechanistic core of social learning theory and other neobehavioristic and cognitive positions explains why self-efficacy and other related phenomena are considered causal. For the mechanist, structural characteristics of the behavioral system are considered behavioral mechanisms, and thus causal entities. Yet, whether such events can be construed as causes of other behavior is another matter for which there is, at present, no convincing data. Indeed, the entire field of psychology has yet to develop a technology to isolate specific private events (thought A), and not other potentially causal variables (thought B or C, physiological event F, environmental contingencies X, Y) as causes of say action Z, and there is, at present, no technology to measure directly the hypothesized private psychological processes in question. Sophisticated brain imaging technology provides a window on electrical and glucose changes in the brain, but not thoughts, feelings, and their causal role in human action. Likewise, a person's verbal report about what they are thinking at a given moment may have nothing to do with what they were actually thinking at that moment. Indeed, we all know from commonsense social experiences that there are times when we think one thing, but say and do something quite different (e.g, a person might think "my boss is a real jerk, and then smile and with an outstretched hand say "nice to see you boss"). The issue here is not whether such private events are real and exist—they are, but whether they can be construed as causes based on available evidence and technology.

John Watson made the mistake of rejecting such events as unimportant for a behavioral science, whereas B. F. Skinner restored the importance of the inner private world in a science of behavior. Most contemporary "behavioristic" behavior therapists do not reject the very real psychological events occurring beneath the skin and acknowledge that such events can and sometimes do exert some controlling relation to other behavior, including what are loosely referred to as memories, expectancies, or feelings. What some behavior therapists do reject is talk about private events as causes, and explanations that are based solely on such events. The reasons for this rejection are pragmatic and scientific. Behavior therapists maintain that the goals of science are prediction and influence (i.e., control). The only means of achieving direct control over behavior is to manipulate environmental variables. Placing the causes, and hence explanation of, behavior inside the person puts the behavior therapist at a distinct disadvantage because there is no way to identify and influence such presumed causes directly when they are within the person. For example, saying that one thought caused another thought, an emotional response, or overt action begs the question as to what caused the first thought, how does one know, and most important what can be done about it? Contextually oriented behavior therapists resolve this issue by conceptualizing the causes of behavior as residing outside the person in the social-verbal context and direct their analyses and interventions there that, ironically, is the same context in which all therapists ultimately operate to affect clinically meaningful change.

E. Behavior Therapy's Conception of Abnormality and Human Suffering

The behavioral view of abnormal behavior is predicated on the notion that life experience gives rise to normal behavior and an adaptive range of functioning

just as life experience can produce maladaptive behavior and human suffering. To explain "normal" and "maladaptive" behavior in any absolute sense is somewhat contrary to the conceptual view of those calling themselves behavior therapists. Rather, it is maintained the similar principles of learning that result in functional behavior also can produce dysfunctional behavior. Dysfunctional and functional behavior is a matter of degree, not of kind. Maladaptive, abnormal, or dysfunctional in this sense represent complex learning, most likely attributable to deficit or inappropriate environmental contingencies. Abnormality is more than constellations of symptoms as outlined in the *Diagnostic and Statistical Manual of Mental Disorders, 4th ed.;* abnormality reflects, at the core, learning processes that are either excessive or deficit, and otherwise interfere with a person's ability to live a full and valued life. This view of abnormal behavior has survived more or less intact and leads directly to behavior change efforts that attempt to modify deficit and inappropriate environmental contingencies that maintain and promote problems in living. The assumption that abnormal behavior is learned, and constrained somewhat by biological factors, translates into a humanistic view whereby the environment, not the person suffering, is largely at fault. The pragmatic leanings of behavior therapists further constrain the analysis to the present context in which the variables controlling problematic behavior can be identified and influenced directly, including factors controlling clients' tendency to respond to their own responses (i.e., past memories, physical symptoms, other thoughts, or their own behaviors). This conception is also optimistic in the sense that if one learned to behave in a given way, then one can also learn to behave differently, and hence live a different life posttherapy. Therapy, therefore, is viewed as a means to construct and teach more adaptive repertoires and to deconstruct problematic behavior–environment relations that contribute to ongoing suffering.

III. THE SCIENCE AND PRACTICE OF CONCEPTUALLY DRIVEN BEHAVIOR THERAPY

Behavior therapy is both a science of behavior and a conceptually driven scientific approach to therapy and treatment development. Here the emphasis is on the word *approach*. As an approach, behavior therapy entails the values and ideals of the scientist–practitioner model, but is not synonymous with it. Though all behavior therapists are, by definition, scientist–practitioners, not all scientist–practitioners are behavior therapists. Though behavior therapists tend to value rigorous empirical standards of proof and experimental methods, such features could just as easily be used by those favoring psychoanalysis, Gestalt, or humanistic approaches to therapy. Practicing in accordance with such values does not, therefore, make a psychoanalyst a behavior therapist, and use of behavioral interventions, say by a Gestalt psychologist in treating a phobia, would not necessarily mean that the Gestalt therapist is really a behavior therapist in disguise. Saying that behavior therapy draws on psychological science or social psychology for inspiration, or that it involves environmental change and social interaction, fails to disqualify just about all other data-based forms of psychotherapy that are increasingly becoming mandatory in managed behavioral health care. Thus, something more than an empirically or experimentally minded approach is needed to establish the unique identity of behavior therapy. The critical question here is what do behavior therapists do that justifies calling themselves "behavior therapists" as opposed to "psychotherapists" or simply "scientist–practitioners?" As is outlined, the main distinguishing feature is not in what behavior therapists do in research or practice, but with how they talk about what they do.

A. Behavior Therapy: True to Its Conceptual Roots

Behavior therapy is, at the core, rooted in the belief that behaviorism, and the basic branches of behavioristic science, can and do provide a coherent set of assumptions and precise sets of laws, facts, and principles with enough scope, or at least the potential for scope, to help understand and alleviate a wide range of problematic behavior and suffering. This view, of course, was characteristic of early behavior therapy, in which the pioneers set their sights on scientific understanding with at least one eye on practical utility. Initially, behavior therapists conceived of themselves as behavioral scientists investigating and applying basic learning principles to change human behavior. Those involved in treatment viewed their work as derived from basic laboratory research and behavior theory, and basic researchers saw important applied applications of their work. Behavior therapists spoke the same language as basic researchers (though not necessarily with their clients), much as physicians use a consistent set of terms derived from biology and medical science. They used the same set of terms and concepts not for dogmatic reasons, but

because it made sense to do so. Imagine that an engineer, when faced with the new challenge of designing a bridge, threw up his hands and said that "the laws of physics simply do not apply to this project," or worse yet went about designing the bridge without regard for the new and known laws of physics. Most would say that such behavior would be foolish, and practically speaking would disconnect this engineer's work from valuable and important knowledge derived from the science of physics. Behavior therapists go about their work in a similar fashion and interpret complex human phenomena (e.g., cognition, emotion) in a language consistent with the basic science. Such interpretations are central to initial assessment and ongoing assessment, hypothesis generation, and case formulation, selection of treatment targets, and ultimately what behavior therapists do next in attempting to ameliorate the problem(s) that a client(s) may present in therapy. Integration of the basic and applied branches of behavioral science is and remains characteristic of this work: a coherent, but far from uniform, formula that paved the way for many, if not most, of the available treatment technologies used by behavior therapists today.

At present, there is no indication that behavior therapy "true to its roots" has failed. What has happened, however, is that many behavior therapists have failed to see the conceptual richness of behaviorism and the promise of what behavioral science has to offer. For example, many behavior therapists, including nonbehavioral practitioners, would likely be surprised to learn that behavior analysts are increasingly addressing complex human phenomena such as the self, knowing, meaning, purpose, cognition, attention, emotion, verbal-regulatory processes involved in psychopathology, attributions, expectancies, and topics familiar to clinical psychologists such as transference and countertransference, resistance, suicide, anxiety, depression, and the most vexing clinical question as to how the talk that goes on between therapist and client in psychotherapy leads to clinically meaningful change outside of therapy (where it really counts). These and other developments, including new psychosocial treatment innovations for adults (e.g., functional analytic psychotherapy, acceptance and commitment therapy), have occurred because behavior therapists and clinical behavior analysts have extended new and known facts of learning systematically to address clinically important phenomena. That is, over the last two decades behavior analysts have pushed the limits of behaviorism and behavioral science and have developed a rich, coherent behavioral psychology of cognition and other complex human phenomena and without the need for a cognitive or "other" brand of psychology. When behavior therapists think and act behaviorally, whether in laboratory, clinic, schools, organizations, they are behaving consistently with the controversial and oft misapplied Kuhnian concept of a paradigm—a disciplinary structure organized by a coherent set of basic assumptions, analogies used to clarify the basic assumptions, conventions (i.e., epistemology, methods, units of analysis), exemplars of classic works, and terminology to facilitate communication amongst its members.

B. Behavior Therapy: The Received View

According to received view, behavior therapy was never all that behavioristic to begin with, that behaviorism and behavior theory were too narrow as a basis for the conceptual development of behavior therapy, and that learning principles could only take behavior therapy so far. What was offered instead was a behavior therapy stripped of its behavioristic core: a behavior therapy that welcomed all of psychological science, and increasingly behavioral neuroscience, into its fold. The reasoning behind this move is unclear but can probably be traced to the presumed limits and failures of the behavioral paradigm and other social developments occurring during the 1960s. Whether the limits and failures were truly that, or simply reflected a lack of familiarity with behaviorism, is another matter for which we have no definitive answer. Yet, the outgrowth of the move away from a behavioral core is quite clear—many so-called behavior therapists have no unique identity and behavior therapy is but one of several growing branches of empirical science that aims to understand variables that, either in whole or in part, contribute to the etiology, maintenance, and treatment of psychological suffering. The prevailing view is that complex human behavior problems require complex solutions, many of which are outside the limits of behaviorism. The practice of behavior therapy has come to mean using the broad base of psychological science to understand and alleviate human suffering. Thus, drawing on the diverse array of psychological science for potential conceptual, empirical, and methodological solutions makes perfect sense: that is, so long as one believes that through pluralism and breadth comes clarity.

Though it is quite clear that behavior therapy has been an enormously successful experiment, it is not entirely clear that the perpetuation of increasing conceptual pluralism is responsible, let alone beneficial. The pace of novel treatment approaches, particularly those we know

not only that they work but also why they work, has slowed considerably since the late 1960s. The trend over the last decade has been to import behavioral interventions shown to be effective for one problem and to test for the efficacy for different problems, either alone or in combination with other interventions. The problem with technique-oriented interventions is that they fail to capture what is unique about behavior therapy: its methodology, its functional analytic approach, its theory, its scientific core, and its behaviorism. Behavior therapists have been retreating from their behavioral core since the early 1970s and have suffered a great deal of identity confusion as a result. In 1976, Goldfried and Davison defined behavior therapy essentially as "applied experimental psychology." Soon, the application of any research in psychology was incorporated into the definition, and behavior therapists tended to identify themselves with scientific rigor first and foremost, and only secondarily (if at all) with developing behavior therapy as a conceptually coherent scientific paradigm. Though the behavioral core is still very much part of behavior therapy, it has been compartmentalized as relevant for specific kinds of questions, problematic behaviors, and interventions, particularly those with clear origins in a psychology of learning. This is not what the founders of the behavior therapy movement had intended behavior therapy to become: a point underscored repeatedly by Cyril Franks, and the late Joseph Wolpe, Hans Eysenck, and B. F. Skinner.

IV. SUMMARY

Though psychoanalysis was the dominant force in the first and much of the second half of the 19th century, behavior therapy appears to be poised to be the dominant player in the 21st century. Ironically, many predicted that behavior therapy would, in effect, wither away and die by the end of the 1970s. This, of course, did not happen. Behavior therapy remains a vibrant and increasing popular approach to understanding and alleviating human suffering: an approach that shares the values espoused by managed behavioral health care, namely treatment accountability, treatment quality, efficacy, time efficacy, and cost-effective care. Behavior therapy is strong, if not dominant, in academic and mental health settings in the United States, parts of Europe, and in countries such as Australia and New Zealand that never had a strong psychoanalytic tradition. If anything has died, it is this: behavior therapy's unique conceptual identity in behaviorism and behavioral thinking.

Behaviorism has been a reference point for ideological debates in psychology since the early part of the 20th century, and behavior therapy has taken more than a few blows on the chin for its behaviorism. Behaviorism initially emerged as a reaction against psychology's preoccupation with consciousness and introspectionism. Behavior therapy emerged in the 1950s as a reaction against the applied incarnation of a psychology of consciousness—naming Freudian psychoanalysis and its cousins (e.g., Gestalt and Rogerian psychotherapy). This reaction was not merely empirical or experimental, it was conceptually driven, it was behavioral, it was behaviorism and behavioral science in action. Behaviorism has been on the retreat within behavior therapy since the rebellious 1960s. In its place, behavior therapists embraced cognitivism and bio-psycho-social conceptualizations. This so-called cognitive revolution was seen as an advance, for it once more legitimized speculation about consciousness and theories derived from clinical intuition and commonsense about consciousness and events occurring within the skin. Under the banner of empiricism, behavior therapy welcomed all of psychological science under its roof, and soon a new conceptual system—a cognitive system—supplanted behaviorism, and talk of behavior was relegated once more to a place outside the skin where it could be observed directly. This cognitive revolution was, in many respects, a conceptual 180-degree *revolution of the wheel* back to a level of inference, albeit highly sophisticated and data driven, that behaviorism reacted so vehemently against early on. A similar 180-degree spin occurred when behavioral thinking was relegated once again to observable behaviors. It is only recently that behavior therapists have come to terms with the view that empiricism is one part of science: a part that behavior therapy can no longer claim as its own. The other part, so often ignored in the equation, is the recognition that science and practice are fundamental human activities: activities that are influenced, to a great extent, by values. Even other so-called hard sciences are increasingly recognizing that science is inherently value laden, not value free.

A sense that behavior therapy entails a coherent set of values and conceptual assumptions has been lost for some time, leaving many behavior therapists with an increasing sense of identity confusion. Indeed, there is something intellectually dissatisfying about identifying one's professional identity with research falling under a diagnostic lable, promotion of a particular assessment device, one of several microtheories or models of psychopathology, or a new or existing treatment technology for a particular psychiatric disorder. By contrast, conceptually grounded science and practice have a certain richness about them that transcends the fads and fancies of a particular era. For these and other reasons

the wheel seems to be shifting back to an interest in behaviorism, particularly the value of a coherent conceptual identity within behavior therapy.

Some behavior therapists will no doubt disagree with grounding behavior therapy in behaviorism, behavioral talk, and the like; however, there is good reason to do so. Behaviorism is a philosophy and an ideology, a way of framing questions of scientific and practical importance. Behaviorism is not, by definition, dogmatic, nor does behavior thinking entail that one should reject by fiat all other nonbehavioral approaches to psychological science. Rather, it is the behavior of some scientists that may have made behaviorism appear that way. Behaviorism has always entailed an openness to a behavioral scientific analysis of the phenomena studied within the purview of other branches of science. A science of behavior is, at the core, an attempt to develop more effective ways of talking about human behavior and its alleviation. Behaviorism is, in many respects, a looking glass that undoubtably influences the questions one asks, the methods one adopts, how one sees the world, the criteria one adopts for truth and explanation, how one talks about their research and applied work, and ultimately what one does as a result. This behavioral looking glass is difficult to master for it runs counter to how all of us have been socialized to talk about and explain our actions and the actions of others.

The payoff for coming to terms with behaviorism and behavioral thinking would likely be improved coherence and clarity, particularly with respect to the connectedness between the basic and applied branches of behavioral science, and ultimately a renewed sense of behavior therapy's unique identity. This is the promise of conceptually driven behavior therapy. Yet, for this promise to be realized again, behavior therapy must first resolve long-standing issues related to misunderstanding and misapplication of behaviorism and behavioral principles in clinical contexts, lack of integration and systematic extension of the concepts and findings from basic behavioral science to applied arenas with humans, including limited training in behavior theory, philosophy of science, and lack of fluency with unique technical jargon emanating from a science of behavior more generally. At present, behavior therapy is at a point of fracture over its psychological roots, its philosophy, its behaviorism, and its relation to basic behavioral science. Without a behavioral core, behavior therapy has no unique identity, and the name behavior therapist might as well be replaced with the generic term scientist–practitioner.

The immediate pragmatic question is why should behavior therapists ground themselves in behaviorism, behavior theory, and behavioral data language? Does such grounding matter in what behavior therapists do? Does behavioral thinking make a behavior therapist more effective in working with clients? Is behaviorism and behavioral thinking outdated and narrow? Such issues cut to the core of a deeper question concerning the very definition of behavior therapy itself: is it defined by its philosophical and theoretical underpinnings?; by the techniques that are typically used?; or by the attention it pays to empirical validation? The history of behavior therapy has been full of diverse opinions regarding where the *heart* of behavior therapy lies. Answers to questions such as these are no doubt complex; however, our view is that consistent and thoroughgoing behavioral thinking is not narrow, certainly not simple or outdated, and would be of value in helping behavior therapy reestablish its identity but also its historic affinity with the basic branches of behavioral science. Ironically, it was the synthesis of such domains that paved the wave for behavior therapy's early successes and unique identity.

See Also the Following Articles

Beck Therapy Approach ■ Behavioral Consultation and Therapy ■ Behavioral Group Therapy ■ Behavioral Therapy Instructions ■ Behavior Therapy: Theoretical Bases ■ Cognitive Behavior Therapy ■ Education: Curriculum for Psychotherapy ■ Gestalt Therapy ■ Humanistic Psychotherapy ■ Multimodal Behavior Therapy ■ Psychoanalytic Psychotherapy and Psychoanalysis

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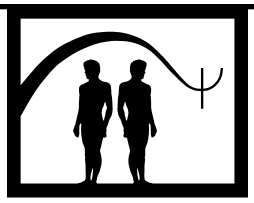

Behavior Therapy: Theoretical Bases

Dean McKay and Warren W. Tryon

Fordham University

I. Overview
II. Theoretical Bases
III. Empirically Based Applications
IV. Summary
Further Reading

GLOSSARY

behavioral assessment A systematic examination of precursors and consequences of behavior, including self-reported cognitions and psychophysiological evaluations.

behavior modification A set of procedures designed to influence behavioral change based on principles from experimental psychology.

behavior therapy The application of behavioral and cognitive interventions to alleviate emotional and behavioral disturbance.

cognitive therapy An eclectic set of approaches aimed at altering patterns of thinking and perceiving environmental and internal events to achieve behavioral and emotional change.

empirically supported treatment Any treatment or collection of techniques that has been shown effective for a specified target behavior or diagnosis. Treatment is deemed empirically supported following a predetermined number of independent investigations that demonstrate clinically significant change.

functional analysis A structured method of determining the maintaining features of any behavior. This approach involves determining antecedent events, target behavior, organismic variables, and consequences of behavior in a causal sequence.

neural network Any model used to describe the neural connections that give rise to cognitive and behavioral events.

self-efficacy A cognitive structure that is associated with the perception of personal influence on the environment.

treatment manual An algorithm for administering treatment for a specified problem or problems. Usually a collection of therapeutic techniques arranged in a sequence.

I. OVERVIEW

Behavior therapy has become a well-developed and integrated part of mental health treatment. As a set of procedures, and as a movement within psychology, behavior therapy has undergone significant changes, not only in form but also in how practitioners view it. The purpose of this article is to provide a comprehensive understanding of the field within the limits of space constraints. Behavior therapy can be described in terms of its theoretical underpinnings and their development from inception to the present time. A summary of these events constitutes the first portion of this article. Behavior therapy can also be described in terms of its clinical approach to treating a wide spectrum of behavioral and psychological disorders. A summary of these events constitutes the second portion of this article. We seek to explicitly discuss how behavior therapy has always been defined in the spirit of manual-based treatment in that treatments must be sufficiently well described to be replicated if empirical support is to be obtained. Operationalization of intervention steps is a hallmark of behavior therapy.

II. THEORETICAL BASES

A. Definitions of Behavior Modification and Therapy

Kazdin has written the most comprehensive and authoritative history of behavior modification and behavior therapy currently available. The terms behavior therapy and behavior modification denoted differences that were perhaps once more vigorously defended than they are today. Kazdin's preface states "Behavior modification can be defined as the application of basic research and theory from experimental psychology to influence behavior for purposes of resolving personal and social problems and enhancing human functioning." This definition is theoretically inclusive as it defines behavior modification in terms of applied experimental psychology, which today encompasses cognitive psychology and cognitive neuroscience as well as operant and respondent conditioning. This definition of behavior modification is consistent with the practice of contemporary cognitive behavior therapy and therefore could be used to define both behavior modification and behavior therapy making them one and the same thing. This would erase the historical distinction between them. Behavior modification was predominantly guided by B. F. Skinner's experimental analysis of behavior, which emphasizes environment–behavior relationships. Contingencies are typically imposed on individuals and/or groups. Notable exceptions entail the use of reinforcer surveys–menus to allow individuals to select what they will work for and behavioral contracting that actively engages the client in negotiations with those who control access to reinforcers. Clinical applications tend to be in schools and institutions with children or adolescents who are developmentally delayed, delinquent, or severely mentally ill.

Behavior therapy is currently viewed as the application of cognitive-behavioral techniques to adults and children on a primarily one-to-one basis, though sometimes in groups, in both inpatient and outpatient settings. behavior therapy has been defined in several ways. Eysenck asserted that behavior therapy may be defined as the attempt to alter human behaviour and emotion in a beneficial manner according to the laws of modern learning theory Wolpe and Lazarus similarly defined behavior therapy as the application of experimentally established principles of learning. Wolpe defined behavior therapy as the use of experimentally established principles of learning for the purpose of changing unadaptive behavior. Attempts to define behavior therapy in terms of learning theory failed primarily because no single learning theory commanded sufficient consensus. Tryon observed that clinical and experimental psychology are predicated on learning. Many facets of normal and abnormal behavioral and psychological development depend on learning. Virtually all psychological interventions by clinical and experimental psychologists, including behavior modification and therapy, presume that some new learning will occur. Developmental theories and schools of psychological interventions differ mainly in how they account for learning. Psychotherapies differ mainly in terms of what they feel clients need to learn and they best learn what they need to know. Therapies by Beck and Ellis discussed later illustrate this point. Hence, learning is at the heart of the "basic research and theory from experimental psychology" that Kazdin used to define behavior modification and that Eysenck, Wolpe, and Lazarus used to define behavior therapy. Therefore, behavior therapy and behavior modification were often used interchangeably in the early history of this approach to treatment. Tryon recommended that we recognize our common dependence on learning, which implies memory, and directly discuss our differences in how learning and memory explains behavioral and psychological disorder as well as how new learning can cause therapeutic change.

Covert conditioning constitutes a hybrid approach. Homme introduced the term *coverant* to mean "operant of the mind." Covert reinforcement, covert extinction, covert modeling, and covert sensitization soon followed. These are operant behavior modification procedures in which the behavior, antecedent stimuli, and consequent reinforcers are all imaginal and therefore purely cognitive. Martin and Peal allocated an entire chapter to this operant interpretation of cognitive behavior modification.

Finally, we note that practitioners who endorse applied behavior analysis (ABA) are primarily persuaded by Skinner's experimental analysis of behavior and therefore focus heavily on behavior–environment relationships. This has recently changed to include private events, such as the treatment protocol developed by Hayes (acceptance and commitment therapy [ACT]). The term behavior modification has primarily been used to refer to their clinical efforts. Because reinforcement contingencies can be imposed on groups of people, behavior modification has also come to connote group interventions in institutions such as hospitals, residential placements, and schools. Because systematic desensitization and related interventions are primarily provided in outpatient settings, behavior therapy has also come to refer to individual treatment. It should be noted that customized contingency management interventions are designed and implemented

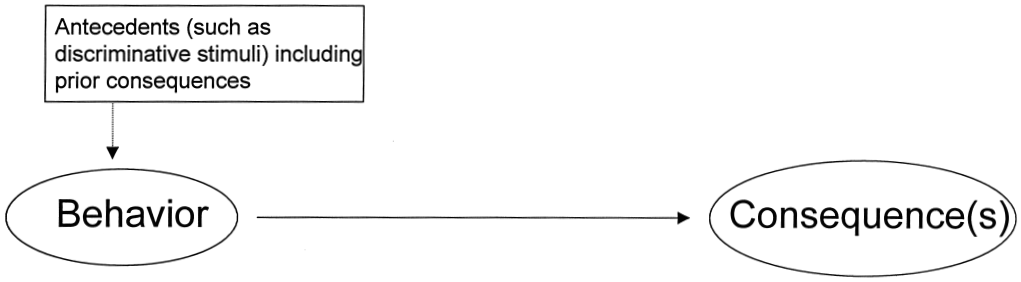

FIGURE 1 Original behavioral links to environment. This figure depicts the original conceptualization of how behavior is driven by environmental consequences.

with regard to individuals in outpatient settings. This frequently entails assisting parents modify behavioral excesses or deficits displayed by their children.

B. History of Behavioral Theory

Kazdin traces the history of the theoretical foundations of behavior modification from Sechenov (1829–1905), through Pavlov (1849–1936), Bechterev (1857–1927), Watson (1878–1958), Thorndike (1874–1949), Guthrie (1886–1959), Tolman (1896–1961), Hull (1884–1952), Mowrer (1907–1982), to Skinner (1904–1990). Kazdin devotes all of Chapter 4 to Skinner, Chapter 7 to the "emergence and evolution of applied behavior analysis," and Chapter 8 to "contemporary applied behavior analysis." Kazdin's Chapter 5 traces the clinical applications of work on experimental neuroses and conditioning to human behavior. Wolpe's work on systematic desensitization beginning in South Africa and efforts by Eysenck and others in the Maudsley Group in England are chronicled. Work in the United States is also covered. Kazdin's Chapter 9 reviews "cognitive behavior modification and self-control" before considering "ethical and legal issues" in Chapter 10. The details of these events have been omitted because they are extensive and not easily summarized except to say that the history of behavior modification therapy entails the clinical application of empirically supported methods and principles of behavior change. The primary attraction of operant and respondent conditioning by clinicians has always been that conditioning provided prescriptions for behavior change because clinicians are primarily called on to change behavior. Behavioral therapies differ from psychotherapy in general because they identify specific behaviors for change and use empirically supported treatment principles and packages to obtain these changes.

C. Behavioral Theory

Kazdin defined behavior modification therapy to include the entire theoretical basis of experimental psychology as noted earlier. Learning theories by Thorndike, Skinner, Hull, Guthrie, Estes, Tolman, and Hebb were available. However, conditioning was the primary theoretical basis for studying learning as can be seen by Kimble's influential revision of Hilgard and Marquis' Conditioning and Learning. In 1970 Kanfer and Phillip's *Learning Foundations of Behavior Therapy* formulated a behavioral approach to clinical psychology in terms of operant conditioning. Plaud and Eifert's book, *From Behavior Theory to Behavior Therapy,* maintains this theoretical orientation. Figure 1 presents the theoretical premise of conditioning theory. Pavlovian respondent conditioning, also known as classical conditioning, is a S–R theory in which conditional stimuli come to elicit responses similar to the responses elicited by unconditional stimuli. Skinner carefully distinguished his approach as a R–S theory in which consequent stimuli reinforced preceding behaviors. Skinner explained behavior in terms of variation and selection using the same functional argument Darwin employed to explain the origin and extinction of species. However, for present purposes it is important to emphasize that only stimuli and consequences residing in the external environment were admissible explanatory candidates in all conditioning models.

D. Operant Conditioning to Psychological Behaviorism

Behaviorism was just reviewed as a single theoretical system. Staats identified three generations of behaviorism. He ascribed the first generation of behaviorism to John B. Watson and his studies on conditioned emotional reactions. Staats associates Skinner, Hull Mac-

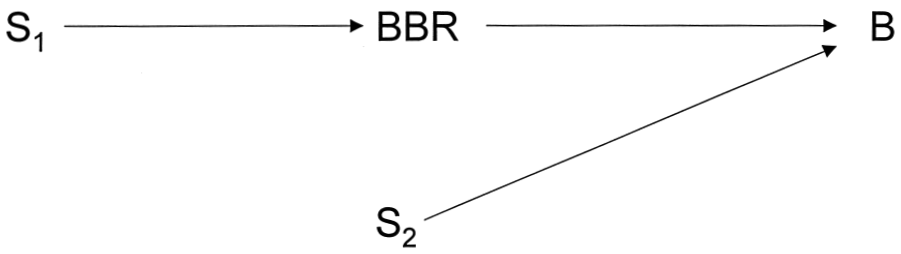

FIGURE 2 Psychological behaviorism. S_1 represents the original learning environment; BBR represents basic behavioral repetoires; S_2 represents the current environmental situation; B represents the behavior (including experience) and resulting learning that takes place. Adapted with permission of A.W. Staats.

Corquodale and Meehl, Spence, and Tolman with behaviorism's second generation. Staats identifies himself with behaviorism's third generation.

Staats has offered a perspective on behavioral assessment and treatment that is based on a unification of basic behavioral principles and general psychology. Unlike his predecessors, his emphasis has been on linking behaviorism with the rest of the field rather than establishing behaviorism as a separate discipline. He has called for "complementarity—not opposition." Staats outlines 11 "levels" of psychological behaviorism, essentially capturing the major experimental and applied areas of psychology. These are biological mechanisms of learning, basic learning theory, human learning principles, personality, child development, social personality, measurement, abnormal psychology, clinical psychology, educational psychology, and organizational psychology. Although not explicitly cited, efforts aimed at incorporating basic psychological science findings into behavior therapy have been undertaken in the same spirit espoused by Staats by Onken and Blaine and by Onken and Bootzin.

In determining how to best analyze human behavior and develop empirically sound interventions, Staats and associates present a diagrammatic approach to developing a functional analysis. A key component of this arrangement is the set of basic behavioral repertoires (BBR) that one develops during a lifetime and brings to treatment. The verbal-motor repertoire entails the ability to understand language and use it to regulate behavior. The verbal-image repertoire entails the ability of language to elicit a conditioned sensory response. The verbal-emotional repertoire entails the ability of language to elicit emotions. The verbal-labeling repertoire entails the person to respond verbally to external stimuli. The verbal-association repertoire entails communication, problem solving, and mathematics. The verbal-imitation repertoire entails language to govern behavior. The verbal-writing repertoire entails language and written expression. The sensory-motor repertoire entails stimuli with action. The emotional-motivational repertoire entails affect and those factors that drive behavior. Standard psychological tests, such as IQ tests, are viewed as standardized behavioral samples. Performance on these tests quantifies specific BBRs. Hence, Staats has addressed what are usually characterized as cognitive phenomena by extending behavioral theory (see Figure 2).

According to Staats, treatment proceeds best when this illustration of initial learning situation, basic behavioral repertoires (or personality), and current contingencies operate in a continuous feedback loop. That is, intervention alters current contingencies, resulting in environmental changes, which in turn influence the BBR. In this way, assessment and treatment are inexorably linked. This approach is consistent with the original vision of behavior therapists but offers a perspective that embraces the full breadth of psychology.

Although Staats initially termed his approach paradigmatic behaviorism, Tryon maintained that his efforts were more accurately termed psychological behaviorism, and that became the title of subsequent article and the subtitle of his most recent book. Staats uses the term unified positivism to describe this approach. He endorses the general values of science including observation, measurement, and experimentation and endorses general theory construction values of empirical definition, consistency, generalizability, and parsimony but is open to and actively encourages the use of psychological constructs.

E. The Cognitive Revolution

Following a period of extensive research on basic behavioral processes, and how various forms of psychopathology may be acquired through environmental

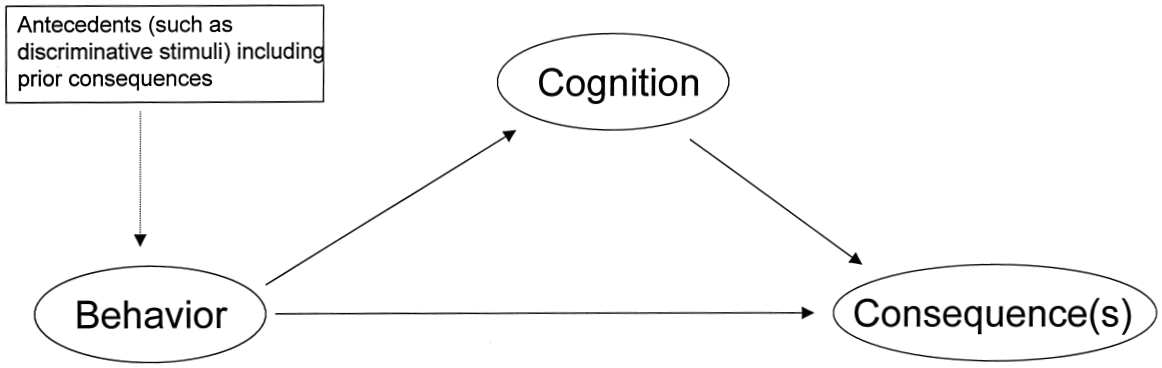

FIGURE 3 Modified behavioral theory. In this revised view of behavior–environment relations, cognitions are considered a mediator between behavior and consequences.

circumstances (learning), many investigators became dissatisfied with conditioning theory. Increasingly, behavior therapists were persuaded that the information proffered from clients' self-report was itself an appropriate area of study and that this information might form the basis of functional assessment and intervention. That is, the way clients *think* was offered as a causative factor in behavioral and emotional problems. Heralded as a more comprehensive view of individual clients, this adjustment was intended to augment current behavioral models by accounting for cognitive styles that are introduced into clinical settings and set the occasion for the development and/or maintenance of most forms of psychopathology. This was the basis for the cognitive revolution that took hold of behavior therapy and continues to exert considerable influence today. Figure 3 depicts this modification of behavioral theory.

Prior to the more formal integration into behavior therapy that cognitive interventions enjoy today, groundwork was laid that would allow for the merging of these approaches. Notable in this regard was the work of Cautela involving coverants and covert conditioning mentioned earlier. Although originally placed in the same company as other traditional behavioral interventions (such as operant and classical conditioning), it should be noted that each element of intervention was a cognitive construction, including reinforcers, consequences, and behavior (i.e., images of behavioral events). Coverant control continues to be viewed as a behavioral rather than a cognitive treatment despite the fact that the events, antecedent stimuli, and reinforcing consequences are entirely imaginal and therefore cognitive.

It is interesting that the mainstream cognitive revolution was initiated by clinicians who were neither behavioral by training, nor experimental psychologists by trade. Beck's cognitive therapy and Ellis's rational emotive behavior therapy each offered approaches to treatment that were essentially client centered, Socratic in method, and reliant on client self-report augured by client self-observation and verbal challenge of identified dysfunctional beliefs. These clinicians assert that the impetus for developing their approaches to treatment was as a reaction to their more traditional training in psychodynamic approaches, whereby they observed that clients spontaneously report a variety of negative thoughts that give rise to neurotic conditions. In contrast to their traditional training, each felt compelled not only by this observation, but by clinical experience that teaching clients methods for directly addressing these spontaneously reported thoughts resulted in the alleviation of emotional distress and behavior disturbance. Both approaches have been popularized and integrated into contemporary behavior therapy. Indeed, this integration appears so complete that most refer to this treatment approach as cognitive-behavioral therapy (CBT) rather than behavior therapy (BT).

1. Beck's Cognitive Therapy

Beck suggests that emotional distress is predicated upon negative automatic thoughts (NATs), which emerge from schemas. Schemas are defined as structures that organize information in a database-like form that sorts and summons information based on stimuli (either overt events or other verbalizations). In 1978 Beck and colleagues articulated this notion most prominently in the application of cognitive therapy for depression. Specifically, depressed individuals are said to possess a "negative triad" of automatic thoughts that cause negative views of the self, world, and future. Each of these domains has been characterized as a schema that is essentially negative in depressed individ-

TABLE 1
Self-monitoring Form for Client Use in Cognitive Therapy *(Sample Form)*

Date	*Situation*	*Emotions*	*Automatic thoughts*	*Rational response*	*Outcome*

uals. The principle task in cognitive therapy (CT) is to help clients systematically determine ways of challenging these thoughts, usually by evidence gathering and self-monitoring. Since the time that Beck and his colleagues described this method for treating depression, it has been extended to anxiety disorders, substance abuse, personality disorders, obsessive–compulsive disorder, eating disorders, and delusions. Beck's approach has shown a great deal of promise in alleviating emotional distress, as well as shedding light on the interaction between therapy and medication. Specifically, it has been shown in numerous trials that cognitive therapy alone is at least as effective as antidepressant medication for depression, while also showing greater maintenance of gains following medication discontinuation. This has since become an important experimental design for use in determining the relative contribution of CBT and medication for a number of other psychological conditions such as panic disorder, obsessive–compulsive disorder, alcohol abuse, and eating disorders.

Cognitive therapy, using the approach described by Beck, involves teaching clients to become their own scientist. For example, clients are engaged in a Socratic discussion whereby the negative automatic thoughts are actively challenged. Clients are taught to identify NATs by maintaining a daily log that is structured along dimensions of situation(s), emotional response to that situation, automatic thoughts, rational response, and outcome. A sample form for client use is presented in Table 1.

The components of the strategy of monitoring events and the NATs that give rise to emotional distress are highly structured in CT. Clients are taught to identify specific situations (or imagery that occur in daydreams) that result in distressing emotional reactions. Clients are instructed in the identification of these NATs and then taught how to challenge these ideas using specific questioning of the accuracy of these ideas. They are then asked to write a rational alternative thought and the outcome from applying this alternate thought. Throughout, as a means of examining the effectiveness of the challenge, clients are also instructed to rate the degree to which they experience the emotion, as well as degree they believe both the NAT and rational alternative. Implicit in this approach is the perspective that one will not initially believe the rational alternative, but with repeated practice the underlying philosophy of the rational alternatives will begin to take hold.

In order to be effective, and for the integration of the rational alternatives to replace the NATs, Beck argues that clients must engage in personal experiments that are designed to directly challenge the accuracy of these dysfunctional thoughts. After conducting several of these experiments, practitioners applying CT seek to identify "themes" (schemas) that guide these automatic thoughts. It is at this point that the cognitive therapist begins to actively challenge the underlying theme, instruct clients to seek situations that broadly address these themes, and continue monitoring automatic thoughts as a means of identifying

other possible automatic thoughts that may arise as treatment continues. Broadly speaking, this process has been referred to as cognitive restructuring.

2. Ellis's Rational Emotive Behavior Therapy (REBT)

Ellis has described a variant of CT that is conversant with traditional operant behaviorism in that clients are taught to develop a functional analysis of their own upset emotional experience. Specifically, in the early stages of treatment, clients are instructed to identify (a)ctivating events, (b)eliefs, and (c)onsequences that surround individual events resulting in distress. After repeated practice and feedback from the therapist, clients are expected to articulate these sequences readily. Following this, clients are taught to extend this A-B-C analysis to include (D)isputation and (E)ffects of the outcome. This full sequence is then understood as a method of alleviating distress when applied repeatedly. As a means for galvanizing these effects, a number of behavioral activities are typically arranged that allow for in vivo challenge of irrational beliefs. For example, shame attacks are where one seeks out a situation in which the irrational belief may be directly challenged (such as announcing the time in a crowded restaurant to challenge beliefs associated with embarrassment). Another method is referred to as the rational barb, where the therapist states the irrational belief out loud to the client, and the client must rapidly arrive at a disputation (such as comments about physical appearance). Finally, rational role reversal is where the therapist enacts the role of client, and the client must identify irrational beliefs and suggest methods for disputation. These procedures are described in detail in the work of Walen, DiGuiseppe, and Dryden.

3. Distinguishing CT from REBT

It appears from the description offered here that CT and REBT have substantial overlap in conceptualization. Both involve homework designed to identify dysfunctional thinking patterns. Each is highly structured. Each approach emphasizes demonstration of the effects of *in session* disputation by *in vivo* application. However, there are some subtle differences. The first is that REBT is more reliant on specific exercises that have been packaged for challenging irrational ideas as they arise. The second is that, despite the broad similarities, most treatment trials have adhered to the format outlined by Beck, resulting in greater empirical support. Indeed, Beck has placed greater emphasis on empirical research, while frankly acknowledging similarities with Ellis's approach. Finally, REBT emphasizes identification of particular words and styles of describing the world that may result in emotional distress. For example, Ellis has popularized some catch phrases that are liberally applied to challenge the use of particular words to describe personal emotional functioning. Ellis has suggested that people "awful-ize" to refer to the use of something being awful (rather than merely unfortunate or inconvenient). Other words specifically targeted as part of treatment are "should," "ought," and "must." Further, Ellis has encouraged people to try applying the E-prime philosophy, which specifically suggests that people avoid using the verb "to be" as it contributes to broad labeling that fosters an inability to effectively and flexibly challenge disruptive thinking patterns. In 1973 Ellis emphasizes that REBT arises from the philosophical tenets of Epictetus whereby the labeling of something as "good" or "bad" is what makes it so, and that no event is inherently good or bad.

F. Cognitive Theory Elaborations That Affect Cognitive Therapies

Although CT and REBT may rightly claim a place as mainstream components of behavior therapy, the groundswell that resulted in the widespread acceptance of these approaches had been set in motion earlier, aside from the initial "behavioral" interventions described by Cautela. Notable here is self-efficacy theory by Bandura. Self-efficacy refers to a person's belief in the extent that their actions influence the environment in ways that are advantageous. These beliefs are said to causally contribute to behavior as well as emotional experience. This is also the central position of the cognitive therapies. This assertion has led to considerable debate within the field, and is not yet resolved. The procognitive side of the argument strongly suggests that observational learning rests on an assumption that even without direct contact with contingencies higher-order organisms learn, which implies cognition. Cognitive theorists have also suggested that radical behaviorists discount cognition despite references to "private events" and that cognition represents a plausible area of investigation within the broader domain of CBT. The behavioral position suggests that cognitions (all private events) are epi-phenomena representing a higher-order class of behavior. Further, in response to the concern over mere labeling, behaviorists have argued that cognitions exist as correlates of behavior. It has been said that the move to cognitive analyses has always been part of psychological assessment but it should not occur at the cost of traditional behavioral assessment. Cognitive

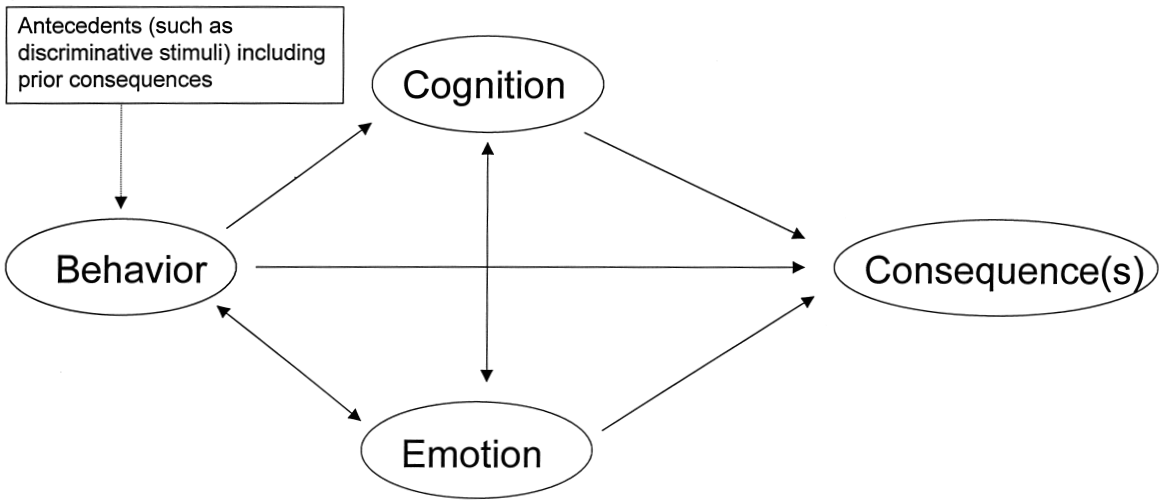

FIGURE 4 Modified behavioral theory.

variables are private events and therefore are essentially unknowable by an observer because of measurement problems. Although the controversy continues regarding whether cognition represents a causal link between behavior and consequences, researchers examining treatment components for specific disorders have embraced self-efficacy. For example, in 1985 Marlatt and Gordon outlined a cognitive-behavioral theory of treatment for substance use that has gained prominence. Since that time, self-efficacy has figured prominently in several variants of cognitive-behavioral therapy for smoking, obesity, depression, anxiety disorders, and marital distress.

G. Impact of Neuroscience

LeDoux summarizes many studies that demonstrate how conditioned emotional responses are formed through activation of subcortical structures. Although he personally rejects behaviorism, his work repeatedly demonstrates the crucial importance of classical conditioning to the etiology of emotional and behavioral disorder. In short, many studies conducted in his lab, and the laboratories of other investigators, clearly demonstrate that emotional responses are formed by subcortical brain structures that respond quicker than our higher cortical centers do. This is what makes negative automatic thoughts rapid and automatic. Emotional reactions derived from traumatic experiences are retained for long periods of time after a single or few learning trials. Fortunately, higher cortical centers enable some cognitive control over these reactions. These and related supportive findings enable us to expand Figure 3 into Figure 4. The line from cognition to emotion represents this influence.

Figure 4 also illustrates that therapeutic experience with the environment, corrective emotional experiences, can modify emotional reactions. Figure 4 indicates that these therapeutic experiences (behavior–environment) relationships have both cognitive and emotional consequences. The path connecting cognition and emotion bidirectional indicating that cognitions influence emotions and emotions influence cognitions. This means that corrective emotional experiences cause people to think and feel differently that also means that cognitive changes accompany behavioral interventions. The crux of cognitive theory is that cognitive processes actively transform experience with the environment.

It can be argued that all of the interconnections in Figure 4 are causally bidirectional. This theoretical extension produces a connectionist network among thoughts, feelings, behaviors, and environmental consequences. We next consider issues related to theoretical integration and how informal and formal network theories have contributed to theoretical unification.

H. Theoretical Integration

In an effort to provide a conciliatory note on this argument, Reitman and Drabman, and Dougher point out the similarities between radical cognitivists and radical behaviorists by indicating both are interested in achieving behavior change, with fundamental differences in method to achieving that change. On the one hand, it appears that the addition of "cognitive" to behavior

therapy has led to improvement in the delivery of treatment and may even enhance treatment adherence in some cases (as in obsessive–compulsive disorder). On the other hand, others have remarked that the retreat to cognitive methods has been either premature or insufficiently informed by theory from experimental cognitive psychology. Indeed, there has been a burgeoning literature in experimental psychopathology that has examined the role of attention and memory in various conditions but has not yet "inspired any treatments".

McNally characterized this disparity as "potentially incompatible." On the one hand, the treatment approaches described by Beck and Ellis represent introspective approaches whereby beliefs associated with various environmental events (assumed to be central to emotional distress) are culled from direct questioning. On the other hand, experimental cognitive approaches (hereafter referred to by the more popular term information processing) rely on inferences for cognitive processes based on participants' performance on a number of laboratory tasks. These tasks do not typically involve direct questioning. McNally indicates that although the arguments levied on both sides of this debate have been intense, there is a common theme that emerges. Specifically, both approaches at some point must rely on client report. Information processing approaches routinely rely on self-report measures for determining placement in groups (i.e., depressed, nondepressed). Likewise, clinical "belief-based" approaches rely on inferences of change based on both client report and performance during specified therapeutic tasks.

If these approaches are to be comprehensive in scope, then each must answer the question of how psychopathology develops. Efforts have been made to articulate etiology so that treatment may be informed with greater clarity. We have identified two different perspectives on this matter. First, a radical cognitive perspective supports the idea that negative (and positive) thoughts arise through discrete learning opportunities. Therefore, one has opportunities to understand emotional reactions through a lens of either rational or irrational beliefs, and these beliefs are shaped by feedback from significant others or information provided by various sources. The second (and more popular) view involves the presence of dispositional traits that set up opportunities for developing these same maladaptive patterns of thinking. There are numerous examples of how preexisting traits may predict later psychopathology such as anxiety sensitivity and panic disorder and other anxiety conditions, sociotropy-autonomy and depression, or restraint eating and eating disorders. This is not a comprehensive list of dispositional traits that have been tied to cognitive bias or the onset of discrete forms of psychopathology. By adopting the position that one may begin with a set of characteristics that lends itself to developing psychopathology by discrete learning consequences represents an attempt on the part of researchers to be truly integrative in understanding and describing psychopathology. This is a well-established tradition in behavior theory and therapy, as advocated previously by Lazarus and Staats, among others. The presence of dispositional traits may assist in identifying schemas, according to Beck's CT, but this has rarely been specifically articulated (except in the case of anxiety sensitivity).

The emergence of network models may enable a resolution of these theoretical differences. We first examine the emergence of informal network theories and then consider formal parallel distributed processing connectionist neural network models.

1. Informal Network Models

Lang suggested that fear can be understood as a memory network containing information about stimulus characteristics, verbal and nonverbal response tendencies, mediating visceral and somatic events (feelings), and propositions about what all these events mean under different circumstances. Each source of information can be thought of as a node. The excitatory and inhibitory connections among these nodes constitute the theoretical network that governs behavior and the psychophysiological responses to scripts read by fearful persons in Lang's research.

Foa and Kozak expanded Lang's network theory to include the concept of "emotional processing", which predicts a gradual reduction in emotional responding over time given persistent activation of the fear network. Short-term habituation effects are hypothesized to change the fear network thereby resulting in long-term fear reduction. New therapeutic memories form and interact with incompatible fearful memories. Creamer, Burgess, and Pattison discuss a similar form of "network resolution processing." Fear networks are hypothesized to vary in size, structure (interconnectedness), and accessibility .

Chemtob, Roiblat, Hamada, Carlson, and Twentyman hypothesized a 4-level cognitive schema network varying from concrete representation at Level 1 to abstract representation at Level 4. One aspect of this network influences another through "spreading activation" thereby interrelating thoughts, feelings, and actions.

The above mentioned network theories are multidimensional and interactive. They are progressive in that

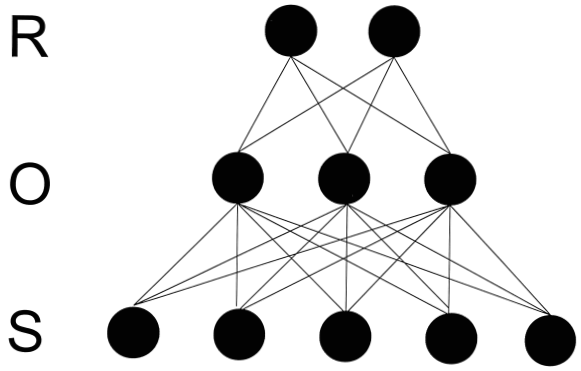

FIGURE 5 S-O-R model.

they provide for flexible and complex interactions among thoughts, feelings, and actions. However, they contain few constraints and cannot be used to deduce (calculate) specific outcomes due to the absence of principles that characterize and limit network dynamics. These systems are black box and arrow models because they indicate relationships among functions and do not provide mechanism infromation to show why these relationships exist.

2. Formal Connectionist Network Models

Parallel distributed processing (PDP) Connectionist neural network (CNN) models are sophisticated mathematical systems that generate quantitative results when computer simulated. They have all the theoretical applicability and flexibility of the informal network models, but they have the necessary structure and constraints to enable specific theoretical predictions to be made. Specific architectures and formal learning rules systematically modify connection weights between the processing nodes in response to experience.

The common 3 layer CNN has strong similarities to a higher-order factor structural equation model (SEM). Behavior therapists have long subscribed to a 3 layered Stimulus–Organism–Response (S–O–R) model. Figure 5 renders this traditional model in terms of a 3 layered feed-forward CNN model that is equivalent to a 2nd-order factor. The bottom layer of processing nodes, frequently termed neurons, represents stimulus inputs. They are the indicators in a SEM. The second CNN layer, also called the middle or hidden layer, is composed of fewer neurons; one for each latent construct the network will need to learn. These are the latent factors in a SEM. Every input neuron is typically connected to, synapses with, every middle neuron in a CNN whereas indicators are selectively loaded on factors in a SEM. These CNN connection weights are initially set to small random values. The network decides for itself, as a result of training, which stimuli are relevant to each latent construct by making some synapses more positive and others more negative via a learning function. Connections to irrelevant stimuli decrease toward zero. Transformation is central to the cognitive model as mentioned earlier. The middle layer transforms stimulus inputs into fewer latent constructs. Hence, these network models are cognitive models that are constructed from associative networks. The third or output CNN layer represents behavioral responses. At least one output neuron is needed to represent the presence (on) or absence (off) a target response. Multiple neurons can be used to represent more complex behavioral repertoires. Figure 4 contains two response nodes. Every middle neuron connects with every output neuron. The response layer corresponds to a higher-order factor structure in a SEM where 2nd-order factors load on 1-order factors. The CNN determines for itself which combination of latent constructs, middle neurons, enables which responses by making some synapses between responses and latent constructs more positive (excitatory) and others more negative (inhibitory) via a learning function. Irrelevant connections between 1- and 2nd-order latent constructs, between middle and output (response) neurons, are modified until they approach zero. Behavioral responses are therefore understood in terms of 2nd-order factors. The 2nd-order factors transform the 1-order factors thereby introducing a second level of transformation. More complex PDP CNN models contain additional levels and therefore perform additional transformations on prior transformations. Complex and powerful cognitive models emerge from such architectures.

These connectionist S–O–R models have been characterized as neural network learning theory (NNLT) because these brainlike PDP–CNN structures develop their functionality through learning at every developmental

step; they are trained rather than programmed. Tryon used the bidirectional associative memory model to satisfy all four of Jones and Barlow's and all five of Brewin, Dalgleish, and Joseph's explanatory requirements for a comprehensive understanding of posttraumatic stress disorder. NNLT accounts for the nonassociative as well as associative etiologies of phobias. NNLT provides a comprehensive understanding of how systematic desensitization and exposure therapies work. NNLT provides an integrated theoretical basis for multimodal behavior therapy. NNLT provides the missing theoretical link between genetics and behavior in behavior genetic explanations. NNLT resolves the cognitive-behavioral debate, synthesizes findings from human and animal research and resolves several other long-standing schisms in psychology.

H. Behavioral Assessment and Functional Analyses

Given this discussion, much has changed in behavioral theory and its application over the past 30 years. The field has witnessed growth, delineations of theoretical perspectives, and widespread applications. Indeed, the rate of change within the behavioral perspective has been so rapid that earlier writers such as Mahoney, Kazdin, and Lesswing questioned whether behavior therapy was even behavioral. This argument stemmed from earlier rebellions against the applications of techniques that assume the functional utility of private consciousness. However, as Mahoney, Kazdin, and Lesswing point out, Skinner too considered private mental activity to be of utility in determining functional relations with behavior, although he contended these were beyond our ability to empirically support.

Since the earlier growth period within behavior theory and therapy, it has been generally agreed that behavior therapy encompasses both behavior theory and cognitive theory. Indeed, the masthead of the flagship journal *(Behavior Therapy)* of the Association for Advancement of Behavior Therapy recently included cognitive sciences as part of the description of the area of study appropriate for that particular scientific forum. The masthead of *Behavior Therapy* reads as follows: "*Behavior Therapy* is an international journal devoted to the application of behavioral and cognitive sciences to clinical problems. It primarily publishes original research of an experimental/clinical nature which contributes to the theories, practices, and evaluations of behavior therapy, broadly defines." Although this change in criteria for submissions to this journal is a recent modification, there have been inherent signs that cognition has been part of behavior therapy since its early years.

1. Behavioral Assessment

Behavioral assessment represents a significant aspect of conducting behavior therapy. In the briefest sense, behavioral assessment allows practitioners to identify patterns of responses (both behavioral and emotional) that accompany specific stimulus events. These can be responses that are tied directly to the presenting problem, or may be associated indirectly, plausibly related but unacknowledged by the client, or acknowledged only after treatment has begun.

As is true of other systems of assessment, behavioral assessment encompasses both reliability of measure and validity of the evaluation. Two additional features should be highlighted here. Specifically, reliability of measurement within individuals (e.g., consistency of response) as well as ecological validity (e.g., similarity to experience outside the office) is emphasized in behavioral assessment. Given these two additional features, there have been numerous rigorously tested behavioral assessment methods developed. Notably, many instruments used in behavioral assessment are self-report questionnaires. However, behavioral assessment also includes self-monitoring (for behaviors, as well as thoughts and emotions as described earlier).

A major area of assessment for the purposes of identifying topographic as well as functional aspects of psychopathology includes activity measurement, which can include direct observation or minimally intrusive monitoring by electronic devices. Further, methods of assessment for psychophysiological response (such as heart rate, eyeblink startle, etc.) has formed an important part of assessment in behavior therapy.

Given the emphasis on empirically supported approaches to treatment, these assessment procedures are useful in two major ways. First, in providing a baseline evaluation, clinical interventions can be tailored to both specific areas of response as well as to severity level. Second, because these approaches to assessment are intended to be objective, each assessment represents an opportunity to objectively evaluate treatment progress and outcome at the level of the individual case. This has become increasingly important for practitioners given the rise of managed care and the need to demonstrate treatment efficacy to third-party payers.

2. Functional Analyses

Behavioral assessment provides an important basis for determining response areas to focus on in therapy, as well as both baseline and benchmarks for evaluating treatment progress. However, in conjunction with behavioral assessment, it is important to establish when, and under what conditions, particular problem

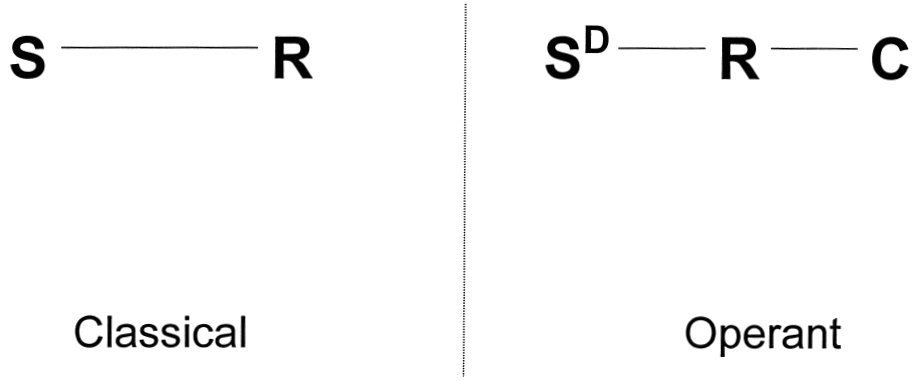

FIGURE 6 Classical and operant conditioning.

behaviors arise. This assessment is typically referred to as a functional analysis.

Functional analysis has its roots in earlier experimental traditions in behavior modification (described earlier). Specifically, functional analyses examine stimulus events that give rise to responses, with organismic variables intervening (the S–O–R perspective; see Figure 5. However, many theoreticians have felt that the S–O–R model fails to account for consequences of behavior. Therefore, a more complete accounting of how behavior is reinforced (and maintained) is encompassed by the inclusion of consequences at the end of the sequence (hence, S–O–R–C). Each unit of behavior is then conceptualized in these terms, and chains of these S–O–R–C analyses may be connected to represent behavior.

The goal following a complete functional analysis of any identified problem behavior is determining methods for altering contingencies to allow for the development of alternate behaviors. Further, as a functional analysis is developed, clinical interventions may be tailored that are intended to eliminate identified problem behaviors, either by extinction (nonreward or exposure), or by developing an incompatible alternate response. Therefore, the functional analysis is considered of utmost importance in behavior therapy as it sets the stage for how treatment is likely to proceed, what behaviors will be targeted, and what is likely to be utilized as reinforcement to foster change (see Figure 7).

III. EMPIRICALLY BASED APPLICATIONS

A. General Characteristics

Early in the history of behaviorally based treatment, researchers and clinicians sought interventions that were based on sound experimental procedures and that produced observable change. Collectively known as behavior therapy, this field flourished under this banner and grew to its current status of cognitive-behavior therapy. It is then a sign of growth that at the present time, many researchers have formulated treatment manuals that are based on a collection of specific interventions, arranged in a meaningful sequence, that address specific behavior problems.

Professional ethics requires psychologists to use empirically supported treatments as well as psychometrically validated tests. The call for restricting clinical practice to empirically supported treatments did not come until after most clinicians abandoned earlier behavior modification practices of performing a functional assessment of the target problem followed by an individually tailored treatment based on extraordinarily well documented conditioning principles. Absent these two practices, cognitive therapists turned to validating multisession treatment packages for various disorders. Although this was and is a constructive practice, the earlier approach of functional assessment followed by intervention based on conditioning principles should not be overlooked as empirically informed practice. The roots of such practice are deeply ingrained in behavioral therapy, beginning with Gordon Paul's famous quote as follows: "What treatment, by whom, is most effective for this individual with that specific problem, and under what set of circumstance, and how does that come about?" Tryon republished a system of behavioral diagnosis that guides behavioral observation and interviewing to identify conditioning principles that maintain behavioral excesses or deficits and leads prescriptively to behavioral treatments based on empirically validated conditioning principles. This is incontrast to the current rush to develop treatment manuals, whereby the credo is what interventions, by

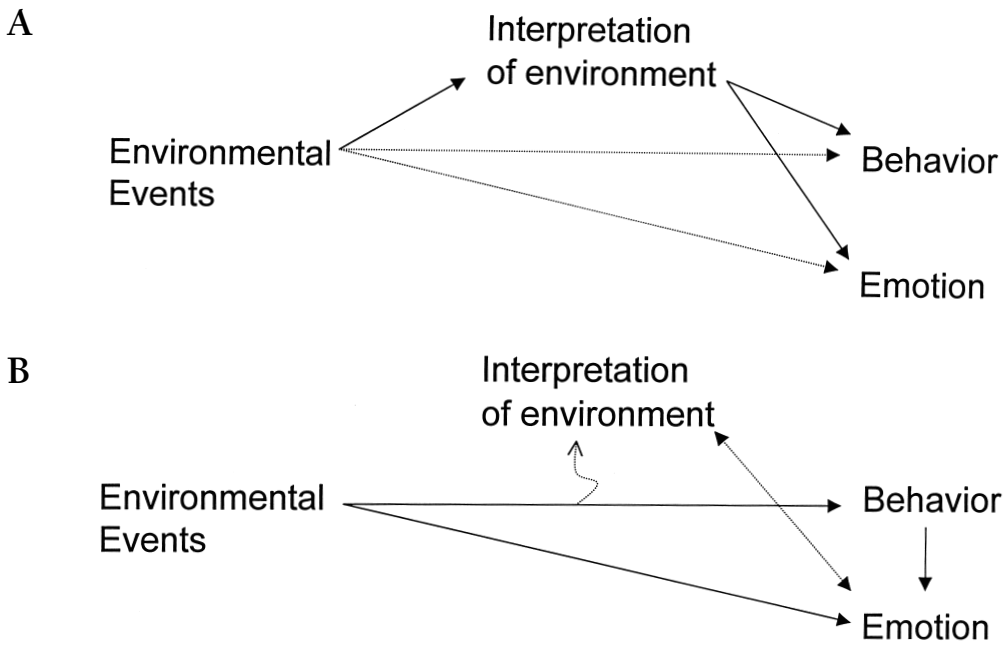

FIGURE 7 Cognitive-behavior therapy vs. Radical-behavior therapy. (A) Cognitive-behavior therapy, solid arrows indicate primary relationship emphasis. (B) Radical behavior therapy, solid arrows indicate primary relationship emphasis; double arrow indicates correlative relationship. Single arrows indicate causative relations.

which therapist, are most effective in which sequence with what diagnoses. The question of how it comes about or under what circumstances have been deemphasized in favor of packaging.

Prescriptive treatment based on known behavioral patterns has not followed such a linear trajectory from functional analysis to empirically sound intervention and back to behavior analysis. The advent of treatment manuals rests on a fundamental assumption: treatment packages have been developed around diagnoses obtained from the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*. This is a surprising development in some ways, because early behavioral interventions (and current approaches based on radical behaviorism) have not endorsed psychiatric nomenclature. Instead, the emphasis has always been on developing a functional analysis of the problem behaviors (including functional assessment of cognition), and developing interventions that address these functional relations.

If this is the fundamental method of assessment and intervention then how did so many cognitive-behaviorally oriented treatment manuals develop that are centered on psychiatric diagnosis? Researchers, like most professionals, are frequently responsive to market demands. There currently exists essentially one widely used diagnostic nomenclature in mental health settings, the *DSM*. Unlike other nomenclatures, however, the *DSM* is not a guide that allows for one to determine treatment (or a meaningful heuristic for treatment) for a given diagnosis. However, practitioners are beholden to this framework in order to communicate with other mental health practitioners, and for third-party payers. Given this state of affairs, behavior therapy researchers have sought generalities within specific disorders rather than generalities within sets of interventions aimed at typical behavior patterns. To further complicate matters, most practitioners do not readily integrate research findings into their daily practices. Therefore, it is understandable why behaviorally oriented practitioners and researchers would focus on treatment manuals as a means of integrating research findings into their practices, even if these are based upon a diagnostic scheme that runs counter to the philosophy of traditional behavior therapy.

B. Characteristics of Manualized Interventions

A wide range of psychological conditions has come to the attention of researchers wishing to develop empirically supported intervention packages. The range of disorders varies, from depression to simple phobia,

headache to childhood enuresis, sexual dysfunction to sex offenses. A detailed list of empirically supported treatment is provided by Hayes, Barlow, & Nelson-Gray in their 1999 book. Criteria have been developed for three levels of empirically supported interventions: well-established treatments, probably efficacious treatments, and experimental treatments. These criteria were developed by a task force formed by Division 12 of the American Psychological Association whose mandate was to formulate both criteria for determining efficacious treatments and to identify treatments that have been established.

The typical treatment manual that relies on cognitive-behavioral procedures is a loosely associated set of empirically sound procedures, but with little in the way of a conceptual core. Although it is not our intention to single any one manualized approach out of the larger set, one illustration of this state of affairs is dialectic behavior therapy (DBT), which has been developed specifically for borderline personality disorder. An examination of the skills manual shows that there are elements of social skills training (especially interpersonal assertiveness), mindfulness exercises, exposure for fear reduction, and cognitive disputation to name a few. This has all been neatly packaged in a user-friendly format specifically formulated for the practicing clinician. The results of this packaging have indeed been encouraging, and the popularity of this approach has been impressive. On the other hand, there is no conceptual feature that unifies these interventions, and the application for borderline personality disorder may suggest as much about the syndromal validity of the diagnosis as it does for the treatment packaging (i.e. necessary components for effectiveness).

We highlight this particular treatment as it has been shown effective with a notoriously challenging population, was developed around a specific *DSM* diagnosis where the label conveys virtually nothing about how to proceed with treatment, the actual symptoms and typical presentation of the disorder are heterogeneous, and treatment entails a conglomeration of empirically established interventions from disparate branches of behavior therapy. Further, clinicians have embraced this approach and have called for more intensive research and dismantling studies.

Some treatment manuals do follow a conceptual core, although these have been less common. There are some noteworthy examples. One is a recent manual for the cognitive treatment of pure obsessions from Freeston et al. in 1997. In this case, the functional component is that individuals with pure obsessions suffer from problems in appraising situations for their personal responsibility, which in turn creates difficulties in determining relative risk associated with specific behavioral action. However, even in this case, there is some reliance on unrelated, noncognitive interventions such as exposure-based intervention aimed purely at fear reduction.

Treatment manuals, whether following a specific diagnosis, or designed for a more general user format (such as ACT), do offer a greater value: dissemination of effective interventions. Because most manuals no longer adhere to the "session-by-session" format, the applicability to everyday practice has been greatly increased. Other barriers to dissemination have begun to tumble as the field offers training initiatives and has developed practice guidelines for specific conditions. The necessary future directions for empirically supported treatment manuals include research into the effectiveness of components in sequence for particular conditions and "dismantling" research, where components are evaluated for the specific contribution to treatment outcome. That is, to what extent are specific components of a treatment package necessary.

IV. SUMMARY

It has been our intent to survey the literature that describes the conceptual and empirical foundations that constitute behavior therapy. This broad base of literature has grown rapidly over the past 50 years, with the greatest growth witnessed in particular over the past 20. Although the founders of the behavior therapy movement did not explicitly include cognition, this has become so fundamental to the approach that it is virtually impossible to disentangle cognitive from behavioral when discussing this approach to therapy.

A more recent trend in the empirical status of behavior therapy has been the development of empirically supported treatment manuals. These manuals, although useful for describing a template for developing an intervention for problems presented in clinical practice, may be more useful when examined as part of an empirically supported practice. That is, as clinicians we would expect a scientific process be utilized when developing a treatment plan for clients, and reliance on empirical findings to inform practice. This is consistent with the original plan described in the oft-cited Bolder model in Raimy's work in 1950. The behavioral approach to therapy embraces this position, and by promoting empirically supported practices (and not only manuals) we can come closer to implementing this model.

See Also the Following Articles

Beck Therapy Approach ■ Behavior Therapy: Historical Perspective and Overview ■ Cognitive Behavior Therapy ■ Classical Conditioning ■ Coverant Control ■ Education: Curriculum for Psychotherapy ■ Gestalt Therapy ■ History of Psychotherapy ■ Operant Conditioning ■ Research in Psychotherapy

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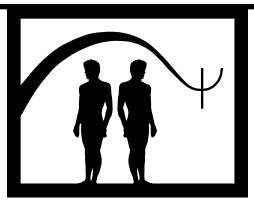

Bell-and-Pad Conditioning

Daniel M. Doleys
Pain and Rehabilitation Institute
Birmingham, Alabama

Brad B. Doleys
Mt. View Hospital, Southeastern Psychiatric Institute
Montgomery, Alabama

I. Development of Continence
II. Treatment of Nocturnal Enuresis
III. Urine Alarm
IV. Summary and Recommendations
Further Reading

GLOSSARY

alarm schedule The percentage of enuretic events that trigger the urine alarm; continuous equals 100%.

anti-diuretic hormone A hormone that reduces the production of urine.

arousability The ease with which an individual can be aroused from sleep.

behavioral analysis The application of conditioning and learning principles/theory to the understanding of a behavior or response.

bell-and-pad A mechanical device incorporating a urine-sensitive pad connected to an alarm system designed to awaken the child immediately upon urine contacting the pad. Also referred to as urine alarm.

buzzer ulcers The presence of burn marks created by prolonged contact with an "active" urine alarm pad. Frequent causes include inadequate amount of urine to trigger the alarm, urine alarm apparatus too sensitive to be activated, weak batteries, alarm of insufficient intensity to arouse the child.

continence The demonstration of control over bowel and bladder activity. In the context of nocturnal enuresis generally defined as 14 or 21 consecutive nights without wetting the bed.

depth of sleep The stage of sleep as measured by electroencephalographic activity; generally 1 of 4 stages of sleep, variant stage 1 is lightest sleep and stage 4 is deepest sleep.

dry bed training (DBT) A procedure in which the child is involved in the cleaning and remaking of the bed following an enuretic episode.

desmopressin acetate (DDAVP) An anti-diuretic hormone given nasally in the treatment of nocturnal enuresis.

enuresis Wetting of the bed (nocturnal enuresis) or pants during the day (daytime enuresis) at a frequency sufficient to cause concern on the part of child and/or parents and occuring at an age by which daytime and nighttime continence is normally achieved.

full cleanliness training (FCT) A procedure that requires the child to participate in cleaning himself and his clothing following an enuretic episode. This can include taking a bath and hand washing of wet clothing. Duration of cleaning can range from 5 to 20 minutes or more.

imipramine An antidepressant that has the side effect of reducing bladder activity and therefore frequently used in the treatment of enuresis; trade name Tofranil.

intermittent alarm The programming of the urine alarm to be activated by less than 100% of wetting episodes.

overlearning A procedure frequently used in conjunction with the urine alarm that requires the child to consume enough liquid prior to bedtime to ensure at least one episode of voiding during the night.

oxybutynin An anti-cholinergic preparation that results in the relaxation of smooth muscles therefore reducing bladder contractions and activity; trade name Ditropan.

relapse The reappearance of a behavior previously altered by therapy. In the context of nocturnal enuresis relapse is usually defined as wetting the bed on one or more nights per week for 3 consecutive weeks.

retention control training (RCT) A procedure that requires the child to refrain from urinating in the presence of the

urge to do so for a progressively longer period of time; once voiding is initiated the child practices stopping and starting the stream by use of muscle control.

spontaneous remission The rate at which a behavior or response improves without systematic application of treatment.

twin-signal alarm An alarm device that presents a brief tone immediately following the enuretic event and a second tone approximately 1 minute later.

urine alarm See bell-and-pad.

I. DEVELOPMENT OF CONTINENCE

The ability to go through the night without wetting the bed, whether by postponing voiding until the morning or awakening and voiding during the night, is referred to as nocturnal (nighttime) continence. There are four stages or steps in the acquisition of mature bladder functioning necessary for nocturnal continence. These include (1) demonstrated awareness of bladder fullness (1 to 2 years); (2) ability to retain urine voluntarily (3 years); (3) capacity to start and stop the flow of urine in mid-stream (4.5 years); and (4) the ability to initiate and terminate the flow of urine at any degree of bladder fullness (approximately 5 years).

Most children achieve bladder and bowel control in a fairly systematic and reproducible fashion: (1) nocturnal bowel control; (2) daytime bowel control; (3) daytime voiding control; and (4) nighttime voiding control. In infancy voiding occurs as a result of a spinal reflex arc up to 20 times per day. This continues for the next couple of years with voluntary control of distal sphincter mechanism gradually available by the age of 3.

Enuresis is defined as the involuntary discharge of urine after the age at which bladder control should have been achieved, in most cases 5 years of age. Enuresis can occur at night (nocturnal enuresis [NE]) or daytime (diurnal enuresis), or both. NE can be further subdivided as primary (continuous), and secondary (discontinuous). The term primary NE is applied to children who have never achieved urinary continence for at least 6 continuous months. Secondary NE refers to those children who achieved dryness only to later relapse to wetting. The majority of NE cases, some 90%, are primary enuretics.

Other descriptors of NE behavior include number of wet nights per week, and number of wets per night. Some children will arouse upon wetting and others will not. A minority of children with NE are considered polysymptomatic, that is, they have coexisting urinary tract infections, dysuria (painful urination), frequency (higher than normal episodes of voiding), and/or urgency (persistent urge to void). Children evidencing nocturnal enuresis in the absence of any other such symptoms are referred to as monosymptomatic. Approximately 10 to 20% of all 5-year-olds wet their bed at a frequency sufficient enough to be considered as NE. In most cases this involves wetting the bed one or more nights per week or at a level sufficient to cause concern on the part of the child and/or parents. Analysis of the "natural history" data suggests that approximately 15% of NE cases resolve each year such that only 2 to 4% of 12- to 14-year-olds are considered to have NE. There does not appear to be any confirmed characteristics that accurately predict which children will become dry and which will not. Some data favor those that wet less than each night, awaken in response to wetting, are motivated but not overly anxious to achieve continence, are free of comorbid psychological/behavioral problems, and live in a supportive community.

Several factors have been deemed potentially causative in NE. Included among these are small functional bladder capacity, "deep sleep," "arousal disorder," genetics, maturational delay, allergic reaction, abnormal anti-diuretic (ADH) activity, and psychological disturbance. However, detailed medical examination in most cases of NE are unrevealing for any medically related pathophysiology. Recent emphasis has been placed on maturational delay, sleep disorder, and ADH abnormality. In some cases environmental/social factors may be involved. A study by J. S. Wekke, for example, noted a higher incidence of nocturnal enuresis in special education children mainstreamed in the Dutch educational system compared to those who were not.

Genetics also play a role in NE. When both parents have had a history of enuresis there is a 77% probability that one or more of their children will be enuretic. When only one parent has a history of enuresis there is a 44% risk compared to a 20% chance of a child being enuretic when neither parent was. This possible genetic abnormality may manifest itself by a developmental delay in central nervous system functioning that could impact on the child's ability to inhibit contractions and/or maintain external sphincter contractions during the night.

It is only natural to believe that NE may be a result of disturbance in sleep. Research in this area, however, has indicated that it is unlikely that there are sleep abnormalities in enuretic patients or that enuresis begins at any particular stage of sleep. In fact, children have been noted to wet their bed in all stages of sleep although it was more likely to occur in the deeper stages. Thirty-six percent of enuretic children were found to be hard to

awaken compared to only 3.6% of nonenuretic children. The ease with which a child can be aroused appears to be a different concept and involve different mechanisms than those related to the "depth of sleep." Although "arousability and depth of sleep would appear to be related they may also exist independent of one another.

II. TREATMENT OF NOCTURNAL ENURESIS

Treatment of NE falls into two major categories, psychological and medical. By far the most common medical treatment involves the use of various medications including desmopressin acetate, imipramine, and oxybutynin. Behavioral/psychological treatments have ranged from traditional psychotherapy to the use of conditioning methodology. Probably the oldest and most researched of these procedures is the urine alarm (also referred to as bell-and-pad or moisture alarm) approach. The chapter will focus on the data related to the urine alarm in the treatment of children with NE found to be free of pathophysiologically relevant abnormalities. The data and information have been gathered from literature review and the authors' previous research and experience.

III. URINE ALARM

The potential effectiveness of an alarm device to awaken the child and prevent nighttime wetting was described by M. Pfaundler in 1904. The device was initially installed in an effort to facilitate nursing care. The concept of a urine alarm or bell-and-pad procedure was, however, popularized by Hobart Mowrer in 1938. The bell-and-pad instrumentation has been modified over the years with advanced electronics in an effort to minimize many of the early hazards such as buzzer ulcers.

The classic urine alarm is composed of a sensing device that can be activated by a small amount of urine leading to the triggering of some type of an alarm, usually auditory. The alarm, of necessity, must be of sufficient intensity to awaken the child. In some cases it may have to exceed 80 to 100 decibels. Traditionally, this device was made of two separate thin and pliable metallic-like sheaths approximately 36 inches square separated by an absorbent cloth of similar dimensions that could be placed on the bed and upon which the child would sleep. As urine was passed it was absorbed into the cloth sheeting completing a circuit and activating a battery-operated alarm.

Subsequent modifications of the urine alarm made use of a single rubber-type pad with embedded "electrodes" wherein the circuit was completed when urine bridged the gap, usually 1 to 2 inches, creating a complete circuit. The use of more sophisticated electronics has eliminated the problem of buzzer ulcers found in earlier devices. These ulcers were created when the child maintained contact with wet spots while electric current was passing through the pad.

In an effort to minimize the likelihood of the child wetting off the pad and therefore not triggering the system, sensors were developed that could be attached to the inside of the child's underwear or nighttime garment. This sensor was connected to a miniature alarm attached to the child's wrist, arm, or garment. In other instances, the sensor was embedded in a "body worn" garment. One of the more recent modifications has made use of an ultrasonic device. This device detects bladder fullness and is thus capable of awakening the child at a point of bladder contractions prior to the act of micturition. The cost and technical aspects of the system, however, may limit its general applicability.

The most common alarm or stimulus used is an auditory one. The intensity should be adjustable and sufficient to arouse the child. "Arousal conditioning" or other adjunctive therapies may be required for the "deep sleeper." A light versus auditory stimulus has been used in treating deaf children. Others have explored the use of telemetric or broadcasting arrangements to eliminate the wire running from the pad to the alarm. In some cases a vibratory or occilatory stimulus was activated inside the nighttime garment in the hope it would awaken the child.

Other equipment issues that have been investigated included cost, sensitivity of the device, maintenance, false alarms, and durability. A ratio programmer that allows the alarm to be activated at a predetermined percentage of wetting episodes; 50% or 70% has been tried with some children. The continuous alarm, however, seems more preferable. Smaller "miniature alarms" that fit on the child's wrist can also be used. In 1970 there were no fewer than 10 different type of alarm systems available. Many of these could be obtained through commercial entities such as Montgomery Ward, Sears and Roebuck, Enuretone, etc.

A. Behavioral Analysis

A behavioral analysis of nocturnal enuresis focuses on the role of environmental conditions and appropriate learning experiences or conditioning. Treatment

emphasizes the development of bladder fullness as a discriminative cue enabling the child to inhibit voiding until the appropriate stimulus (bathroom) is present. Additionally, bladder fullness would come to be an adequate stimulus for arousal from sleep. This approach highlights the "learned" nature of the desired response (nighttime continence) and attributes the absence of the response to habit deficiencies, poor learning experiences, and lack of appropriate reinforcement contingencies.

A behavioral analysis does not ignore the potential contribution of psychological abnormalities such as childhood depression or anxiety. Rather, the behavioral analysis emphasizes the application of behavioral theory and principles of conditioning/learning to the treatment of nocturnal enuresis in place of more traditional verbal psychotherapy. The latter has not been found to be a very effective approach in treating nocturnal enuresis. In addition, behavioral analysis assumes that there is no underlying medical pathophysiology causing the nocturnal enuresis that would interfere with the use and potential effectiveness of behavioral therapies.

Some theories have been put forth to explain nocturnal enuresis and the outcome of urine alarm or bell-and-pad treatment. One such theory utilizes a classical conditioning paradigm. In this theory an event such as the urine alarm is thought to function as an unconditioned stimulus (UCS) awakening the child and reflexively inhibiting micturition or urination, the unconditioned response (UR). With repeated trials the conditioned stimulus (CS; bladder distention, detrusor muscle contraction, sphincter muscle relaxation), would produce the same inhibiting response and arouse the child (the conditioned response or CR).

Some researchers have felt that the classical conditioning paradigm did not predict the sustained dryness that is observed after treatment. They have proposed an instrumental conditioning model instead. In this model the bell or buzzer is viewed as an aversive or undesirable event that provides the basis for the development of a "conditioned avoidance response" of awakening and contracting the sphincter muscles to prevent voiding. The persistent dryness/continence that is observed following successful treatment is therefore explained in terms of the well-known resistance to extinction that is observed in conditioned avoidance responses. It is further thought that detrusor muscle relaxation and contraction of the sphincter muscles were an important part of this total response and not necessarily just the awakening of the child.

Keith Turner and his colleagues proposed a different theory. They maintained that the enuretic child's response during treatment was indeed an "instrumental response" but felt that the process could be more parsimoniously accounted for in terms of a punishment (passive avoidance) paradigm. They reasoned that the bell or auditory stimulus served as a type of punishment suppressing those responses, such as nocturnal voiding, that preceded or caused it.

Another behavioral approach to the problem of nocturnal enuresis has involved the use of a functional analysis. This analysis involves the application of operant conditioning principles. It views toileting and the acquisition of related behaviors such as nighttime dryness as an operant conditioning process in which social and motivational factors play an important role. The use of a functional analysis has prompted the development of therapeutic approaches that emphasize positive reinforcement for appropriate behavior, repeated rehearsal of nighttime toileting, and the application of affective negative reinforcement immediately following the enuretic event. For example, a positive reinforcement, such as a special treat, might be given for a dry night whereas wetting would result in the child having to participate in changing the wet bed.

These behavioral or conditioning approaches to nocturnal enuresis have been criticized on the basis that they overlook enuresis as a symptom of sleep or underlying problems that, even though the child may become dry at night, will probably manifest itself in some other fashion. This has frequently been referred to as a "symptom substitution theory." Even though this theory seems to make some sense, it has not proven valid. In fact, children have been noted to be happier, less anxious, and more likely to assume responsibility therefore acting in a mature and confident fashion once the bedwetting has been resolved. A small minority of patients have reported anxiety, bad dreams, and other emotional responses when first exposed to the bell-and-pad. However, these problem responses generally diminish as treatment continues. These emotional responses, in fact, may be likened to conditioned emotional responses or the extinction burst phenomenon frequently observed in the conditioning/learning literature.

B. General Effectiveness

In 1965 Gordon C. Young reported on 18 studies conducted between 1938 and 1964 involving 1635 children treated with the urine alarm. Success rates with the urine alarm ranged from 63 to 100%, averaging 83%. Relapse rates ranged from 9 to 52%, averaging 23%. A separate study in 1971 reported a 67% cure rate

in 83 children within 3 months of the onset of treatment but 92% at the end of 12 months. Other studies have reported up to 85% of children becoming dry in response to the urine alarm within 4 months of starting the therapy, with the majority in the first 2 months.

In a more recent review published in 1977, Daniel M. Doleys systematically evaluated the studies that were reported between 1960 and 1977. The review emphasized studies that provided (1) quantitative data, (2) between-group comparisons, (3) procedural descriptions sufficient to allow replication, and (4) follow-up data. Ther was total of 628 subjects. Ninety-five percent were between the ages of 4 and 15, nearly 75% were males, and the majority were primary enuretics. By applying the individual researcher's own criteria for successful treatment, which ranged from 7 to 21 consecutive dry nights, 75% of the children treated were considered successful. Treatment duration ranged from 5 weeks to 12 weeks. Forty-one percent of the children on whom follow-up data were available relapsed, the majority occurring within 6 months of treatment. Retreatment data available on 80 relapsed subjects indicated that 54 (68%) were successfully retreated.

The overall 75% success rate noted in this 1977 review was somewhat less than the 80 to 90% reported in some of the individual studies. Similarly, the 41% relapse rate was somewhat higher. Systematic reviews beyond that of 1977 continue to report success rates of approximately 70% with 20 to 30% of children relapsing. These success rates were similar when a large bell-and-pad, mini-alarm, oscillator type alarm, and alarm awakening only the child versus one awakening the child and the parents were compared. Some 60 to 80% of the children that were "cured" learned to sleep through the night while the remaining stayed dry by awakening and going to the bathroom. About 30% of the enuretic children that started treatment with the urine alarm dropped out. The vast majority of these dropouts occurred in the first few weeks of treatment.

The standard urine alarm procedure has been compared to a variety of other types of therapies. These other therapies included the use of a placebo tablet, children that received no treatment, a urine alarm that was disconnected but placed on the bed, supportive psychotherapy, advice and encouragement, and of course, "spontaneous remission." In each of these cases the urine alarm was found to be superior. There was some evidence that giving advice and encouragement helped some but a small number of children. Subjects involved in passive therapies, which were defined as instrumentation, surgery, medication, and bell-and-pad, versus those actively involved in treatment consisting of reinforcement, reality therapy, response shaping, and sensation awareness/retention control, did not do as well; however, the difference was not statistically significant. Time to criterion and group size were not well controlled and create methodological concerns that make interpretation of the results difficult.

C. Procedure Modifications

A number of variables in the basic urine alarm protocol have been experimentally manipulated to evaluate their impact on outcome. The effect of delaying the onset of the buzzer/alarm for 3 to 5 minutes after the child wet the bed has been examined. This delay alarm group did better than a group that was not treated by the alarm but did not do as well as the no-delay group. In addition, there was a higher relapse rate in the delay group. It is therefore concluded that it is best that the alarm sound as quickly as possible after the child begins wetting the bed. It is interesting, however, to note that there was some improvement in those children when the urine alarm was placed on the bed but never activated. Factors responsible for this are frequently referred to as "nonspecific factors" and help to remind us that we may never be able to totally explain how and why a given treatment works for a specific child.

The "schedule of alarm presentation" refers to the percentage of nighttime wets that will activate the alarm system. In the traditional protocol, referred to a "continuous" alarm, each bedwetting episode activates the alarm. A 70% variable ratio schedule indicates that "on average" 70% of the wets triggered the alarm. In some cases the percentage of wets triggering an alarm can increase or decrease during the period of treatment. In general the continuous alarm was more effective in terms of the duration of treatment and percentage of children achieving continence. The overall relapse rate, however, seemed to be somewhat less when the alarm was programmed on a more intermittent basis.

A rather unique apparatus is one that is referred to as the twin-signal apparatus. This alarm systems presents a brief auditory tone at the onset of wetting and a second tone after 1 minute. The addition of the second tone is thought to help to increase the child's response to the alarm system. Although this protocol is effective there does not appear to be any distinct advantage to the twin signal alarm when compared to the one signal alarm.

Another modification to the standard urine alarm procedure involves the use of what is referred to as overlearning. In the overlearning protocol the child

consumes 32 ounces of liquids 1 hour before bedtime. This increases the likelihood that the child will have one or more wetting episodes during the night. It was believed that this would help to increase the number of "conditioning trials" during the night, which could result in a faster rate of improvement. Furthermore, consuming this amount of liquid may help the child to expand his or her control over higher levels of bladder fullness and detrusor muscular activity. In fact, when overlearning was added to the standard alarm procedure the percentage of children that became dry was comparable but the relapse rate was 13% in the overlearning group compared to 35% in the standard procedure. One research study compared the use of overlearning to a continuous versus intermittent alarm group. The percentage of children achieving continence was comparable; however, the percent of relapse was less in the overlearning group.

From a theoretical perspective these data supported the interpretation of relapse as similar to the extinction of a learned response and the intermittent schedule of alarm as a process resulting in greater resistance to extinction compared to continuous procedures. The overlearning procedure appeared to help to confirm a "generalization" hypothesis in which the conditioned awakening became associated with varying degrees of bladder fullness. The overlearning modification also produced a condition similar to "massed" practice in which trials occur more often and in closer proximity.

D. Urine Alarm Plus Medications

In the 1977 review by Daniel M. Doleys, which was referred to earlier, several medications including dexamphetamine sulfate (Dexadrine), methamphetamine hydrochloride (Methadrine), and imipramine (Tofranil) were used in the treatment of nocturnal enuresis. When dexamphetamine, methamphetamine, or imipramine was combined with the standard urine alarm protocol the duration of treatment was shorter although sometimes by a very small number of nights. However, the relapse rate was higher. In an analysis of the data, Gordon Young and Keith Turner indicated that the shorter duration of treatment was probably not clinically significant and amounted to perhaps one or two "trials." This fact, combined with the indication of the possibility of misuse of the drugs by children in the absence of proper safeguards, resulted in the conclusion that there was little distinct advantage to adding these preparations to the urine alarm procedure.

Several new medicines have been developed since 1977. Desmopressin acetate (DDAVP) is a synthetic analogue of arginine vasopressant (an anti-diuretic hormone.) It has very specific anti-diuretic effects with a relatively long half-life and is administered through nasal spray. DDAVP reaches its maximum plasma concentration in about 45 minutes and has a 4 to 6 hour half-life. The use of DDAVP is based on the assumption that there is a deficit in the anti-diuretic hormone in enuretic children. Some believe that there is an inadequate production of this anti-diuretic hormone during the night, thus resulting in nighttime wetting. The introduction of an anti-diuretic hormone such as DDAVP, therefore, allows for a reduction in the amount of urine permitting the child to sleep during the night without wetting.

A second newer medicine is called oxybutynin (Ditropan). Oxybutynin is an anticholinergic preparation that has direct effect on smooth muscle relaxation. This effect reduces the bladder's ability to contract. If the bladder does not contract as much the child would then be allowed to sleep through the night uninterrupted by bladder activity.

Both DDAVP and Ditropan have been found beneficial in producing a more rapid onset of nocturnal continence. However, there is an almost 100% probability of relapse when these medicines are discontinued. They have found favor in combination with the urine alarm to help to increase motivation and compliance by prompting early success when used in the first few weeks of treatment. When used by itself, DDAVP was associated with success rates of only 42% compared to that of the urine alarm's 78%. If used, these medicines should be gradually discontinued. Both of these medicines may be used on a periodic basis to minimize the enuretic child's avoidance of reinforcing social activities such as overnight visits with friends, camping, and so forth.

E. Correlates of Success and Failure

As in any type of therapy it is important to identify those factors that seem to be associated with success and failure. It seems logical to assume that the acquisition of control over pelvic floor musculatures involved in the inhibition of voiding would be associated with successful treatment. Such muscular activity can be evaluated by the use of surface electromyographic studies (sEMG). In fact, children who were successfully treated for nocturnal enuresis were found to have a higher peak voltage when compared to those that failed. Furthermore, when measured prior to treatment, successful children had lower peak voltage (1.9 microvolts versus 2.7 microvolts). This observation encouraged

Arthur Housts to develop what he referred to as the "full spectrum treatment protocol." This type of treatment included a urine alarm that was worn by the child in the underwear, awakening the child during the night, the child remaining in bed until he or she is fully conscious with the alarm ringing, retention control training (Kegel exercises), and the use of overlearning, as described above. Retention control training involved the child withholding voiding during the day for progressively longer periods of time. When voiding does occur, he or she is instructed to periodically interrupt the flow of urine through the exercise of muscle control. Another component of the full spectrum treatment protocol was a parent manual explaining all aspects of treatment and an explicit behavioral contract regarding parent and child compliance. Housts reported a 75% success rate over 12 weeks of treatment with nearly 60% of the children remaining continent at 1 year.

Success rates can sometimes be increased by the use of negative reinforcement. One example is the use of a star chart. In this case a star is provided when the child awakens in response to the urine alarm and goes to the bathroom but one is lost if he or she does not awaken. Having children participate in cleaning themselves and the bed and remaking the bed following each enuretic event is another example. Such mild forms of "punishment" may enhance the child's motivation.

The use of DDAVP in conjunction with the urine alarm may help to reduce the dropout rate and therefore increase the number of children that are successfully treated. The effect of adding DDAVP to the urine alarm tends to occur in the first 3 weeks of treatment. Beyond this there appears to be no advantage over the use of the urine alarm alone. When medications such as DDAVP or imipramine are used to achieve dryness it is recommended that the urine alarm be re-instituted after 6 months while tapering the child from the medications. Success rates can also be enhanced by treating other toileting problems such as diurnal enuresis or encopresis (bowel incontinence) prior to introducing the urine alarm for nocturnal enuresis.

There appear to be a variety of factors that are associated with treatment failures. A high frequency of wetting prior to treatment and a tendency for parents to punish the child for enuretic episodes tend to correlate with failed treatment. Children that tend to display a good deal of deviant behavior and those living in a dysfunctional family environment do not do well. Maternal anxiety, failure of the child to awaken in response to the alarm, the absence of parental concern over nighttime wetting, the absence of any distress on the part of the child over nighttime wetting, low parental education, and multiple wetting episodes during a given night have also been noted. One of the most commonly found reasons for failure is the lack of parental cooperation. A positive family history for enuresis, lack of treatment progress, and an intolerant parental attitude tended to predict early withdrawal from treatment.

Several other factors appear to have been associated with treatment failure, whether defined as early withdrawal from treatment, noncompliance of treatment procedure, or discontinuation of treatment by the professional because of a disproportionate amount of time without progress. These included elevated scores on behavior checklists indicating an abnormal level of inappropriate behaviors along with indications of general family distress. Noncompliance by parents, which tends to be highest in the first 3 weeks, unsatisfactory housing, poor maternal education, and low socioeconomic class were also noted. Parents viewing the child as withdrawn or socially incompetent and lack of parental concern seemed relevant as well.

A number of maneuvers have been found to increase the chance of success in the application of the urine alarm. These included the use of a "dummy" run with the child; allowing the child to do all the work but the parent to supervise; keeping a daily diary; no restriction of liquids; the wearing of underpants rather than pajamas to bed; the child testing the alarm prior to going to bed and rehearsing covertly or aloud the subsequent steps; overlearning; and parental praise and encouragement. In their 1998 summary of predictors of successful outcome Gretchen Gimple and colleagues noted the following: fewer wet nights pretreatment, older children, absence of daytime enuresis, parental support, and negative child perception in the absence of any significant psychiatric/psychological problem. Children with a "negative self-image" and who were exposed to parental intolerance had poor outcomes.

IV. SUMMARY AND RECOMMENDATIONS

The urine alarm has assumed and maintained a position of prominence in the treatment armamentarium for nocturnal enuresis. The apparatus generally consists of some type of sensing device activated by the presence of urine. The device is placed on the bed. The child is awakened by a bell, buzzer, or some other stimulus designed to initiate involuntary or voluntary suppression of voiding until the child reaches the

bathroom. The child then returns to bed and with parental help prepares the system by resetting the alarm and returns to sleep. In general, 70 to 90% patients become dry with a 15 to 40% relapse. Treatment duration varies from 5 to 40 weeks with a recommended continuation of treatment until 21 consecutive dry nights are accomplished. Two or more wets in 7 consecutive days have been used to determine a relapse. It is recommended that children be followed for at least 24 months following the achieving of continence even though the highest percentage of relapse occurs in the first 6 months.

The use of the urine alarm has demonstrated superiority to placebo, psychotherapy, nighttime awakening, and counseling. Medications including imipramine, amphetamine derivatives, DDAVP, and oxybutynin have contributed to increased frequency of dry nights during the early part of treatment but have not been associated with an overall increase in percentage of children that become continent. A high rate of relapse, approximately 100%, occurs upon discontinuation of the medication. Consideration needs to be given to the risk profile and cost when applying these medications.

Alarm modifications have come in various types. The devices are more sensitive and appear to have resolved concern over buzzer ulcers. Some are body worn with sensors placed in the underwear. In addition to an auditory or visual stimulus there has been the examination of a vibratory stimulus. Experimental procedures involving an ultrasonic device have been explored. The size of the alarms have been reduced because of improved technology. Treatment components for the urine alarm have remained relatively unchanged. The addition of overlearning, the use of full cleanliness training in which the child assists in cleaning the bed, and arousal conditioning remain standard aspects of the procedure.

See Also the Following Articles

Arousal Training ■ Nocturnal Enuresis: Treatment ■ Retention Control Training

Further Reading

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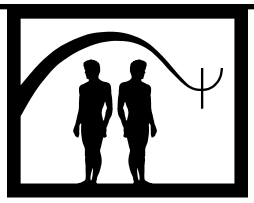

Biblical Behavior Modification

Linda Wasserman

University of West Florida

I. Description of Treatment
II. Theoretical Bases
III. Empirical Studies
IV. Summary
Further Reading

GLOSSARY

aversive counterconditioning A specific application of respondent conditioning that causes behavior change when a stimulus that elicits an undesired response, is consistently paired with an aversive stimulus that elicits an incompatible response. The result is that, due to such pairing, the undesired response is eventually reduced or eliminated.

cognitions A person's thoughts, beliefs, perceptions, and images.

contingency contracts Behavioral contracts between individuals who wish behavior to change (e.g., parents or teachers) and those whose behavior is to be changed (e.g., children or students).

covert assertion A behavior modification technique that causes behavior change when a person says forceful or assertive things to himself or herself (e.g., "I am brave. I am strong."), statements that often contradict the actual situation or problem.

desensitization The gradual counterconditioning of anxiety with an incompatible response such as relaxation.

modeling A behavior modification technique that causes behavior change when a person observes a behavior in one or more others and then imitates or learns that same behavior or behavior strategy.

operant conditioning A behavior modification technique that causes behavior change by building associations between certain behaviors and the consequences of those behaviors (e.g., a particular behavior is either rewarded or punished and thus increases or decreases in probability).

respondent (classical) conditioning A behavior modification technique that causes behavior change when a particular stimulus is paired or associated with a second stimulus (the unconditioned stimulus). As a result of the association, the first stimulus (the conditioned stimulus), then comes to elicit a response (the conditioned response) it did not previously elicit. Eventually, the conditioned stimulus elicits the conditioned response without the presence of the unconditioned stimulus.

semantic desensitization The process of counterconditioning the negative aspects of certain words related to unpleasant situations or a person's phobias with more pleasant images or thoughts.

Therapists and their clients alike want effective means to promote desired changes in behaviors, attitudes, and coping skills. Biblical behavior modification offers a unique way for therapists to help their Christian clients do just that. By matching behavior modification techniques to the clients' beliefs or to Biblical principles (the usual foundation for those beliefs), the therapist not only helps produce the desired changes in behavior, but also builds a relationship of trust and respect between the therapist and client. This is especially important considering the fact that many Christians avoid

seeking professional secular help because they believe, even fear, that therapists may attempt to use therapies or behavior change techniques that either ridicule and/or fail to support their religious beliefs.

I. DESCRIPTION OF TREATMENT

Biblical behavior modification, composed as it is of both theoretical and practical components from behaviorism, social learning, and cognitive science, offers a wide variety of treatments that can be especially appealing to Christians. Christians might desire, for example, to show less anger in their reactions to certain events, get rid of a slight agoraphobia in order to spend more time with fellow Christians, control a problem with alcoholism, or learn to think of others in a less critical way. In this desire to live a more Christian life (i.e., "live up to their beliefs"), Christians seek help in a variety of ways in order to change or control certain behaviors. They pray or study their Bible, talk to friends or family members, or seek counseling from a minister or a counselor/therapist (who may or may not be a Christian).

Sometimes these choices are effective and sometimes they are not, with success usually depending both on individual motivation and dedication to change and on whether or not the advice given or the action taken follows the course of proven behavior change methods. The methods and techniques of behavior therapy, especially with the Biblical applications, are designed to offer what Christians need: the ability to develop desired behaviors, discourage undesired behaviors, eliminate phobias, control addictions, and monitor thoughts and attitudes.

Therefore, with Christian clients, Biblical behavior modification can be quite effective because it is not only based on sound behavioral theory, but it also acknowledges the spiritual motivation Christians have for the behavior change. Part of its effectiveness, then, comes as a result of universal principles that cut across disciplines such as psychology and theology. However, because many think such disciplines as psychology and theology are incompatible, it is necessary to take a closer look at some philosophical controversies that are basic to the whole concept of Biblical behavior modification.

A. The Controversies: An Introduction

Those who seek good mental health, and counselors who assist those who need help in the search, are faced with a monumental question. How do human beings learn to control their circumstances and/or behaviors—that is, promote desirable ones and eliminate undesirable ones—in order to reach life goals and live a good and happy life?

Humankind's attempt to answer that question over the ages has given rise to major philosophical controversies over what we can and cannot control or change. In fact, these controversies have transformed themselves into many complex and interrelated questions, so many and so complex, in fact, they cannot all be discussed thoroughly here. However, to give some flavor to the overall reason for the controversies, we must take a cursory look at two of the many layers: the mind/body dilemma and the science/religion controversy.

The mind/body dilemma poses many of the questions most commonly cited, and most wrestled with, by the world's greatest philosophers. What are we as human beings? Are we bodies with strange ethereal appendages called minds? Or are we minds (spirits) who inhabit troublesome bodies? In other words, does the body control the mind, or does the mind control the body? Do Descartes' famous words, "I think, therefore I am," exude truth or hide it?

Conclusions to these questions have come in all forms throughout the ages, but the latest research seems to indicate that there is no true line of demarcation. The mind and body seem so interrelated that most researchers and philosophers today acknowledge their mutual control and influence over each other. At the same time, however, scientists today are more ready to accept as true the idea that the mind (spirit) within each person represents something that is distinct from the material body. They also seem to accept that this mind, despite its unwillingness to be measured, exists as a separate entity of the person with a separate purpose: mainly, control of the body. So, the controversy continues to exist, but Christian beliefs about individual spirits seem to be more acceptable to science in today's world than in times past.

This brings us to the science/religion controversy. Scientists have for centuries scoffed at religious beliefs, calling them subjective, superstitious, and emotion-driven. This is true, of course, in many cases, but religious people have also scoffed at science, calling it materialistic and godless, also true in many cases. Indeed, many consider science and religion mutually exclusive realms, realms that will never meet. Biblical behavior modification, however, proves that conclusion to be incorrect.