TABLE 1
Example Minimal Therapist Contact Treatment versus Standard Clinic-Based Treatment Protocols

		Type of contact		*Time (min)*		*Training material*
Week	*Session content*	*MCT*[a]	*SCT*[b]	*MCT*	*SCT*	*MCT*
1	Education, treatment rationale, relaxation demonstration	Clinic	Clinic	60	60	Manual, audiotape
2	Progressive muscle relaxation (PMR) exercises; discrimination training (16 muscle groups)	Phone	Clinic	10	60	Manual, audiotape
3	PMR exercises (8 muscle groups)	None	Clinic	0	60	Manual, audiotape
4	PMR exercises (4 muscle groups)	None	Clinic	0	60	Manual, audiotape
5	PMR exercises (4 muscle groups); relaxation by recall, autogenic phrases, positive imagery, problem solving	Clinic	Clinic	60	60	Manual, audiotape
6	Same as Week 5	Phone	Clinic	10	60	Manual
7	Same as Week 5	None	Clinic	0	60	Manual
8	Review all components	Clinic	Clinic	40	60	Manual
Total		**3 visits 2 phone calls**	**8 visits**	**180**	**480**	

[a] MCT = Minimal Therapist Contact Treatment.
[b] SCT = Standard Clinic-Based Treatment.

MCT therapist will also briefly discuss the treatment activities for the upcoming weeks and remind the patient of the date and time of the second treatment session that will take place during Week 5.

During Weeks 3 and 4, the MCT patients do not have any contact with the therapist. They follow the readings and instructions regarding further development of relaxation and stress management skills that are contained in the manual and use the audiotapes to guide their skill acquisition and practice.

Week 5 for the MCT patients involves a 60-min clinic visit during which the therapist reviews the materials and the homework assigned during Weeks 3 and 4. The therapist also discusses problem solving, previews the information for Week 6, and schedules the final clinic visit for Week 8.

At the end of Week 6, a 10-min telephone contact is conducted. During this contact, the MCT therapist will ask questions regarding treatment progress, skills practice, and problem-solving exercises, discuss briefly the material for Week 7, reinforce the patient's effort and progress, and confirm the appointment for Week 8.

No contact is made with the patients in MCT during Week 7, and the patient meets with the therapist for a final 40-min session at the end of Week 8. During this visit, the materials and practice of skills from Weeks 5 through 8 are reviewed, posttreatment plans and goals are developed, and feedback is acquired regarding the treatment process.

Throughout the same 8-week period, SCT patients are exposed to the same information and skills, but they are delivered in weekly, 60-min, in-clinic sessions, with or without supplemental written and audiotape materials. It is important to recognize that many SCTs utilize supplemental materials such as manuals and audiotapes; however, in SCTs the intention of these materials is to review and reinforce the information and techniques presented by the therapist during in-clinic sessions. On the other hand, training materials used in MCTs are intended to be the primary delivery medium for the majority of the instruction.

See Also the Following Articles

Art Therapy ■ Bibliotherapy ■ Brief Therapy ■ Home-Based Reinforcement ■ Self-Help Groups ■ Self-Help Treatment for Insomnia ■ Single-Session Therapy

Further Reading

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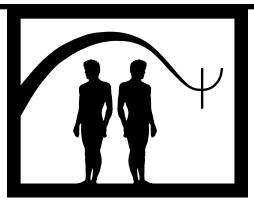

Modeling

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GLOSSARY

imitation Re-creation of an observed response.
vicarious learning Change in the likelihood that a person will demonstrate an observed behavior based on whether the observed model experiences reward or punish for engaging in the behavior.

Modeling is a psychotherapy technique utilized to produce changes in a client's behavioral repertoire by providing a demonstration of the desired behavior patterns and then affording opportunities for imitation. In this article, the basic components of the modeling procedure are discussed. Then, the theoretical bases on which the techniques are founded is explored. A review of the applicability of the technique follows, after which a synthesis of relevant research assessing the effectiveness of the approach is provided. Finally, a case example is given as an illustration of the process of using modeling as an intervention.

I. COMPONENTS OF MODELING INTERVENTION

As an intervention technique, modeling is relatively simple and is designed to assist clients in learning new behavior patterns. The procedure involves two primary components. First, the client is provided with an opportunity to observe the correct or desired form of behavior. Thus, theoretically any behavior that can be replicated in a form that is observable to the client may be taught through modeling. Second, the client imitates the observed behavior, demonstrating learning. For modeling to be effective as an intervention, the client must be able to demonstrate an imitative response. In other words, the client must be able to observe (i.e., pay attention to) the model (i.e., the person demonstrating the desired response) and then implement the skill that was just demonstrated. Clients who have particular characteristics that may interfere with attending to the model (e.g., blindness) or demonstrating the imitative response (e.g., physical disability) may not be good candidates for the use of this intervention.

Modeling is said to produce observational learning on the part of the client. Observational learning can be further divided into two forms of learning: imitation and vicarious learning. Imitation involves simply matching the topography of the observed behavior. For example, if a client observes a therapist demonstrate how to effectively introduce oneself to individuals unknown to the client (a skill that may be lacking in the

client's behavioral repertoire), imitation involves the client simply repeating or matching the demonstrated introduction responses. Vicarious learning, on the other hand, involves a change in the likelihood of the targeted response being imitated as a function of observing the model being rewarded or punished for engaging in the targeted behavior. Using the earlier example, vicarious learning may result in the client being more likely to demonstrate the effective greeting response if the modeling situation involves the model being rewarded for implementing the skill (e.g., through a warm reception by "unknown" individuals).

Observational learning as a result of witnessing a model can produce three different effects. First, observing a model can result in the acquisition of previously unlearned behaviors. Thus, modeling can be used to increase a person's behavioral repertoire. In addition to establishing completely novel behavior patterns, modeling can facilitate chaining—the process of sequentially exhibiting various behaviors so that they form a complex pattern.

Second, modeling can result in a strengthening or weakening of inhibitory responses, referred to as inhibitory or disinhibitory effects, respectively. Regarding the former, modeling can strengthen inhibition to engage in a particular response via exposure to a model who is punished for engaging in the targeted behavior. Take, for example, a young child who tantrums. Assume that her parents are using time out as a punishment technique to decrease tantrums. If the time-out procedure is effective, it will inhibit the likelihood that the young girl will tantrum. Furthermore, if she observed (perhaps at school) another child being placed in time out after engaging in a tantrum, this could further decrease the likelihood that the she will tantrum. Through observing the model (in this case, the other child) being punished for the target behavior, she is now even less likely to engage in the tantrum, above and beyond the decrease produced by experiencing the time out directly. Alternatively, modeling can weaken previous learning that has inhibited responding. As an illustration, consider a student who was previously punished for participating in class (e.g., other students laughing at his incorrect answers, the teacher sternly correcting the student when he is wrong). If this student observes a model experience rewarding consequences as a result of participating in class, this may weaken the previous inhibitory learning, thus increasing the likelihood that the student will participate.

Finally, modeling may evoke previously learned behavior patterns, referred to as the response facilitation effect. Although seemingly similar to the disinhibitory effect, the response facilitation effect differs because of the previous learning that was involved. The disinhibitory effect occurs when behavior was previously punished. However, the response facilitation effect produces an increase in the likelihood of the occurrence of a response pattern that was not previously punished. In essence, then, the modeled behavior in this case simply serves as a cue to engage in behavior that has already been learned.

In 1977, Albert Bandura described the factors that influence the effectiveness of modeling as a behavior change technique. First, if modeling is being used to facilitate the demonstration of a particular behavior pattern by the observer, then the modeled behavior should result in successful (i.e., reinforcing) consequences for the model. Second, modeling is more likely to produce the desired impact if the model is similar to the observer(s), or has a high status. For example, if one is working with an adult African American client, modeling may be more effective if the model is also an adult African American individual. Thus, attention to factors such as age, gender, and ethnicity are important when selecting a model. Third, the complexity of the behavior modeled should be appropriate based on the abilities and developmental level of the observer. Fourth, the observer has to attend to the model for the exposure to have an effect. Fifth, the modeled behavior should occur within the proper context. For example, if a therapist is trying to teach the social skills necessary for successfully greeting a new person, the therapist should arrange a situation in which the client can observe one person demonstrate the necessary skills while interacting with a second person, perhaps in the waiting room or other similar situation. Sixth, the modeled behavior should be repeated as frequently as necessary for the learner to demonstrate correct imitation. To facilitate generalized learning, the desired behavior should be modeled in various situations and context. Finally, the observer should be given opportunities to imitate the modeled behavior as soon as possible after modeling has occurred, with corrective and positive feedback provided.

There are several variations in the format of presenting the modeling procedure to the client. The traditional form involves a live model demonstrating the desired responses. The client watches the model and then is provided with the opportunity to demonstrate the imitative response. Live, or *in vivo,* modeling is advantageous because of the ability to adapt and modify the model selected and the demonstration of the desired response to best meet the needs of a particular client. For example, specific appropriate models can be selected to match the

characteristics of the client. Furthermore, particular behaviors of concern that are idiosyncratic to the client can be selected and demonstrated. However, the advantages of *in vivo* modeling can also be disadvantages in that it may be difficult to select ideal models or create the necessary conditions for the demonstration of various forms of behavior.

To provide for frequent exposure to the model, symbolic modeling may be used. Symbolic modeling can be achieved via the use of several different modeling formats, such as use of video, film, slide presentation, and so on. With symbolic modeling, the model is somehow recorded while demonstrating the desired responses. Then, the client is exposed to the recorded version of the modeling demonstration. Although the initial investment may be larger in terms of equipment and time needs, symbolic modeling can result in more efficient demonstration of the desired responses because once the model is recorded, it can be used repeatedly with the same client, or with multiple clients. In fact, there are commercially available resources to teach a variety of skills via symbolic modeling.

Finally, covert modeling has been described in the literature. Covert modeling involves carrying out the intervention via the use of imagery. With this variation, the client is instructed to imagine the model demonstrating the desired response, rather than actually witnessing the scenario *in vivo*. For a person to participate in covert modeling, she or he must be able to create detailed cognitive/mental images. Thus, careful assessment of a client's abilities to create detailed images is necessary prior to using covert modeling. Like live modeling, covert modeling has as an advantage flexibility in that a client can image models and scenarios that are particularly relevant. Furthermore, like video or film modeling, covert modeling has as an advantage ease of implementation in that a client can be repeatedly and frequently exposed to the model with minimal effort.

In addition to the general formats of modeling, the variants of this procedure can be further defined by whether they involve simple modeling or participant modeling. The former involves exposure to the model presented in any of the formats described earlier, followed by the opportunity for imitative responding. Participant modeling, on the other hand, also involves some form of guide practice either during or just after exposure to the model. With this form of modeling, the clinician physically guides the client to engage in the desired response, thus ensuring correct or successful performance.

Regardless of the form of modeling used, there are several components to the use of the intervention that should be considered, as described by Sherry Cormier and Bill Cormier in their 2000 text. First, the client should be provided with a rationale for the use of the modeling procedure. Essentially, the therapist should explain that by observing effective demonstration of skills/behaviors, the client should be better able to learn those desired responses. Second, Cormier and Cormier recommend addressing five components of the actual modeling scenario: (a) specifying and dividing desired goals into identifiable behavioral responses, (b) arranging the actual behaviors into a logical order of presentation, (c) selecting the appropriate model, (d) providing verbal instructions to the client prior to modeling, and (e) demonstrating the targeted behaviors repeatedly. Third, the client needs to be provided with an opportunity to demonstrate the modeled responses. At this stage of the intervention, the therapist should observe the client imitate the response, provide induction aids (e.g., verbal or gestural prompts), and offer positive and corrective feedback. Feedback and induction aids can be reduced and eliminated as the client demonstrates mastery of the responses. Finally, critical to the success of any modeling situation, the therapist should ensure that the imitated behavior produces desired, positive outcomes.

II. THEORETICAL BASES

Several authors have hypothesized about the theoretical reasons for why modeling produces observational learning. Those explanations have ranged from being firmly grounded within behavior analytic theory to being linked to cognitive and social learning theories. The cognitive-behavioral account provided by Albert Bandura, the researcher perhaps most strongly associated with modeling and observational learning due to his prolific research and writings about the topic, has received the greatest acceptance within the field of psychology.

Bandura proposed the contiguity theory (which eventually became part of his more expanded theory of social learning) as a means for understanding the impact of modeling. According to this theory, an observer acquires (i.e., learns) the modeled response through continuous associations between the observed behavior and sensory events, mental representations, and so on, that occur during the exposure to the model. These "cognitive" events then serve as cues for the occurrence of the behavior that was originally modeled.

According to Bandura, there are four main processes that influence the observational learning that occurs as a

result of modeling. First, attentional processes are important in that they affect how much of an impact the modeled event will have on the observer. Attentional processes are affected by variables related to both the modeling stimulus (e.g., salience, distinctiveness, complexity, prevalence) and the observer (e.g., sensory capabilities, emotional arousal, past reinforcement history). Second, retention processes are involved, including such factors as symbolic coding of the modeled behavior, cognitive organization of the observed information, and symbolic and motoric rehearsal (i.e., imitation). Third, motor production processes are important influences in observational learning. Physical capabilities of the observer/learner, previous learning of similar responses, self-observation of imitation, and feedback regarding the accuracy of the imitative response are all variables that affect whether observing a model will result in imitative responding. Finally, motivational processes such as external reinforcement, vicarious reward and punishment, and self-reward or -punishment all are relevant to determining whether observing a model will produce imitation.

III. APPLICATIONS AND EXCLUSIONS

Unlike some psychotherapeutic techniques that are applicable for use with a limited number of clinical problems, evidence suggests that modeling strategies are effective with a wide variety of psychological, behavioral, emotional, and social problems. In fact, research evaluating the applicability of this intervention is so large that a thorough discussion is beyond the scope of this article. Instead, a brief discussion is provided to familiarize the reader with relevant issues.

As mentioned earlier, for modeling to be effective as a psychotherapeutic intervention, it is necessary for the person to be able to both attend to the model and engage in the imitative response. Thus, as the research supports, use of this intervention is possible with clients who meet these prerequisite skills. The clinician needs to determine whether the modeling procedure is the technique most likely to produce the desired effect. Thus, the clinician should consider various factors when determining whether to use this intervention, such as the clinical issue at hand, the complexity of the desired outcome, the ability to create the appropriate modeling conditions, and client interest and motivation.

Extending the applicability of the intervention even further, evidence suggests that modeling actually can be used with people who do not already demonstrate imitative responses. Through the use of prompting, shaping, and differential reinforcement, the generalized imitative response can be taught to clients who do not already exhibit such behavior. As a result, modeling may be used with people with severe or profound retardation, autism spectrum disorders, and clients with psychoses who do not already demonstrate the imitative response. In such situations, if use of modeling is desired, clinicians must first teach the imitative response to the clients. Once imitation is established, continued use of reinforcement for said responses will ensure that such clients will be able to benefit from modeling.

When considering the use of modeling strategies, one should also consider that particular formats of modeling have been shown to be more beneficial for use with certain clinical issues. For establishing new behavioral repertoires, evidence suggests that modeling (*in vivo* or symbolic) with guided performance may be effective. With this variant of modeling the client is first exposed to the model (with steps taken to ensure that the client is attending). Then, the client is guided to perform the desired behavior, after which reinforcement is provided for demonstrating the behavior. Use of the physical guidance is gradually decreased as the client demonstrates the imitative response with increasing independence.

Presentation of coping versus mastery models should also be considered. Coping models are those models who initially exhibit flawed or fearful performances, but then become increasingly competent in the desired behavior. This transition may occur during one or repeated modeling implementations. Mastery models, on the other hand, demonstrate the desired behavior perfectly from the beginning. Evidence suggests that coping models may produce more beneficial outcomes for clients, particularly when targeting fears, phobias, or other avoidance-based clinical problems. The opportunity to observe someone experience similar fear reactions, and then learn to overcome them, appears central to this finding.

Finally, evidence suggests that modeling techniques are useful with clients from diverse ethnic and cultural backgrounds. Studies have evaluated various modeling interventions with African Americans, Asian Americans, Hispanic Americans, gays, and lesbians. The use of ethnic and/or culturally similar models increases the salience and relevance of the model, thereby increasing the likelihood that clients will attend to the models. Although the general intervention format will not vary greatly across ethnic groups, Sherry Cormier and Bill

Cormier suggest in their 2000 text that clinicians consider three issues to ensure cultural sensitivity: (a) ensure that the live or symbolic model is culturally similar to the client, (b) ensure that the content to be demonstrated in the modeling scenario is culturally sensitive, and (c) be familiar with and account for differences in how people attend to, learn from, and use modeled information.

IV. EMPIRICAL STUDIES

Although the phenomena of learning via observing a model has been recognized for many years, methodologically sound research on the influence of models on observer's behaviors dates back to the 1950s and early 1960s. During this early research, experimenters designed investigations that documented the occurrence of observational learning. For example, researchers demonstrated that participants would engage in imitative responses of observed behaviors in the presence of the model who had demonstrated the behavior. This early research was important in that it demonstrated the phenomena of interest could be investigated under controlled, replicable conditions.

In 1961, Albert Bandura, Dorothea Ross, and Sheila A. Ross expanded on earlier non-clinical research by investigating whether the imitative response would occur in the absence of the model. To do so, they had 36 boys and 36 girls with a mean age of 59 months observe adult models engage in either aggressive or non-aggressive behavior with inanimate objects (i.e., toys). Following the observation period, the children were allowed to interact with the toys in the absence of the models while experimenters documented the presence or absence of aggressive imitative responses. Those children who observed the aggressive models were more likely to be aggressive with the toys than those children who had watched non-aggressive models. More important, Bandura, Ross, and Ross demonstrated that the influence of the model persisted in the absence of the actual model. Over the next 10 to 15 years, Bandura and his colleagues conducted numerous studies evaluating the effectiveness of modeling, the conditions necessary to produce observational learning, and the extent of learning produced via the process of modeling.

Applied research also has emerged and strengthened the position that modeling is an effective therapeutic tool. Since the initiation of this research, investigations have demonstrated the effectiveness of modeling with children, adolescents, and adults, and for various clinical problems (e.g., aggression, poor social skills). Furthermore, the intervention has proven effective with clients from various ethnic and cultural backgrounds. What follows is a sample of research on modeling in these different areas.

A significant amount of research has demonstrated the usefulness of various forms of modeling with children and adolescents. For example, in 1942 Gertrude Chittenden utilized symbolic modeling to alter aggressive responses by children. In this investigation, the participants were exposed to several "plays" in which an adult and a child used dolls to enact non-aggressive alternative responses in reaction to a situation in which both dolls wanted to play with the same toy, a scenario shown to produce aggressive responses in the participants. Furthermore, the plays involved the dolls receiving positive rewards for demonstrating the prosocial alternative responses. During observations conducted after watching the models, Chittenden found that there was a significant decrease in displays of aggressive responses and increase in modeled prosocial behavior.

In 1986, Eva Feindler, Randolf Ecton, Deborah Kingsley, and Dennis Dubey utilized modeling as one of several interventions to address anger management problems displayed by adolescent males residing in a psychiatric hospital. These experimenters used a between-groups wait-list control design to evaluate the impact of an 8-week group therapy program targeting anger control. The intervention group was taught various anger control strategies via the use of symbolic and participant modeling, which also included opportunities for role playing and behavioral rehearsal. Results indicated that the experimental group displayed significantly lower rates of anger problems posttreatment as compared to the members of the wait-list control group.

Research on the use of modeling to treat anger control problems and aggression is not limited to children and adolescents. In 1990 Frank Vaccaro assessed the impact of instructions, *in vivo* modeling, role playing, and feedback on verbal aggression displayed by 6 institutionalized older adults. Using an ABAB single-subject design, Vaccaro found that the intervention resulted in decreased instances of verbal aggression for all 6 participants. Further, improved behavior generalized from the experimental situation (i.e., the group therapy sessions) to the milieu setting.

A significant amount of research has been conducted assessing the utility of different modeling approaches to treating fears and phobias exhibited by both children and adults. In 1996, Rutger W. Trijsburg, Marko Jelicic, Walter W. van den Broek, and Annelies E. M. Plekker

utilized participant modeling to treat phobic reactions to injections experienced by a 26-year-old female. According to the authors, this client demonstrated a "resistant-type" phobia in that she displayed strong, sometimes violent resistance to receiving a shot. Utilizing both scores on the State-Trait Anxiety Inventory and heart rate monitoring, the researchers found that the client's phobic reactions decreased as a result of exposure to a model receiving shots.

Matthew R. Sanders and Lyndall Jones provided a demonstration of the effectiveness of participant modeling with an adolescent female in 1990. In this investigation, the participant was a 13-year-old female with multiple medical and dental phobias, with comorbid oppositional defiant disorder. At the time of the investigation, she was scheduled for major surgery in 6 months. The investigators utilized coping skills training, systematic desensitization, and *in vivo* desensitization with participant modeling to help her overcome her fears.

As a final example of research demonstrating the utility of modeling to treat fears and phobias, consider a study conducted by K. Gunnar Goetestam and Dagfinn Berntzen in 1997. In this investigation, three pairs of adults with animal phobias participated. One person in each pair had stated that he or she was unable to participate in exposure therapy. Therefore, this person observed the other participant in the pair receiving direct exposure of the feared animal, thus creating a scenario involving *in vivo* modeling. Results showed that after observing the first person participating in direct exposure, the second person's phobic reactions reduced significantly. Furthermore, following modeling, the second person engaged in direct exposure to further reduce phobic responding. Results showed that treatment goals were achieved within 15 min for participants who had experienced modeling before desired outcome goals were met, as compared to within 1.5 to 2 h for the participants who experienced direct exposure only.

In addition to research demonstrating the usefulness of modeling to treat aggression and phobias, a significant amount of research has show that these procedures can be used effectively with individuals with developmental disabilities and/or mental retardation. Research with this population has utilized participant modeling, as well as various forms of symbolic modeling.

The use of modeling procedures with children and adults with autism has received particular attention. In 1986, Adeline S. Tryon and Susan Phillips Keane utilized participant modeling to target imitative play in 3 boys with autistic-like features. In this investigation, participants were exposed to a peer demonstrating appropriate play. Peers were selected for their similarity in age and gender to the participants and for their ability to engage in appropriate play with toys. Results showed that exposure to peer models resulted in increased appropriate play across a variety of toys, as well as a decrease in self-stimulatory behavior.

Researchers have also evaluated the effectiveness of video (symbolic) modeling with individuals with autism. Thomas G. Haring, Craig H. Kennedy, Mary J. Adams, and Valerie Pitts-Conway effectively used video modeling to teach 3 adults with autism skills used to purchase items from grocery and other stores in their research study published in 1987. Furthermore, Marjorie H. Charlop and Janice P. Milstein's 1989 research article describes the use of video modeling to teach 3 autistic children conversational speech. Finally, Marjorie H. Charlop-Christy, Loc Le, and Kurt A. Freeman demonstrated in their study published in 2000 that video modeling was more effective than *in vivo* modeling in teaching a variety of skills to 5 autistic children.

In addition to the research just mentioned, others have demonstrated the usefulness of modeling specifically with individuals with developmental disabilities to address developmental problems such as delayed social skills, deficits in expressive language, underdeveloped discrimination abilities (e.g., colors, shapes, on/under), and poor walking performance. Furthermore, researchers have demonstrated the utility of various modeling strategies with individuals with mental retardation who are experienced other clinical problems such as substance abuse problems, phobias and fears, selective mutism, and so on.

As should be evident from the brief review provided, modeling procedures are widely applicable and effective. The research described earlier only provides an introduction to the use of modeling, however. Evidence suggests that modeling procedures can be effectively incorporated into treatments for many different psychological, social, and emotional problems. Other clinical and social issues that have been shown to response positively to modeling include smokeless tobacco use, parenting, child safety, breast self-examination, self-defense skills, altruistic behavior, and gender stereotyping modification, to name just a few more. Thus, the research supports the general applicability and versatility of modeling interventions with a variety of psychological, social, and health-related issues.

V. CASE ILLUSTRATION

Consider Jeremy, a 13-year-old Caucasian male receiving services in a large-scale residential facility. In

addition to full participation in the milieu therapy provided to all residents, Jeremy was also referred for individual psychological services due to social skills problems, oppositionality, and ongoing severe conduct problems. His behavior problems significantly affected his social functioning in that he was severely rejected by his peers. Teacher, peer, and other staff report all indicated that Jeremy was actively avoided, taunted, and made fun of by the majority of his peers. For example, it was not uncommon for Jeremy's peers to say something such as "Don't talk to me!" in response to his attempts to initiate interactions.

Further assessment on initiation of psychological services revealed the presence of significant social skills deficits that likely contributed to his social rejection. First, he was awkward in his attempts to initiate or maintain conversations. Specifically, he would attempt to start conversations by yelling hello to peers or adults from across the room and generally speak with a voice that was louder than conversational level. Second, Jeremy would attempt to procure interactions with popular peers by using age-appropriate phrases or wearing "trendy" clothes. Rather than elevating his social status, these attempts appeared to further alienate him from his peers, as evidenced by laughter and jeers directed toward him. Third, Jeremy tended to use mannerisms and gestures that were exaggerated and excessive. Fourth, Jeremy demonstrated poor table manners, as evidenced by him talking with food in his mouth, eating rapidly and/or with his finger, and eating in a messy manner (resulting in food being on his face and/or clothes). This particular behavior pattern often set the stage for ridicule and rejection during the lunch recess hour. Finally, Jeremy typically presented with a facial expression characterized by a clownlike vacant grin.

Modeling procedures were used during individual therapy sessions to target his social skills deficits directly. First, *in vivo* modeling was used to target his poor table manners. To accomplish this, the therapist conducted 3 one-half-hour sessions weekly while he and Jeremy sat together at a dining table in the lunchroom at Jeremy's junior high school. Sessions occurred during Jeremy's regular lunch period while he and his peers ate lunch. After establishing the need to target table manners, and describing the rationale for participant modeling, the therapist described verbally and demonstrated physically proper table manners (e.g., use of a napkin, appropriate rate of eating, chewing with one's mouth closed). Then, collaboratively the therapist and Jeremy selected a specific skill for focus, rather than attempting to intervene with all relevant behaviors at once.

Once the target skill was selected, the therapist initiated each session by verbally and physically reviewing the proper target behavior and then drawing Jeremy's attention to peers who were demonstrating that behavior while they ate lunch. During the observation, the therapist would verbally describe the behavior being modeled by the peer, as well as point out the positive social benefits of engaging in such behavior. After a brief period of observation, Jeremy was then instructed to eat his lunch while attempting to demonstrate the appropriate response. Positive and corrective feedback was provided during this time. Periodic prompts to observe his peers were also provided until Jeremy demonstrated the skill successfully.

In conjunction with *in vivo* modeling to target table manners, symbolic modeling was used to address various other social skills problems (e.g., facial expressions, voice volume). Sessions involving symbolic modeling typically occurred every other week in a therapy session room. Again, the deficit skills were identified and reviewed prior to implementing the intervention. Furthermore, appropriate skills were also discussed and modeled by the therapist. Examples of targets identified included taking turns appropriately, offering praise to his peer, and displaying facial expressions appropriate to the context. After establishing the target behaviors, symbolic modeling was implemented. Symbolic modeling in this case took the form of videotaped interactions between Jeremy, the therapist, and another similar-aged male peer. The peer was selected because care providers had identified him as being quite socially skilled. Interactions occurred in the context of involvement in some sort of board game. Following 10–15 min of playing the game while being videotaped, Jeremy and the therapist would review the videotape so that Jeremy could observe the peer implement appropriate social skills. Further, Jeremy's behaviors were evaluated, and positive and corrective feedback was provided. Then, Jeremy was provided with another opportunity to interact with the peer and the therapist while playing a game, thus allowing for imitation of the desired responses.

Modeling procedures were effective in altering some of Jeremy's serious social skills deficits in the therapeutic contexts. He learned how to eat in a more socially acceptable manner while the therapist was present, how to talk in a more normal tone of voice while playing a game with a peer, and how to change his facial expressions to more closely match the situation (e.g., smile when there was a joke told, scowl when losing the game). The level of prompting that was needed to ensure the use of these skills decreased during the ther-

apy situation. Unfortunately, however, Jeremy was discharged from the residential program before specific measures could be taken to prompt generalization and maintenance of treatment gains, as these did not appear to be occurring naturally.

VI. SUMMARY

Modeling is a psychotherapy technique that is designed to create opportunities for the client to learn new behavior patterns or alter existing ones. Implementation of the intervention involves several relatively simple steps. First, the client is exposed to a model who demonstrates the desired response. The model can be presented live, symbolically, or cognitively. Second, the client is provided with an opportunity to imitate the desired response. Finally, corrective and positive feedback is provided to the client.

Modeling can produce two different forms of learning, imitation and vicarious learning. Imitation simply involves the observer matching the topography of the model's behavior. Vicarious learning, on the other hand, involves either an increase or decrease in the likelihood that the client will demonstrate the modeled behavior as a result of the model being rewarded or punished, respectively. As a result, the modeling situation should be created in a manner that capitalizes on the desired outcome. For example, if modeling is being used to decrease problem behavior, then the intervention should associate negative consequences with engaging in the behavior.

Research has demonstrated that modeling is an effective psychotherapeutic technique. Evidence suggests its utility with clients from diverse backgrounds, as well as those with diverse intellectual or developmental functioning. Furthermore, the intervention has been shown to affect a variety of clinical and social problems—such as smoking, phobias and fears, deficits in parenting skills—as well as important health-related behaviors (e.g., self breast examination). Finally, evidence suggests that the intervention may be most effective as a component of a larger set of strategies to address clinical or social issues.

See Also the Following Articles

Behavior Rehearsal ■ Cultural Issues ■ Heterosocial Skills Training ■ Race and Human Diversity ■ Retention Control Training ■ Role-Playing ■ Symbolic Modeling

Further Reading

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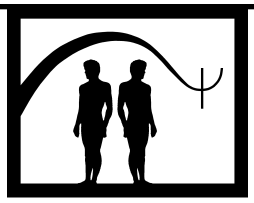

Mood Disorders

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GLOSSARY

depression An abnormal psychological state that is characterized by reduction of mood, interest, and vitality. It can be considered as the opposite state of mania. Depression differs from normal sadness in the severity of the symptoms and the lack of reactivity to otherwise pleasurable activities.

dysphoria An unpleasant emotional state that may be a mixture of sadness, low-grade anxiety, and negativity. Dysphoria is most likely a nonpathological alteration of mood state that represents a part of the normal spectrum of human experience.

dysthymia A chronic, persistent disturbance of mood that has some low-grade features of depression persisting over prolonged periods.

hypomanic episodes These share many features of manic episodes although they are considered to be not as severe as mania, or to cause as significant an amount of disruption to a sufferer's social or work abilities.

mania An abnormal psychological state that is characterized by overexcitement and elevation of mood. A "manic episode" is considered to be present if the symptoms create marked impairment for a person in his or her working and social interpersonal lives.

mixed mood states Characterized by the simultaneous presence of manic symptoms and depressive symptoms. Some clinicians refer to this condition as "dysphoric mania," which is characterized by the presence of irritability or an unpleasant sense of agitation or sadness rather than classically elevated mood.

I. INTRODUCTION

Disorders of mood or affect are among the most commonly recognized psychological disorders in both clinical and community settings. Individuals can develop a mood disorder at any time in their lives, although the nature, clinical presentation, and course of mood disorders vary greatly from individual to individual. This article will describe the features of mood disorders, their etiology, and their treatment.

The terms "mood" and "affect" are often used interchangeably; however, they refer to two different concepts. Mood is best defined as, "the prevalent emotional state described by an individual, consistently present over a prolonged period of day to weeks," as opposed to affect, which is best defined as, "the observable emotional state of an individual at a specific point in time, that may be changeable from moment to moment." Metaphorically speaking, mood refers to a person's climate whereas affect refers to the day's weather conditions.

The disorders of mood clinically recognized currently in the *Diagnostic and Statistical Manual of Mental Disorder, 4th edition* (DSM-IV) are:

1. Depression
2. Mania or hypomania
3. Dysthymia

4. Mixed mood states
5. Dysphoria

II. DEPRESSION

A. History of Depression

Depression is a heterogeneous condition that encompasses different types of illness. In ancient Greece the term "melancholia" (referring to "black bile") described a temperament characterized by lethargy, sullenness, and brooding. The concept infiltrated Western and non-Western cultures over time and numerous philosophers and physicians have written of its effects on the human psyche.

Sigmund Freud in his 1963 text *Mourning and Melancholia* conceptualized depression as a process of "internalizing" lost loved ones and "turning anger inwards" so that negativity directed at the loss would dominate the psyche. In the latter half of the twentieth century, psychological and psychiatric disorders were seen in more complex biological, psychological, and social terms, leading to a broader conceptualization of depressive disorders as having primarily psychological or biological origins. Currently, depression that is of clinical significance is referred to as a "major depressive disorder" by the American Psychiatric Association. This is the core concept around which our current classification of mood disorders revolves.

B. Phenomenology of Depression

The features of a major depressive disorder are shown in Table I. More severe forms of depression can occasionally have a number of unusual psychotic features such as delusions (false unshakeable beliefs) or hallucinations (disturbances of perception without a stimulus, e.g., hearing voices).

There is considerable variation in the experience and presentation of depression across the life span. In children and adolescents, depression may manifest in nonemotional ways such as behavioral deterioration, withdrawal, irritability, weight loss, school refusal, or self-injury. In the elderly, depression may manifest as preoccupation with health, paranoia, memory loss, cognitive impairment, or irritability. There is also a significant overlap between depression and responses to grief.

C. Epidemiology of Depression

Estimates of the prevalence of major depressive disorder by age and gender have been derived from the

TABLE I
Features of Major Depression

1. Significantly depressed mood that is in excess of normal sadness
2. A loss of interest in an individual's usual activities
3. Marked loss of self-esteem, or self-reproach
4. Impaired sleep
5. Psychomotor agitation or retardation (a subjective sense of either psychological and physical perturbation or slowing)
6. Reduced or increased appetite with weight loss or weight gain
7. Feelings of hopelessness about the future
8. Suicidal thinking
9. Significant anxiety such as panic attacks or generalized worry or obsessional thinking

The Epidemiological Catchment Area (ECA) study of 18,000 community and institutionalized subjects over 18 years of age at five sites throughout the United States, according to Weissman and colleagues in 1991. The ECA found that the overall lifetime prevalence of mood disorders is 6%. This differs slightly from the 1994 DSM-IV data that suggest a lifetime prevalence of 10 to 25% risk of depression in women as opposed to a 5 to 12% lifetime risk for men. The ECA data indicate a much higher prevalence of all the mood disorders among persons under the age of 45. The ECA also reported a relatively higher prevalence of major depressive disorder in women than in men, which, although consistent across the ages, was more evident among the younger adult group than in the elderly or in childhood. The study also found alcohol abuse and dependence was more prevalent in men than in women, leading some to argue that depressive disorders and alcohol abuse and dependence may be different manifestations of the same biopsychosocial vulnerability.

Sex differences in depression begin in early adolescence and persist at least until midlife. However, women with a previous history of a depressive episode are no more likely to experience a new episode than men with a previous history of a depressive episode. This suggests that the higher risk in women results from women having a higher risk of experiencing major depressive disorder for the first time.

A number of studies performed prior to the ECA study suggested that the prevalence rates of depressive disorders may be changing. The findings seemed to indicate a progressively lowering of the age of onset of depressive disorders and a possible increase in childhood

mood disorders as well as an observed reduction in suicide in the elderly.

D. Etiology of Depression

As with most psychological disorders, the causes of depression are multiple and overlapping. It is customary to divide etiological theories of depression into biological, psychological, and social factors.

1. Biological Factors

a. Biogenic Amines The human brain communicates with itself biochemically. The biological chemicals that are involved in this process are referred to as neurotransmitters. There are likely to be numerous neurotransmitters involved in the complex processes of the human brain; however two chemicals from the amine family have been implicated in the disordered functioning of the brain in depression, according to Nemeroff in 1998. The first, serotonin or 5-hydroxy–tryptophan (5-HT), is the most active biological amine in the human brain. A second biogenic amine, noradrenaline (NA), has also been implicated. The biogenic amine theory of depression postulates that levels of 5-HT and NA are present in subnormal levels in the parts of the human brain that regulate mood. The mechanism of action of virtually all antidepressant compounds is to effectively increase the level of activity of these compounds.

b. Neuroendocrine Factors Research by Nemeroff in 1998 indicated that the state of depression is associated with alterations in the level and activity of various endocrine glands, particularly the adrenal gland and the thyroid gland. This research demonstrated that higher levels of corticosteroids such as cortisol are associated with depression, as are alterations in responsiveness of the adrenal gland to the suppressive effects of artificial corticosteroids such as dexamethasone. Other hormonal disturbances include alterations in thyroid gland function.

c. Genetic Factors There have been numerous family and molecular studies of depression; however, progress has been limited by the fundamental problem of phenotypic identification. The controversy regarding the precise definition of depression has limited the study of depression to specific groups of individuals with "undisputed" depression. These patients tend to have more severe depression and are more similar in presentation than many patients treated in clinical settings. This has likely distorted the findings regarding depression to some degree, as most of the patients studied have had this more severe and uniform type of illness.

In general, most family studies highlight that depression and manic depression tends to cluster in families, according to Tsuang in 1990. The risk of developing depression in an individual with a first-degree relative with either depression or manic depression varies from 7 to 15% for depression and manic depression. Moreover, studies of identical (monozygotic) and nonidentical (dizygotic) twins indicate that the concordance for depression is approximately 60% for monozygotic twins and 30% for dizygotic twins, as discussed by Taylor in 1993.

Studies examining linkage of depression to other genes and molecular markers have been promising but inconclusive. In essence, the balance of opinion regarding the genetic etiologic factors in depression is that they are polygenic and multifactorial.

2. Psychological Factors

a. Attachment Style In the 1950s, John Bowlby evolved the concept of "attachment," which referred to the complex process by which animals and humans seek proximity to and interact with caregivers. Bowlby postulated that there was a biological and psychological drive to seek proximity to caregivers. Later studies, such as Ainsworth and colleagues' 1985 observations of infants' responses to separation from their caregivers, created the notion that human attachment could be either "secure" and flexible, or "insecure." The notion that attachment styles remained fixed throughout the life span suggested that adults could also be securely or insecurely attached. It is common to observe patterns of disturbed attachment in individuals who develop depressive disorders; however, insecure attachment in itself does not condemn an individual to depression. It is likely that a "poorness of fit" between a person with an insecure attachment style and his or her social environment will predispose an individual to depression.

b. Cognitive Style In the late 1960s, Aaron Beck formulated the idea that certain styles of viewing the world could predispose an individual to depression. Beck saw that individuals evolved a pattern of perceiving and interpreting events described as a "schema." A cognitive schema that was "depressogenic" was characterized by a triad of a negative view of self, present circumstance, and future circumstances. Further, depressed individuals have been found to have depressive attributional styles that are more global and stable than nondepressed individuals. Beck's clinical approach thus advocates identifying and altering factors in these types of schema.

c. Personality and Temperament Personality refers to the relatively enduring and stable patterns of thinking,

behaving, and acting that are present consistently over time. The various recent psychiatric classification systems such as the American Psychiatric Association's 1994 *Diagnostic and Statistical Manual of Psychiatric Disorders 4th Edition (DSM-IV)* and the World Health Organization's *International Classification of Disease (ICD-10)* have highlighted the concept of "personality disorder" as a substantive clinical entity. This construct emphasizes the presence of persisting maladaptive patterns of interaction that produce clinically significant impairment in social, occupational, and interpersonal functioning. Certain types of personality, such as those with unstable emotions or relationships (borderline personality disorder) or excess perfectionism (obsessional personality disorder) may be at higher risk for depression.

Temperament refers to those biologically based dispositions that color personality. It was of interest in antiquity and has more recently enjoyed increased attention in a research and clinical context. Temperament is evident across the life span and relatively stable over time. Authors such as C. Robert Cloninger in 1987 have described temperament-based personality variables such as "novelty seeking," "harm avoidance," and "reward dependence" that may have their origin in neurophysiological states. These temperamental characteristics may have significance in the genesis of depression.

3. Social Factors

a. Early Environment Loss of a parent in early childhood has been long considered a risk factor for the later development of depression. More recently, loss of a parent either through death or family disintegration and the associated ecological disruptions have been associated with depression as well. Early childhood difficulties such as childhood anxiety disorders, behavioral problems, or illness may predispose an individual to later adult psychopathology.

b. Gender There has been an apparent higher incidence of depression in women as opposed to men. This has been debated, however, as some experts, including Jorm in 1987, have argued that the prevalence of mood disorders is roughly equal between the sexes, but that women are more likely to present for treatment or divulge depressive symptomatology.

c. Interpersonal Factors Specific studies including Brown's 1978 research, have isolated independent risk factors for depression in women including the lack of a confiding relationship and having more than three children. Similarly, the lack of a social support network seems to be a risk factor for depression in both sexes. Unemployment and other social adversity as well as abrupt loss of status are also associated with depression.

E. Treatment of Depression

As depression is invariably the product of a complex interaction of biological, psychological, and social factors, interventions in the treatment of depression are also grounded in these three areas.

1. Biological Treatments for Depression

a. Antidepressant Medication The current understanding of the biochemical origins of depression has led to several generations of medications that putatively correct the underlying "biochemical imbalance." At present these agents all have the effect of altering the activity of biogenic amines in the human brain. The classes of agent and their putative mechanisms of action are listed in Table II and depicted in Figure 1.

Duration of drug treatment. The duration of treatment with antidepressant agents has been an area of recent controversy. Studies have indicated that in many cases depression is a relapsing and remitting condition that requires long-term treatment, according to the American Psychiatric Association in 1993. Several useful terms describing the stages of treatment of depression include:

TABLE II
Classes of Antidepressants and Their Putative Mechanisms of Action

Selective serotonin reuptake inhibitors (SSRI)—Inhibit serotonin reuptake pump
Serotonin-noradrenaline reuptake inhibitors (SNRI)—Inhibit serotonin and noradrenaline reuptake pumps
Monoamine oxidase inhibitors (MAOI)—Inhibit the enzyme that catabolizes biogenic amines
Tricyclic agents—Inhibit serotonin and noradrenaline reuptake and alter postsynaptic receptor activity
Tetracyclic agents—Block alpha-2 noradrenaline receptor (stimulation of this inhibits release of biogenic amines)
Other agents—Varied degree of activity
mirtazapine—blocks alpha-2 noradrenergic receptors and type 2 and 3 serotonin receptors
nefazodone—inhibits serotonin transporter and type 2 serotonin receptors

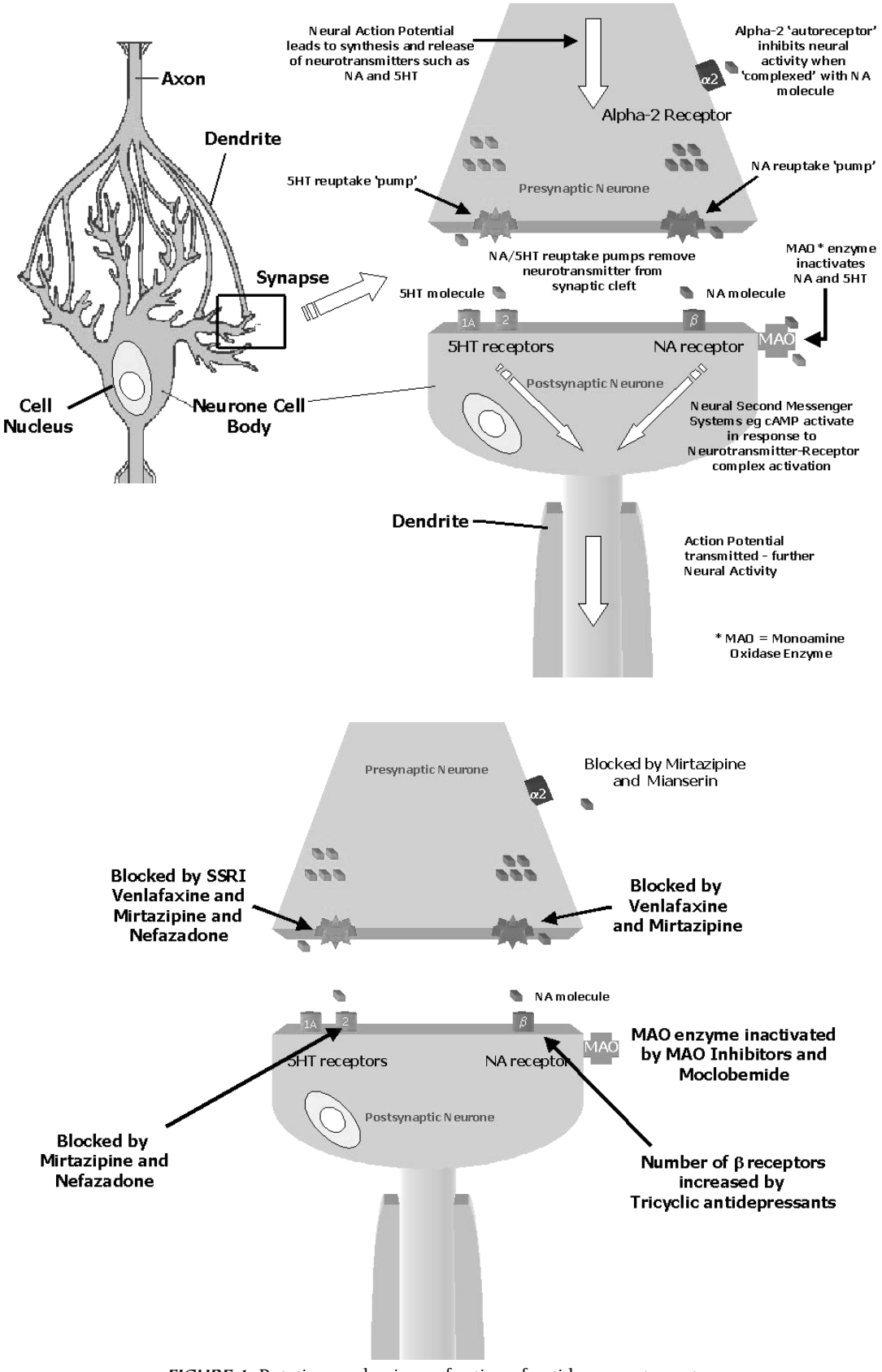

FIGURE 1 Putative mechanisms of action of antidepressant agents.

1. **Response**: the point at which depressive symptoms alter following treatment initiation. A 50% reduction in the level of symptoms is typically considered a response to treatment.
2. **Remission**: the point at which the diagnostic criteria for depression are no longer met. There may be residual symptoms at this point.
3. **Recovery**: the point of resolution of the depressive syndrome. This period requires 3 months of remission prior to being defined as remission.
4. **Relapse**: the reemergence of the depressive syndrome within the 3-month recovery phase.
5. **Recurrence**: the reemergence of symptoms during the remission phase.

The natural history of depressive disorders is for a 50% rate of recurrence after one episode of major depression and an 80 to 90% rate of recurrence after two episodes, according to the American Psychiatric Association in 1993. It states, therefore, that long-term treatment with antidepressant medication is necessary in cases where individuals are at high risk of recurrent depression.

b. Electroconvulsive Treatment Electroconvulsive treatment (ECT) is perhaps the most controversial area of psychiatric practice. In the late 1930s an Italian psychiatrist Ugo Cerletti experimented with convulsive treatments using electrical stimulation, as described by Abrams in 1988. This was based on observations that people suffering comorbid epilepsy and depression experienced improvements in their mood after seizures. According to Abrams, as technology and neuroscience have advanced, ECT has become a safe and effective treatment for severe biological depression.

It is thought that the therapeutic effects of ECT result from changes in the brain's biochemistry. Over a course of treatment, ECT has anticonvulsant effects that raise seizure threshold and decrease seizure duration. The so-called seizure threshold at which seizures will occur increases during ECT and it is thought that this may be a part of its mechanism of action. Periods of increased electrical activity in the brain, including seizures, promote the release of the compound adenosine, which in turn acts on several neuroreceptors to produce alteration of their chemical activity. Additionally, ECT increases norepinephrine turnover and α_1-adrenergic receptor sensitivity and decreases presynaptic α_2-adrenergic receptors. ECT also appears to enhance the effects of the serotonergic system but differs from antidepressant medication treatment in producing increases in serotonin (5-HT_2) receptor binding in the cerebral cortex. These findings suggest that ECT may have important actions on monoaminergic transmission that contribute to its therapeutic effects.

c. Rapid Transcranial Magnetic Stimulation Rapid transcranial magnetic stimulation (rTMS) uses an exter-

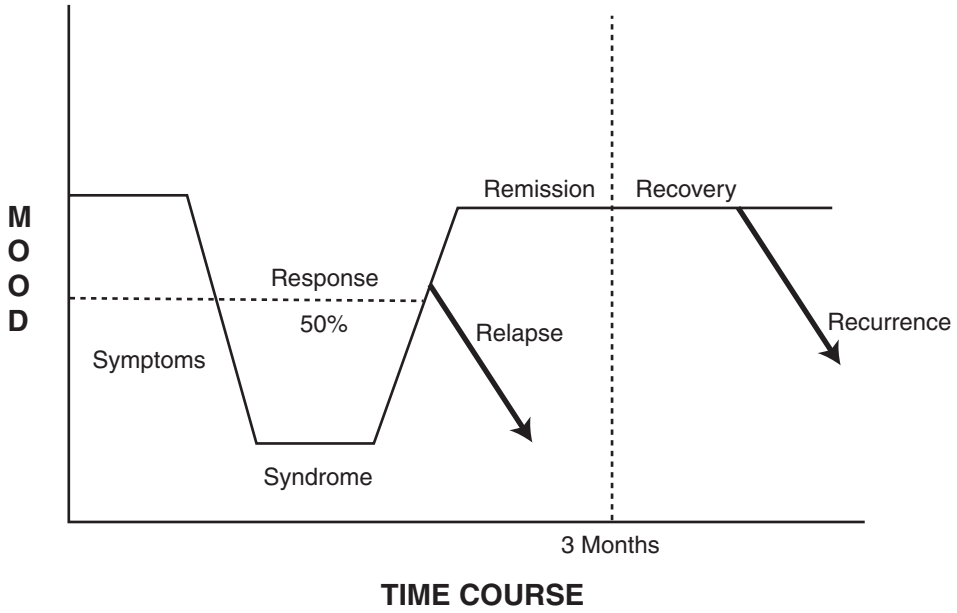

FIGURE 2 The stages of depression treatment.

nal magnetic field passed through a small coil applied to the scalp to allow focused electrical stimulation, which generates a focused magnetic field of 1.5 to 2 teslas. The magnetic field in turn depolarizes brain cells to a depth of 2 cm from the coil. Some evidence suggests that major depression may be characterized by hypoactive cortical areas. It was postulated by Post and colleagues in 1997 that rTMS stimulation of these frontal areas may help relieve symptoms.

Currently, the use of rTMS for the treatment of neurological and psychiatric disorders is still under investigation. Several open-label and controlled studies have suggested that rTMS may be at least temporarily effective in both animal models of depression and patients with major depression, according to Post and colleagues in 1997. A number of small, open-label studies have suggested that rTMS may be effective in some patients with treatment-resistant major depressive disorder as well as in those with milder major depressive disorder.

d. Phototherapy Phototherapy (light therapy) was first introduced in 1984 as a treatment for seasonal affective disorder (SAD; depression with seasonal pattern). In this disorder, according to Wehr and Rosenthal in 1989, patients typically experience depression as the sunlight period of the day decreases with advancing winter. Women represent at least 75% of all patients with seasonal depression, and the mean age of presentation is 40, as discussed by Blehar in 1989.

Phototherapy typically involves exposing the afflicted patient to bright light in the range of 1,500 to 10,000 lux or more with a light box that sits at face level for approximately 1 to 2 hours before dawn each day, according to Lam in 1994. As circadian rhythms are frequently disrupted in major depression, this is thought to be the basis of SAD and some of the features of depression. Exposure to light results in a phase advance that shifts the phase response curve earlier in the day. In addition, light suppresses the production of melatonin from the pineal gland at night. A number of controlled studies by Blehar in 1997 suggests that phototherapy is effective as monotherapy and as an adjunctive agent in the treatment of seasonal depressions.

2. Psychological Treatments for Depression

The specific details of this area are discussed elsewhere in this text. In brief, a number of studies have confirmed that the focal structured psychotherapies such as Beck's cognitive behavior therapy (CBT) and Klerman's interpersonal psychotherapy (IPT) are equivalent in antidepressant efficacy for depression of mild to moderate severity, according to Elkin in 1989. There is also evidence that the combination of antidepressant medication and psychotherapy has greater efficacy than either alone. Evidence suggests that a short-term psychotherapy, while efficacious in acute depression, confers little protection against further episodes. There is now a shift to studying and providing psychological treatments in maintenance fashion as well as acute treatment for depression.

III. MANIA AND BIPOLAR DISORDER

A. History of Bipolar Disorder

Aretaeus of Cappadocia (ca. 150 AD) is likely to have initially nominated that mania and melancholy were associated entities stating, "It appears to me that melancholy is the commencement and a part of mania" (see Goodwin and Jamison's 1990 work). In the 19th century, French psychiatrists offered the description "folie à double forme." Later that century, the German psychiatrist Emile Kraepelin elaborated the ideas that the core of depression was lowered mood and slowed mentation, wheras mania was characterized by elation and accelerated mental activity. Unlike depression, which may have significant "neurotic" contributions, Kraepelin saw manic states as being hereditary and biologically determined.

B. Phenomenology of Bipolar Disorder

Bipolar disorder is diagnosed when a person suffers a manic episode at some point in his or her lifetime. People who suffer from bipolar disorder are prone to develop episodes of hypomania, mania, and depression. The features of a manic episode are listed in Table III.

A "manic episode" is considered to be present if the symptoms create marked impairment for a person in his or her work or social and interpersonal functioning. "Hypomanic" episodes share many features of manic episodes although they are considered to be not as severe or to cause as significant amount of disruption to a sufferer's social or work functioning.

Current classification systems describe a number of different types of bipolar disorder:

1. **Type I bipolar disorder:** Diagnosed if an individual suffers an episode of mania. Depressive episodes may or may not be present as well.

TABLE III
Features of a Manic Episode

1. Distinct periods of abnormal or persistently elevated or irritable moods
2. Inflated self-esteem or grandiose behavior
3. A decreased need for sleep
4. Overtalkativeness
5. Racing thoughts
6. Being easily distracted
7. Overactivity including increased productivity, increased sexual drive, or purposeless agitation
8. Overspending
9. Disinhibition in social activities
10. Possible recklessness in behavior including gambling, sexual indiscretions, or exercising poor judgment
11. Psychosis including hallucinations (abnormal sensory experiences), severe disorder of thinking, or delusions (fixed unshakeable ideas that are often false).

2. **Type II bipolar disorder:** Diagnosed if an individual suffers episodes of both depression and hypomania.
3. **Mixed mood states:** Characterized by the simultaneous presence of manic symptoms and depressive symptoms. Some clinicians often refer to a condition known as "dysphoric mania," which is characterized by the presence of irritability or an unpleasant sense of agitation or sadness rather than classically elevated mood.

C. Epidemiology of Bipolar Disorder

The ECA data suggest that the lifetime risk for bipolar disorder is approximately 1.2% in the general population. It commonly affects young adults from 20 to 40 years of age. It tends to affect both men and women equally, and also appears to have a similar rate of occurrence across a variety of cultural and racial groups, according to Weissman and colleagues in 1991.

D. Etiology of Bipolar Disorder

1. Biological Factors

Unlike depression, mania is now regarded as primarily a biologically determined process. The general consensus is that during a manic episode the brain is usually overactive in terms of chemical activity, electrical activity, and generalized neurological processes. Most studies, according to Post in 1997, have consistently indicated that there may be imbalances or overactivity of a number of neurotransmitters including serotonin, noradrenaline, dopamine, glutamate, and other excitatory compounds during acute mania as well as possible disturbances in thyroid hormone or cortisol and newly described neurochemicals such as neuropeptides.

More recently, researchers have uncovered some possible disturbances in complex chemical processes occurring within the neurons including alterations in the activity of so-called second messenger systems involving compounds such as cyclic adenosine monophosphate (cAMP) and phosphatidylcholine, as described by Post in 1997.

There has been some additional interest in a process referred to as "kindling" (in which a number of neurons are chronically hyperactive and have a tendency to summate with produced marked neural overactivity, rather like kindling in a fire combining to produce a large flame) in the temporal lobe of the cerebral cortex and more specifically the deep nuclei that comprise the limbic system including the hippocampus and amygdyla, according to Post in 1997.

2. Genetic Factors

A first-degree relative (such as child or sibling) of someone suffering from bipolar disorder has approximately a 6% risk of developing bipolar disorder but a 15% risk of developing either depression or bipolar disorder, according to Tsuang in 1990. Tsuang notes that children of people suffering from bipolar disorder have approximately a 25% risk of developing a mood disorder if either parent suffers from bipolar disorder and a 75% risk of developing a mood disorder if both parents suffer bipolar disorder.

E. The Treatment of Bipolar Disorder

1. Medication

The treatment of mania and hypomania has two phases: an acute phase, in which the acute syndrome is quelled and social and occupational impairment is improved; and a maintenance phase, in which medications are administered long term to prevent the recurrences of the condition.

a. Mood Stabilizers

Lithium. In the 1940s Australian psychiatrist John Cade discovered the tranquilizing properties of lithium (see work by Goodwin and Jamison in 1990). Since

that time lithium has been the primary treatment for acute and prophylactic treatment of mania. In comparative studies with antipsychotic agents, it yields better overall improvement in most aspects of manic symptomatology, including psychomotor activity, grandiosity, manic thought disorder, insomnia, and irritability, according to Post in 2000. The type of patient most likely to respond to lithium carbonate is someone with a classic presentation and euphoric mania (rather than dysphoric mania) and a pattern of mania followed by a depression and then a well interval. The number of patients with this "classic" presentation is relatively small, hence lithium's status as the "gold standard" treatment is under threat.

Valproic Acid. Studies by Bowden and colleagues in 1994 demonstrated that anticonvulsant medications such as valproic acid are efficacious in acute and maintenance treatment of bipolar disorder. This is possibly due to the effects on temporal lobe kindling and also its effects in acting on so-called inhibitory neurotransmitter systems that reduce neural activity. This research indicates that valproic acid seems to be the treatment of choice for dysphoric mania or mixed states as well as those patients with rapid-cycling types of bipolar disorder. Valproic acid also has the potential benefit of rapid oral loading in acute mania, which is usually well tolerated and associated with a rapid onset of response, according to Post in 2000.

Carbamazepine. Carbamazepine appears to have similar benefits as valproic acid, as described by Denikoff and colleagues in 1997; however, its side effect profile and potential for drug interactions tend to lessen its use.

Lamotrigine. Lamotrigine is a newly approved anticonvulsant for add-on therapy that has antidepressant and possibly mood-stabilizing properties, according to Calabrese and colleagues in 1999. Its place in the management of bipolar disorder is still being investigated; however, a significant risk of severe rash may limit its use.

Gabapentin. Gabapentin is a newly approved anticonvulsant for adjunctive therapy that may also have some mood-stabilizing effects in bipolar patients. The drug appears to have positive effects on sleep and anxiety.

Topiramate. Topiramate is a recently approved add-on agent for treatment of refractory epilepsy. Preliminary experience suggests that it may have mood-stabilizing properties in rapid-cycling patients, with better antimanic than antidepressant effects, according to Post in 2000.

b. AntiPsychotic Agents The use of major tranquilizers has historically been confined to the acute treatment of mania, particularly if there are psychotic features present. In recent years, a new class of major tranquilizers that lack the troublesome side effects of older antipsychotic agents has helped to improve the acute management of mania. These agents include risperidone and olanzapine (both serotonin-dopamine antagonists), which are frequently coadministered with mood stabilizers to control acute mania. In some cases, these agents need to be used for maintenance treatment as well.

2. Psychological Management

Psychosocial factors may contribute 25 to 30% to the outcome variance of bipolar disorder and despite optimal pharmacotherapy, up to 50% of sufferers may encounter further episodes, according to Joyce in 1992. It is important to note, however, that all of the studies of psychological interventions in the treatment of bipolar disorder have been used during the recovery phase of treatment, and have been used only to prevent relapse—there is no evidence that any psychological intervention is of benefit in the acute treatment of mania.

a. Family Therapies Several studies support the efficacy of brief family-focused interventions in both inpatient and outpatient settings, with an emphasis on education, problem solving, and reduction of ambient stress within the family, as discussed by Miklowitz and colleagues in 1996.

b. Group Psychotherapies Several studies suggest the benefits of group therapies, although no actual controlled studies exist. There is limited evidence of benefits in the areas of compliance with medication, problem solving, and interpersonal functioning, according to Scott in 1995.

c. Cognitive Behavior Therapy Cognitive behavior therapy for bipolar disorder has focused on improving compliance and in recognition of early symptoms of relapse. The results of some trials suggest that this reduces relapse rates, and there are some observations of improvement in social functioning and employment stability, as discussed by Robertson in 2000.

See Also the Following Articles

Cognitive Behavior Therapy ■ Pain Disorders ■ Psychopharmacology: Combined Treatment

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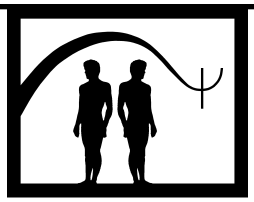

Multicultural Therapy

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GLOSSARY

acculturation conflict Conflict between traditional ethnic values and the adoption of values of the host culture.

barriers to cross-cultural psychotherapy Values, expectations, and behavioral differences between the therapist and client that impede the therapeutic process.

cultural encapsulation Ethnocentric perspective that does not acknowledge cultural differences.

culture-specific (emic) therapy Therapies developed from the study of the helping processes found in specific cultural groups.

co-construction A process in which therapists work with and learn from clients in jointly developing appropriate intervention strategies.

ethnic identity models Models that indicate the "stages" that members of ethnic groups go through in attaining identity.

generic characteristics of counseling Traditional Euro-centered therapy that is based on the importance of openness of expression, individualism, action orientation, and a clear distinction between physical and emotional realms.

universal (etic) multicultural therapy Therapies based on hypothesized factors that transcend cultural differences and involve shared human experiences but holding that culture is universal.

worldview Frame of reference based on a particular set of values and beliefs.

I. THEORETICAL BASIS

Multicultural therapy (MCT) developed out of the recognition that current forms of psychotherapy were inadequate to meet the needs of ethnic minorities. In fact, some have suggested that ethnic minority clients have been harmed by psychotherapy as currently formulated and practiced. Barriers to effective cross-cultural counseling included the generic aspects of Eurocentric counseling: verbal and emotional expressiveness, individual centered, self-disclosure and intimacy, nuclear family orientation, and egalitarian relationships. These elements of counseling and therapy are often in opposition to the beliefs or values of ethnic minorities. Many ethnic groups value the family rather than the individual, have hierarchical family patterns, demonstrate different communication patterns and styles, and are more hesitant about revealing information of a personal nature. In addition, there has been little attention paid by humanistic, psychodynamic, and cognitive-behavior therapies to issues of racism, oppression, and acculturation conflicts. Because of the inadequacies of current counseling theories and techniques, there was a need to develop a multicultural therapy.

MCT has developed into two somewhat divergent camps, although both have stressed the importance of considering culture in counseling. Total immersion into the cultural group under study is a part of the emic approach (culture-specific model). It attempts to generate new theories of psychopathology and therapy from the study of different cultural groups. Current systems of

the classification and treatment of mental disorders are considered to be "culturally encapsulated." As Uchenna Nwachuku and Allen Ivey in 1991 pointed out, "In contrast with the conventional approach of adapting existing counseling theory to 'fit' a new culture, the culture-specific method seeks to generate a new theory and technologies of helping." Only by adopting such a methodology can one prevent the imposition of an existing framework on other ethnic groups. New theories originating from the culture under study can be developed using anthropological methods and observations. Natural helping styles and means of problem solving for each cultural group are then identified. A culture-specific psychotherapy training model involving the African-Igbo, a tribe in Nigeria, was described by Nwachuku and Ivey. The steps involved:

1. Generating a culture-specific theory. Questions such as, "How do people in this culture view the helping relationship?" "What methods are used in solving problems?" "How similar or different are they from EuroAmerican approaches" were used to determine problem-solving approaches from the African-Igbo perspective. Study of the culture revealed a group, extended family, and community orientation. Childrearing was shared by the family and the entire community. The locus of decision making centered in the extended family and community, and problem solving involved participation by these units.
2. Generating training material based on the analysis of the culture. It was determined that effective helping approaches involved a multiperspective rather than individual frame of reference. The family and community values in decision making were stressed as well the need for harmony for cultural tradition. A more directive style was more in line with cultural expectations.

The emic or culture-specific orientation avoids the "imposed etic" or the presumed universality of theories developed in one culture and applied to another. Many EuroAmerican therapists apply psychodynamic, humanistic, or cognitive-behavioral techniques to members of different ethnic groups without questioning the validity of this practice. Donald Cheek was one of the first to point out the ethnocentric basis of traditional counseling approaches. He stated,

> I am advocating treating one segment of our population quite differently from another. This is implicit in my statement that Blacks do not benefit from many therapeutic approaches to which Whites respond. And I have referred to some of these approaches of counselors and therapists as "White techniques."

Many of the recommendations regarding therapy with ethnic minorities contain aspects of the culture-specific approach. With American Indians, there has been suggestions to incorporate cultural healing elements such as the talking circle, sweat lodge, and community interventions such as network therapy. African American therapists often indicate the importance of the Afrocentric worldview. This perspective has its roots in both the African heritage and experiences from slavery. As opposed to the Eurocentric view, there is greater emphasis on interdependence, extended family orientation, spirituality, and holism. Treatment modalities are expected to include Afrocentric elements.

In 1993, Paul Pedersen and Allen Ivey developed a description of four synthetic cultures that are actually based on the extreme grouping of the values of different cultural groups found in the world: (a) The Alpha culture is described as high in power distance. Inequalities as accepted and expected. Children are taught to obey and authority is respected; (b) The Beta culture is characterized as strong uncertainty avoidance. To deal with uncertainly, rigid rules have developed, and deviant or different ideas are suppressed. Citizen protest is repressed and conservatism and emphasis on the law is popular; (c) The Gamma culture is associated with high individualism. Emphasis is on the individual or the nuclear family. People have the right to express their own opinion and freedom of the press is supported. Education is the process of learning how to learn and evaluate; (d) The Delta culture is highly masculine. Money and possessions are dominant values. Men are expected to be assertive and tough while women should be nurturing and tender. Performance, strength and accomplishments are admired. Culture-centered therapy skills involve identifying culturally learned values and expectations and developing techniques and goals that are consistent with the specific groups.

In general, the culture-specific models have identified the differences in values, orientation, and philosophy that need to be addressed in counseling and the new therapy skills that need to be learned in working with culturally different populations. However, not all multicultural clinicians share the culture-specific perspective in multicultural therapy. Suzette Speight, Linda Myers, Chikako Cox, and Pamela Highlen argued in 1991 that the culture-specific approach makes multicultural psychotherapy an "extra skill area" that is somehow different from "regular counseling." They

contend that culture-specific methodology could have negative consequences, particularly if a "cookbook" method of therapy is employed with a checklist of the values of each cultural group and directions on how counseling should proceed. Such a approach would overemphasize cultural differences, ignore individual variations, and lead to possible stereotyping ethnically different clients.

The second trend in multicultural therapy involves an etic or modified universal perspective. Under this framework, all counseling is considered to involve cultural factors (defined broadly to include differences between the therapist and client in terms of diversity issues such as age, gender, social class, religious background, and ethnicity). A proponent of the universal perspective to multicultural therapy is Mary Fukuyama who argued that cultural factors are present in all psychotherapy and must be addressed. In working with all clients it is important to consider the context and social environment when conceptualizing the presenting problem. Such a focus would enable the therapist to gain an understanding of the worldview of the client. The modified universal approach would also reduce the danger of stereotyping, encourage the assessment and consideration of cultural values and beliefs, and understand how societal norms and values can affect processes such as acculturation. Criticisms of the universal multicultural perspective include the continued reliance on therapy approaches based on individualistic and Eurocentric models with culturally different groups. Others are concerned that defining culture to include sexual orientation, age, religiosity, and other diversity issues will dilute the emphasis on the plight of ethnic minorities.

Although the culture-specific and universal forms of multicultural therapy have been espoused, neither has not been fully developed as a theory. Not until 1996 was a multicultural therapy theory presented in a complete form. In a book titled, *A Theory of Multicultural Counseling and Therapy* by Derald Sue, Allen Ivey, and Paul Pedersen, multicultural counseling and psychotherapy (MCT) is described as a "metatheory" of counseling or a "theory or theories." MCT incorporates elements of both the universal and cultural-specific perspectives. As currently constructed, the theory of multicultural counseling and psychotherapy is composed of six propositions:

1. MCT is considered a metatheory of counseling and psychotherapy that includes a culture-centered organizational framework in which to view different theories of counseling. All theories of psychotherapy are identified as stemming from a particular cultural context. Mental health professionals need to identify the values, assumptions, and philosophical bases in their work. Not recognizing these can result in the imposition of their worldview onto their clients. MCT accepts aspects of the psychodynamic, humanistic, behavioral, and biogenic approaches as they relate to the worldview of the client. MCT co-constructs definitions of the problem and solutions with the client that reduces the chances of oppression. The approach attempts to help individuals, families, and organizations develop new ways of thinking, feeling, and acting both within and between differing worldviews. Failure in therapy can result from an overemphasis on either cultural differences or similarities. Successful therapy involves utilizing a combined perspective.

2. Multiple levels of experiences (individual, group, and universal) and contexts (individual, family, and cultural) affect both the counselor and the client. Although the salience and strength of these identities vary from individual to individual and over time, they must be considered part of the focus of treatment. Elements of the similarities and differences between the therapist and client can either assist or obstruct development of a working alliance. It is important for the therapist to identify and strategize in dealing with these factors. The person–environment interaction is central to MCT. Both the therapist and client are affected on multiple levels through these identities, and this interaction can influence the conduct and success of therapy.

3. Cultural identity of both the client and the therapist can affect problem definition and the identification of appropriate goals and treatment. These dynamics are also influenced by the dominant–subordinate relationship among different cultural groups in the United States. Most theories of helping have ignored issues of dominance and power. The stage of ethnic identity for both White and ethnically different clients can affect the relationship. For many ethnic minorities, the cultural identity can go through stages such as unawareness or unacceptance of the self as a cultural being, recognizing the impact of cultural variables, redefining the self as a cultural being, and the development of a multicultural perspective. Therapists who are not members of ethnic minorities are also hypothesized to go through a parallel process.

4. When the processes of helping and goals are consonant with the experiences and cultural values of the client, the outcome is likely to be enhanced. This can be accomplished by matching the counselor and client on relevant variables or to have the counselor develop a

larger repertoire of multicultural skills. MCT recognizes the two aspects of culturally-sensitive therapy, that of the cultural specific and the universal. The cultural-specific approach can help generate new helping skills and theories whereas the universal can help identify therapy processes transcending culture. Co-construction with the client can facilitate these processes.

5. MCT stresses the importance of developing additional helper roles such as that of an advisor, consultant, advocate, systems interventionist, and prevention specialist. Traditional psychotherapy has emphasized one-to-one interactions. The new roles help focus attention on the family, community, and government policies that may also affect the mental health of a particular client.

6. Instead of self-actualization, insight, or behavior change, the basic goal of MCT is the "liberation of consciousness." It involves the expansion of consciousness as it applies to the individual, family, group, and context for behavior. The underlying cultural dimensions of specific problems are identified with the specific client. MCT therapists are able to draw on both Eurocentric and other cultural forms of helping. The psychoeducational component of MCT is emphasized in helping the client gain awareness of the cultural aspects related to the presenting problem.

II. DESCRIPTION OF TREATMENT

Cross-cultural psychotherapy is still in the evolving phase and has not developed a specific course of treatment. Instead it advocates incorporating a "culture-centered" perspective when employing the different therapeutic approaches and techniques. As mentioned earlier, there are two major models for MCT, the culture specific and the universal. Although the techniques for each are discussed separately, many are shared between the two approaches.

A. Culture-Specific Treatments

1. Assess and explore the indigenous cultural belief systems of the culturally different client. Study and understand culture-bound syndromes and the explanatory basis of disorders. For example, "sustos" is the folk belief among some Latinos and people from Mexico and other Latin American countries, that the soul has left the body because of a frightening event resulting in illness. Healing results in the return of the soul to the body. In "rootwork," a belief found in certain African- and EuroAmerican populations, generalized anxiety and somatic problems are thought to be the result of witchcraft or sorcery. Cure is effected by utilizing a "root" healer who can remove the spell. *DSM-IV* lists a number of culture-bound syndromes that reveal the belief system underlying the cause and treatment for disorders found in different cultural groups.

2. Become knowledgeable about indigenous healing practices. As opposed to Western beliefs and practices, indigenous practices often involve the support of the disturbed individual though the use of communal and family networks, efforts to problem solve or develop treatment through a group context, reliance on spiritual healing, and the use of shamans or a respected elder from the community. Although we may not subscribe to these particular beliefs or practices, the psychotherapist can assist as a facilitator of indigenous support.

3. Consult with and seek the services of traditional healers within a specific culture. A liasion with indigenous healers can help deliver treatment more effectively. When the problem is clearly defined as primarily rooted in cultural traditions, referral to traditional healers becomes necessary. Advice regarding specific intervention strategies and how they can be reinterpreted to fit the specific culture can lead to more effective outcome.

4. Developing indigenous helping skills entails working in the community, making home visits, and expanding roles to include activism, prevention, outreach and social change. The culture-specific approach can be helpful to therapists in exposing them to multiple cultural perspectives, becoming aware of different philosophical and spiritual realities, and developing a more holistic outlook on treatment.

Techniques based on the universal perspective on psychotherapy are discussed in the context of the multicultural counseling and therapy theory. MCT provides a culture-centered element in traditional forms of intervention. Indeed, the different Eurocentric approaches to psychotherapy can be effectively employed when modified to be appropriate with multicultural populations. Following are some suggested steps in multicultural psychoterapy:

1. Role preparation and establishing rapport. To establish a working alliance, a therapist must be able to establish rapport with a client. The client must feel understood and respected. Some ethnic group members are responsive to emotional aspects of the interview process; for others "credibility" can be demonstrated through the identification of appropriate issues. For many ethnic minorities, therapy is a foreign process. To

enhance the working relationship, it is helpful to explain what happens in therapy, the roles of the both the client and the therapist, and confidentiality. Determining the expectations of the clients, their understanding of the treatment process, their degree of psychological mindedness and difficulties they might have with the therapy is an important aspect of role preparation. The concept of "co-construction"—that solutions will be developed only with the input and help of the client is introduced. Explain that problems are often complex and can be influenced by family, social, and cultural factors, and that you work together to determine if these are areas that need to be addressed.

2. Assessment—incorporating contextual and environmental factors. A culture-centered assessment would begin with an exploration of issues that may be faced by members of ethnic minorities such as immigration or refugee experiences, difficulties at work or in school, language and housing problem, possible issues with discrimination or prejudice, and acculturation conflicts (Recent immigrants or even individuals from first and second generations often show a pattern in which the children acculturate more quickly than the parents, and this difference often leads to conflict within the family). Social and community supports should also be identified. The assessment allows one to determine the possible impact of environmental, cultural, and social issues on the presenting problem. If the therapist determines the problem is external in nature, the therapist must help the client not to internalize the problem. Instead, the therapist might assist the client with developing strategies to cope with the external issues.

a. Ethnic or cultural identity. The cultural identify of both the therapist and client can affect both the problem definition and goals. Different identity development models have been developed for specific ethnic groups, but they all describe the process in which an individual moves from the host culture frame of reference to an acceptance of one's own cultural group. Determining the degree of ethnic identity of a particular client can help prevent stereotyping. Some clients will show little adherence to ethnicity and consider it unimportant whereas others may have a very strong ethnic identity that may influence how they perceive the presenting problem. Intervention strategies will depend on the stage of ethnic identity of the client. Those with a strong desire for assimilation into White society may reject attempts to explore ethnic variables. If the clinician determines that the presenting problem does not involve a rejection of the client's own ethnic identity, then mainstream psychotherapy approaches can be useful. At another stage of ethnic identity, the individual may become angry over issues of racism and oppression and respond with suspicion to the therapist. They may feel that therapy attempts to have them adjust to a "sick" society. Ethnic identity issues have to be identified to determine if this should be a focus of therapy.

b. Although controversial, a number of ethnic researchers and clinicians posited models of White Racial Identity Development that apply to EuroAmerican therapists. Hypothesized stages are: (a) conformity or the obliviousness and lack of awareness of racism. Success in life is seen to be dependent on effort and not race. Ethnic minorities are evaluated according to EuroAmerican standards. The therapist professes to be "color blind" and does not question the relevance of applying therapy approaches to ethnic groups; (b) disintegration or the conflict produced by the beginning recognition of discrimination and prejudice against ethnic minorities. An individual at this stage may avoid contact with people of color; (c) Reintegration that involves resolving conflict by returning to beliefs of minority inferiority; (d) Pseudoindependence or the acknowledgement of societal biases and the recognition of White privilege. However, the individual may perpetuate racism by attempting to have minorities adjust to White standards; (e) immersion/emersion that is marked by a personal focus on one's own biases and to directly combat racism and oppression; and (f) autonomy in which the individual accepts one's whiteness and is comfortable acknowledging and accepting ethnic differences.

(1) Intake forms. Background information, history, description of the problem, mental status exam, and other means of gathering data should include a section determining whether the characteristics or behaviors are considered normative for the particular cultural group. If the clinician determines the problem may have cultural aspects, a determination has to be made if it applies to a particular individual. This would reduce the chances of stereotyping. When using *DSM-IV–TR,* it is especially important to do a thorough assessment of Axis IV (psychosocial and environmental problems) to eliminate the possibility that the presenting problems may actually be "other conditions that may be a focus of clinical attention" rather than a mental disorder. It is essential that the therapist remain aware of validity issues with different types of assessment and clinical judgments involving specific ethnic minorities. *DSM-IV–TR* warns that there may be a tendency to

overdiagnose schizophrenia in certain ethnic groups. Behaviors considered normative in a specific ethnic group may be seen as pathological from another group's perspective. Asian Americans tend to score low on assertiveness and high on social anxiety. Rather than being considered negative attributes, these may represent the Asian values of modesty and group orientation. African Americans may show a "healthy paranoia" or suspiciousness resulting from experiences associated with oppression and racism.

(2) Problem definition. Consider the clients' perspective on problems. How did they arise and how are they affecting functioning? Are specific cultural factors involved? In interviewing an individual make certain information about family, friends, and possible cultural/environmental factors is also obtained. When working with a family, these areas are also explored along with the possibility of acculturation conflicts between the parents and children.

(3) Goal definition. First, identify the different theoretical therapeutic techniques or processes used to attain goals. What assumptions underlie the techniques, and are they acceptable to members of other cultural groups? What kinds of modifications may have to be made or new techniques adopted? Second, the therapist should acquire knowledge of the experiences of ethnic minorities in the United States and issues involving oppression and discrimination. Many are still affected by their minority status and face conflicts over acculturation issues. There must be a willingness to acknowledge and address cultural and value differences with clients. Third, therapists should seek continuing education and consultation when working with ethnic minority populations and be willing to take on different roles such as advisor, advocate, and consultant.

B. Culture-Centered Interventions

Although psychoanalytic, humanistic, and behavioral models have differences in theory and techniques, they still share similarities in their "generic" approaches to psychotherapy and the conceptualization of the "healthy" client. There has been some movement in each of these approaches to make them more compatible for the different cultural groups. One such suggestion involves coconstruction. In *DSM-IV–TR,* it is noted that is important to identify possible "cultural explanations of the individual's illness." These explanations are how the particular individual views the problem and are part of the co-construction process.

In general, the research on therapy for ethnic minorities has revealed that they prefer techniques that are directive, action oriented, and concrete. Some have suggested that cognitive-behavioral approaches show promise. However, as with all therapies, the cultural elements have to be identified. For example, what constitutes an "irrational belief" for particular cultural groups would have to be determined. Also, as with all Eurocentric psychotherapies, the focus has to change from the individual to include family, community, and societal factors. An individual's current mental complaints might stem from oppression and discrimination.

Currently, there are no specific guidelines in modifying traditional forms of psychotherapy to make them more appropriate for the problems of ethnic minorities. Regardless of psychotherapeutic orientation, the suggestions for multicultural assessment and co-construction can be helpful. All Eurocentric schools of psychotherapy face similar problems. They tend to have an individual focus and only work with the client rather than to attempt to address social and cultural concerns. Psychodynamic approaches could perhaps include exploration of a family or cultural unconscious to determine how these influenced individual development. Questions related to how these affected the identity of the individual could be explored. Humanistic therapists might use Abraham Maslow's hierarchy of needs to help identify the satisfaction of needs and the consideration of environmental concerns. Again, there could be a developed focus on cultural and family dimensions.

Empathy and other helping skills could not only be directed to the individual but to interpersonal relationships, the family, and the environment. The notion of co-construction fits well in the humanistic framework. With both the psychodynamic and the humanistic therapies, action and concrete suggestions need to be included as part of the therapy. Cognitive-behavior therapies are direct and action oriented and fit well into the expectations of many ethnic minority clients. However, they are also focused on the individual and need to be modified in use with other cultural groups. Cognitions considered to be "irrational" may not be perceived that way be ethnic minorities. The challenge is to understand what thoughts might be considered irrational by members of different cultural groups. In addition, the "unit" of treatment may not be the individual but the family, community, or even society. Group therapy with ethnic minorities also has to involve alterations. Techniques such as "ice breakers" are often used to facilitate interaction among the participants. Again, many of the activities reflect a cultural basis, and as therapists, we must analyze it as such. Some members of ethnic minorities may be uncomfortable participating because of the seeming lack of structure and ambiguity of these activities. Pairing individuals up with

other group members or providing structured tasks may generate more responsiveness. The focus of groups often is in personal development, and being a member of a family or particular ethnic groups is ignored. It may be valuable to focus on social identity and the increased understanding and responses to differences between groups.

Family therapy is also based on Eurocentric models and should not be imposed on families from different cultural groups. The family structure needs to be identified and relationships assessed. Therapy should be co-constructed with the help of family members. Systems theories should be expanded to included societal issues such as discrimination, poverty, and conflicting value systems. Reframe the concept of the "identified patient" as conflicts between different value systems. Again, the emphasis is to help the family develop better ways of handling problems within and between cultural constraints. It will be a challenge for individuals with training in Eurocentric therapies to develop more culture-centered treatment strategies.

III. EMPIRICAL STUDIES

There has been a number of studies examining some of the factors that affect cross-cultural therapy. However, most of these are not theoretically based, and few have addressed either the culture-specific or modified universal multicultural therapy models. For the culture-specific approach presented earlier by Uchenna Nwachuku and Allen Ivey on the African-Igbo culture, U.S. graduate students in a counseling program responded to problems presented by videotaped African-Igbo clients. The counselors displayed listening skills, allowed the client to determine direction, and focused clearly on the individual. The counselors were then trained in a workshop with information gained from the analysis of African-Igbo culture and were again rated on their performance with videotapes of African-Igbo clients. Improvement was noted in the use of more culturally aware responses but difficulty was still displayed in focusing on family and community values rather than the individual and the use of use of influencing skills such as giving advice. The study indicated that culture-specific information and training can improve sensitivity to different cultural styles, but that aspects of Eurocentric therapy remain difficult to alter.

There has been no direct research on either the modified universal model or the six propositions of multicultural counseling and psychotherapy. Indeed it can be argued that past research on culturally different populations is culture bound and difficult to interpret from a culture-centered perspective. However, although the theories have not been directly examined, some of the research can apply to the propositions in multicultural counseling and psychotherapy. It must be noted that many of the cross-cultural studies involve college populations, and the findings may not be valid with ethnic clients living in the community. The following are hypotheses and research support in the area of multicultural counseling and psychotherapy that could be predicted from MCT. These are from the chapter "Research and Research Hypotheses in Intercultural Counseling" by David Sue and Norman Sundberg.

1. Conceptualization of mental disorders and psychotherapy will influence access. In general, Southeast Asians are less likely to enter psychotherapy because they associate mental illness with stigma and shame and are not acquainted with the notion of psychotherapy. Asian American groups tend to believe that mental illness is due to a lack of willpower and believe that they should deal with the problem themselves. Hispanic American families are more likely to utilize family, relatives, or community resources for emotional problems. Both groups underutilize mental health resources. African American and American Indians may show cultural mistrust of psychotherapy feeling that the therapy symbolizes oppression. African Americans tend to overutilize mental health services but also tend to terminate more quickly and show little positive gain. There is also some evidence that they use the therapy session to deal with external problems such as problems with agencies and the law rather than personal issues.

2. The degree of similarity in the expectation between client and therapist toward the process and goals of counseling affects effectiveness. In a number of research studies, ethnic minorities are more likely to be responsive to approaches that are more directive and action oriented and rate therapists using these approaches as more "credible." Pretherapy explanations of the process of therapy and the responsibilities of the client and therapy lead to greater satisfaction of services.

3. Ethnic similarity between client and therapist will enhance the probability of a positive therapeutic outcome. Reviews of ethnic matching have produced mixed results. Some support has been found in some studies and not in others. There is some support that African Americans prefer an ethnically similar therapist and that stage of racial identity development is related to this preference. Among Hispanic Americans, a slight preference for an ethnically similar therapist was found, especially among those low in acculturation. In one study of clients in the Los Angeles area, ethnic

matching was a significant predictor of outcome for Hispanic Americans and approached significance for Asian Americans, especially among recent immigrants. For all groups, including EuroAmericans, ethnic match was related to length of treatment except for African Americans. In many of the studies, other similarities between the therapist and client involving attitudes, values, or style was as, if not more, important than ethnic matching.

4. Among ethnic minorities, degree of acculturation or stage of ethnic identity affects receptivity to counseling. In general, low-acculturated ethnic minority individuals appear to prefer an ethnically similar therapist. This has been found with Asian American, Hispanic American, and American Indian participants. For African American clients, there is some support for the view that those with a cultural distrust were more likely to terminate earlier with a White than a African American therapist. There is limited support for the view that the stage of ethnic identity is related to the types of problems presented and reaction to the counselor.

5. Exploring cultural and environmental variables can increase the "credibility" of the therapist. Cultural sensitivity as defined by the acknowledgment of culture, acculturation conflicts, and other issues faced by ethnic minorities demonstrated by therapists increased their ratings of credibility. The acknowledgement of ethnic differences between the client and therapist has also found to be related to positive outcome. Demonstrating a culturally sensitive approach by exploring cultural issues increased the therapeutic alliance, regardless of ethnic differences between the client and therapist. Cultural sensitivity displayed by the therapist has been found to be related to greater client self-disclosure and satisfaction.

6. The stage of identity for a EuroAmerican therapists can affect their reaction to ethnic minority clients. The concept of "White identity" is controversial in that EuroAmericans also go through a stage of racial identity. Certainly it would seem that if therapists denied the possibility of prejudice and discrimination faced by ethnic minority group members, they would not be able to understand the worldview of many culturally different clients and not be able to provide appropriate interventions. There has been limited support for the impact of the specific stage of White identity development and self-reported multicultural competencies.

7. Ethnic minorities prefer directive, concrete, and action-oriented psychotherapy techniques. Most of the studies indicate that ethnic minorities show a preference for a directive when compared to a client-centered approach. This appears to be more true for recent immigrants or those with low acculturation. Ethnic minority females show somewhat greater acceptance of a client-centered approach than males. However, what ethnic clients may want is more structure and guidance in therapy and advice or suggestions for different courses of action.

Thus, it would seem that some of the predictions made by multicultural therapy has received some support. However, what is needed are more explicit testable hypotheses to measure outcome in a varied of ways (symptom reduction, termination, and satisfaction) and to involve the use of actual patient populations.

IV. SUMMARY

Consideration of cultural factors in psychotherapy is being addressed by the different mental health organizations. It is receiving greater recognition in *DSM-IV–TR* where it is discussed both in the Appendix and as a subheading under the different disorders. The mental health field has responded primarily by drawing attention to possible cultural factors but not questioning the universality of psychotherapies developed according to Eurocentric models. Multicultural therapy approaches attempt to have practitioners understand the culture-specific nature of Western therapies and to identify assumptions and values under their system of psychotherapy. All therapies develop under some type of cultural framework. To deal with the inadequacies of current counseling theories and techniques in working with different ethnic groups, there is an increased attention to the impact of cultural factors.

Multicultural therapy has developed into somewhat different theoretical models. The culture-specific model or emic approach attempts to determine how a cultural group defines problem behaviors and problem-solving techniques. Anthropological observations and interviews are used to gather information. The concept of "healer" within the culture is identified to understand the philosophical nature of "therapy." From this, new theories of psychopathology and psychotherapy may develop. Criticism of the culture-specific model includes the possibility of overemphasizing culture, ignoring individual differences, and the necessity of developing a different approach for the cultural groups.

The modified version of multicultural therapy attempts to identify universals and considers all therapy to have cultural components that need to be identified. Some criticize the universal approach as just adding

culture to Eurocentric psychotherapies. A multicultural therapy that lies in between the culture-specific and universal perspectives was recently developed. It emphasizes the cultural aspects of all forms of counseling, emphasizing that practitioners need to identify the value system underlying their therapeutic approaches, and the importance of considering behaviors in context and multiple levels of experience (individual, group, universal). This theory is considered to be a theory of theories and has formulated a number of testable propositions and corollaries.

Intervention strategies based on culture-specific models are developed specifically for the population under study. With the African-Igbo, U.S. counseling students learned the methods of therapy derived through interviews with indigenous "experts" and observation and workshop material. The universal and multicultural therapy models develop intervention based on a culture-centered approach. Cultural factors are identified and assessments modified. The culture-specific nature of psychodynamic, humanistic, and cognitive-behavioral theories are identified and modified to incorporate family, groups, and environmental considerations. To reduce stereotyping, the ethnic identity of the client is assessed along with the identity of the therapist. Co-construction or the understanding of the problem, solutions, and appropriate interventions are made with the help of the client. Individual, family, and group therapies need to go through the process of identifying the assumptions underlying the models and altering the techniques to fit the worldview and expectation of ethnic minorities.

Research on cultural factors in psychotherapy has been relatively limited and without a theoretical basis. Most studies involve college populations and deal with specific aspects of cross-cultural counseling such as the rating of credibility, preference, and expertise. Although the findings are mixed, there is some support for ethnic matching of the therapist and client, especially for African Americans and less acculturated Hispanic and Asian Americans. It also appears that ethnic minorities feel more comfortable with action-oriented and concrete approaches of helping. Therapists are also rated higher when they demonstrate cultural sensitivity when dealing with an ethnic minority client. These findings are only tentative and need to include more actual clients and therapists.

See Also the Following Articles

Bioethics ■ Cultural Issues ■ Race and Human Diversity ■ Transcultural Psychotherapy

Further Reading

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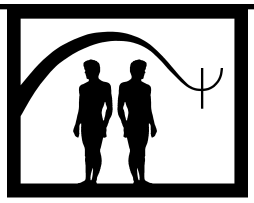

Multimodal Behavior Therapy

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GLOSSARY

BASIC I.D. An acronym of Behavior, Affect, Sensation, Imagery, Cognition, Interpersonal relationships, and Drugs/Biological processes.

bridging A procedure in which the therapist deliberately tunes into issues that the client wants to discuss, then gently guides the discussion into more productive areas.

second-order BASIC I.D Focusing on a specific problem in the BASIC I.D. to flesh out more information; useful for breaking impasses in therapy.

social learning theory A system that combines classical and operant conditioning with cognitive mediational factors (e.g., observational learning and symbolic activity) to explain the development, maintenance, and modification of behavior.

structural profile inventory A 35-item questionnaire that assesses the extent to which one is apt to be active or inactive; emotional or impassive; aware of or indifferent to sensory stimuli; reliant on mental imagery; inclined to think, plan, and cogitate; gravitate toward people and social events or avoid them; and engage in healthful habits and activities.

technical eclecticism The use of techniques drawn from diverse sources without also adhering to the disciplines or theories that spawned them.

tracking the firing order A careful scrutiny of the firing order of the BASIC I.D. modalities to facilitate more effective sequencing of treatment procedures.

I. DESCRIPTION OF TREATMENT

Multimodal behavior therapy (also called Multimodal therapy) rests on the observation that at base, we are biological organisms (neurophysiological/biochemical entities) who *behave* (act and react), *emote* (experience affective responses), *sense* (respond to tactile, olfactory, gustatory, visual, and auditory stimuli), *imagine* (conjure up sights, sounds, and other events in our mind's eye), *think* (entertain beliefs, opinions, values, and attitudes), and *interact* with one another (enjoy, tolerate, or suffer various interpersonal relationships). By referring to these seven discrete but interactive dimensions or modalities as **B**ehavior, **A**ffect, **S**ensation, **I**magery, **C**ognition, **I**nterpersonal, **D**rugs/Biologicals, the convenient acronym BASIC I.D. emerges from the first letter of each one.

Many psychotherapeutic approaches are trimodal, addressing affect, behavior, and cognition—ABC. The outcomes of several follow-up inquiries pointed to the importance of *breadth* if treatment gains were to be maintained. The multimodal approach provides clinicians with a comprehensive template. By separating sensations from emotions, distinguishing between images and cognitions, emphasizing both intraindividual and interpersonal behaviors, and underscoring the bio-

logical substrate, the multimodal orientation is most far-reaching. By assessing a client's BASIC I.D. one endeavors to "leave no stone unturned."

The elements of a thorough assessment involve the following range of questions:

B: What is this individual doing that is getting in the way of his or her happiness or personal fulfillment (self-defeating actions, maladaptive behaviors)? What does the client need to increase and decrease? What should he or she stop doing and start doing?

A: What emotions (affective reactions) are predominant? Are we dealing with anger, anxiety, depression, or combinations thereof, and to what extent (e.g., irritation versus rage; sadness versus profound melancholy)? What appears to generate these negative affects—certain cognitions, images, interpersonal conflicts? And how does the person respond (behave) when feeling a certain way? It is important to look for interactive processes—what impact do various behaviors have on the person's affect and vice versa? How does this influence each of the other modalities?

S: Are there specific sensory complaints (e.g., tension, chronic pain, tremors)? What feelings, thoughts, and behaviors are connected to these negative sensations? What positive sensations (e.g., visual, auditory, tactile, olfactory, and gustatory delights) does the person report? This includes the individual as a sensual and sexual being. When called for, the enhancement or cultivation of erotic pleasure is a viable therapeutic goal.

I: What fantasies and images are predominant? What is the person's "self-image?" Are there specific success or failure images? Are there negative or intrusive images (e.g., flashbacks to unhappy or traumatic experiences)? And how are these images connected to ongoing cognitions, behaviors, affective reactions, and so forth?

C: Can we determine the individual's main attitudes, values, beliefs, and opinions? What are this person's predominant shoulds, oughts, and musts? Are there any definite dysfunctional beliefs or irrational ideas? Can we detect any untoward automatic thoughts that undermine his or her functioning?

I: Interpersonally, who are the significant others in this individual's life? What does he or she want, desire, expect, and receive from them, and what does he or she, in turn, give to and do for them? What relationships give him or her particular pleasures and pains?

D: Is this person biologically healthy and health conscious? Does he or she have any medical complaints or concerns? What relevant details pertain to diet, weight, sleep, exercise, and alcohol and drug use?

The foregoing dimensions or modalities are some of the main issues that multimodal clinicians traverse while assessing the client's BASIC I.D. A more comprehensive problem identification sequence is derived from asking most clients to complete the Multimodal Life History Inventory. This 15-page questionnaire facilitates treatment when conscientiously filled in by clients as a homework assignment, usually after the initial session. Seriously disturbed (e.g., deluded, deeply depressed, highly agitated) clients will not be expected to comply, but most psychiatric outpatients who are reasonably literate will find the exercise useful for speeding up routine history taking and readily provide the therapist with a BASIC I.D. analysis.

A. Placing the BASIC I.D. in Perspective

The treatment process in multimodal behavior therapy rests on the BASIC I.D., which serves as a template to remind us to examine each of the seven modalities and their interactive effects. It implies that we are social beings that move, feel, sense, imagine, and think, and that at base we are biochemical–neurophysiological entities. Students and colleagues frequently inquire whether any particular areas are more significant, more heavily weighted, than the others are. For thoroughness, all seven require careful attention, but perhaps the biological and interpersonal modalities are especially significant.

The biological modality wields a profound influence on all the other modalities. Unpleasant sensory reactions can signal a host of medical illnesses; excessive emotional reactions (anxiety, depression, and rage) may all have biological determinants; faulty thinking, and images of gloom, doom, and terror may derive entirely from chemical imbalances; and untoward personal and interpersonal behaviors may stem from many somatic reactions ranging from toxins (e.g., drugs or alcohol) to intracranial lesions. Hence, when any doubts arise about the probable involvement of biological factors, it is imperative to have them fully investigated. A person who has no untoward medical/physical problems and enjoys warm, meaningful, and loving relationships, is apt to find life personally and interpersonally fulfilling. Hence the biological modality serves as the base and the interpersonal modality is perhaps the apex. The seven modalities are by no means static or linear but exist in a state of reciprocal transaction.

A patient requesting therapy may point to any of the seven modalities as his or her entry point. *Affect:* "I suffer

from anxiety and depression." *Behavior:*. "It's my compulsive habits that are getting to me." *Interpersonal:* "My wife and are not getting along." *Sensory:* "I have these tension headaches and pains in my jaw." *Imagery:* "I can't get the picture of my grandmother's funeral out of my mind, and I often have disturbing dreams." *Cognitive:* "I know I set unrealistic goals for myself and expect too much from others, but I can't seem to help it." *Biological:* "I'm fine as long as I take lithium, but I need someone to monitor my blood levels."

It is more usual, however, for people to enter therapy with explicit problems in two or more modalities—"I have all sorts of aches and pains that my doctor tells me are due to tension. I also worry too much, and I feel frustrated a lot of the time. And I'm very angry with my father." Initially, it is usually advisable to engage the patient by focusing on the issues, modalities, or areas of concern that he or she presents. To deflect the emphasis too soon onto other matters that may seem more important is only likely to make the patient feel discounted. Once rapport has been established, however, it is usually easy to shift to more significant problems.

Any good clinician will first address and investigate the presenting issues. "Please tell me more about the aches and pains you are experiencing." "Do you feel tense in any specific areas of your body?" "You mentioned worries and feelings of frustration. Can you please elaborate on them for me?" "What are some of the specific clash points between you and your father?" The therapist will then flesh out the details. However, a multimodal therapist goes farther. She or he will carefully note the specific modalities across the BASIC I.D. that are being discussed, and which ones are omitted or glossed over. The latter (i.e., the areas that are overlooked or neglected) often yield important clinical information.

In this description of the overview of treatment processes, it is important to explain several procedures that are employed by multimodal behavior therapists.

1. Second-Order BASIC I.D. Assessments

The initial Modality Profile (BASIC I.D. Chart) translates vague, general, or diffuse problems (e.g., depression, and unhappiness, and anxiety) into specific, discrete, and interactive difficulties. Techniques—preferably those with empirical backing—are selected to counter the various problems. Nevertheless, treatment impasses arise, and when this occurs, a more detailed inquiry into associated behaviors, affective responses, sensory reactions, images, cognitions, interpersonal factors, and possible biological considerations may shed light on the situation. This recursive application of the BASIC I.D. to itself adds depth and detail to the macroscopic overview afforded by the initial Modality Profile. Thus, a second-order assessment with a client who was not responding to antidepressants and a combination of cognitive–behavioral procedures revealed a central cognitive schema—"I am not entitled to be happy"—that had eluded all other avenues of inquiry. Therapy was then aimed directly at addressing this maladaptive cognition.

2. Bridging

A strategy that is probably employed by most effective therapists can readily be taught to novices via the BASIC I.D. format. We refer to it as bridging. Suppose a therapist is interested in a client's emotional responses to an event. "How did you feel when your father yelled at you in front of your friends?" Instead of discussing his feelings, the client responds with defensive and irrelevant intellectualizations. "My dad had strange priorities and even as a kid I used to question his judgment." Additional probes into his feelings only yield similar abstractions. It is often counterproductive to confront the client and point out that he is evading the question and seems reluctant to face his true feelings. In situations of this kind, bridging is usually effective. First, the therapist deliberately tunes into the client's preferred modality—in this case, the cognitive domain. Thus, the therapist explores the cognitive content. "So you see it as a consequence involving judgments and priorities. Please tell me more." In this way, after perhaps a 5 to 10 minute discourse, the therapist endeavors to branch off into other directions that seem more productive. "Tell me, while we have been discussing these matters, have you noticed any sensations anywhere in your body?" This sudden switch from cognition to sensation may begin to elicit more pertinent information (given the assumption that in this instance, sensory inputs are probably less threatening than affective material). The client may refer to some sensations of tension or bodily discomfort at which point the therapist may ask him to focus on them, often with a hypnotic overlay. "Will you please close your eyes, and now feel that neck tension. (Pause). Now relax deeply for a few moments, breathe easily and gently, in and out, in and out, just letting yourself feel calm and peaceful." The feelings of tension, and their associated images and cognitions may then be examined. One may then venture to bridge into affect. "Beneath the sensations, can you find any strong feelings or emotions?Perhaps they are lurking in the background." At this juncture it is not unusual for clients to give voice

to their feelings. "I am in touch with anger and with sadness." By starting where the client is and then bridging into a different modality, most clients then seem willing to traverse the more emotionally charged areas they had been avoiding.

3. Tracking the Firing Order

A fairly reliable pattern may be discerned of the way that many people generate negative affect. Some dwell first on unpleasant sensations (palpitations, shortness of breath, tremors), followed by aversive images (pictures of disastrous events), to which they attach negative cognitions (ideas about catastrophic illness), leading to maladaptive behavior (withdrawal and avoidance). This S-I-C-B firing order (sensation, imagery, cognition, behavior) may require a different treatment strategy from that employed with a C-I-S-B sequence, a I-C-B-S, or yet a different firing order. Clinical findings suggest that it is often best to apply treatment techniques in accordance with a client's specific chain reaction. A rapid way of determining someone's firing order is to have him or her in an altered state of consciousness—deeply relaxed with eyes closed—contemplating untoward events and then describing his or her reactions.

One of my clients was perplexed at the fact that she frequently felt extremely anxious "out of the blue." Here is part of an actual clinical dialogue:

> Therapist: Now please think back to those feelings of anxiety that took you by surprise. Take your time, and tell me what you remember.
>
> Client: We had just finished having dinner and I was clearing the table. (Pause) I remember now. I had some indigestion.
>
> Therapist: Can you describe the sensations?
>
> Client: Sort of like heartburn and a kind of a cramp over here (points to upper abdomen).
>
> Therapist: Can you focus on the memory of those sensations?
>
> Client: Yes. I remember them well. (Pause) Then I started remembering things.
>
> Therapist: Such as?
>
> Client: Such as the time I had dinner at Tom's and had such a migraine that I threw up.
>
> Therapist: Let me see if I am following you. You started having some digestive discomfort and then you had an image, a picture of the time you were at Tom's and got sick.
>
> Client: Yeah. That's when I stopped what I was doing and went to lie down.

This brief excerpt reveals a sensation-imagery-behavioral sequence. In the actual case, a most significant treatment goal was to show the client that she attached extremely negative attributions to negative sensations, which then served as a trigger for anxiety-generating images. Consequently, she was asked to draw up a list of unpleasant sensations, to dwell on them one by one, and to prevent the eruption of catastrophic images with a mantra—"this too shall pass."

II. THEORETICAL BASES

Multimodal behavior therapy is behavioral in that is based on the principles and procedures of experimental psychology, especially social learning theory. According to this theory, all behaviors—normal and abnormal—are maintained and modified by environmental events. The initial behavioral theories rested on animal analogues and were decidedly mechanistic. They put forth rather simplistic analyses of stimulus-response contingencies. The advent of what is now termed cognitive-behavior therapy rests on a much more sophisticated foundation. Emphasis is now placed on the finding that cognitive processes, which in turn are affected by the social and environmental consequences of behavior, determine the influence of external events. The main focus is on the constant reciprocity between personal actions and environmental consequences.

Social learning theory recognizes that association plays a key role in all learning processes. Events that occur simultaneously or in quick succession are likely to be connected. An association may be said to exist when responses evoked by one set of stimuli are similar to those elicited by other stimuli. The basic social learning triad is made up of classical (respondent) conditioning, operant (instrumental) conditioning, and modeling and vicarious processes. Added to the foregoing is the personalistic use of language, expectancies, selective attention, goals, and performance standards, as well as the impact of numerous values, attitudes, and beliefs. A person's thoughts will determine which stimuli are noticed, how much they are valued, and how long they are remembered. In the brief space allocated, it is not possible to do justice to the nuances of social learning theory, but I hope that its level of sophistication and experimentally based outlook can be appreciated.

A pivotal concept in multimodal behavior therapy is that of technical eclecticism. As more therapists have become aware that no one school can possibly provide all the answers, a willingness to incorporate different methods into their own purview and to combine different

procedures has become fairly prominent. There are several different ways in which methods may be combined. The first is to utilize several techniques within a given approach (e.g., exposure, response prevention, and participant modeling from a behavioral perspective). One may also combine techniques from different disciplines, especially when confronted by a seemingly intractable patient or problem. Yet another way of combining treatments is to use medication in conjunction with psychosocial therapies. In addition, one may treat certain clients with a combination of individual, family, and group therapy, or look to other disciplines (e.g., social work in the case of vocational rehabilitation).

There are three principal routes to rapprochement or integration: technical eclecticism, theoretical integration, and common factors. Those who attempt to meld different or even disparate theories (theoretical integrationists), differ significantly from those who remain theoretically consistent but use diverse techniques (technical eclectics). And those who dwell on the common ingredients shared by different therapies (e.g., self-efficacy, enhanced morale, or corrective emotional experiences), are apt to ignore crucial differences while emphasizing essential similarities. Unfortunately, there are still many school adherents who refuse to look beyond the boundaries of their own theories for ideas and methods that may enhance their clinical acumen.

In essence, there appear to be no data to support the notion that a blend of different theories has resulted in a more robust therapeutic technique or has led to synergistic practice effects. It cannot be overstated that the effectiveness of specific techniques may have no bearing on the theories that spawned them. Techniques may, in fact, prove effective for reasons that do not remotely relate to the theoretical ideas that gave birth to them. This is not meant to imply that techniques operate or function in a vacuum. The therapeutic relationship is the soil that enables techniques to take root. Theories are needed to explain or account for various phenomena and to try to make objective sense out of bewildering observations and assertions. And it is precisely because social learning and cognitive theories are experimentally grounded that multimodal behavior therapy embraces them rather than any of the other theories in the marketplace. It makes sense to select seemingly effective techniques from any discipline without necessarily subscribing to the theories that begot them.

In multimodal behavior therapy, the selection and development of specific techniques are not at all capricious. The basic position can be summarized as follows: Eclecticism is warranted only when well-documented treatments of choice do not exist for a particular disorder, or when well-established methods are not achieving the desired results. Nevertheless, when these procedures, despite proper implementation, fail to prove helpful, one may resort to less authenticated procedures or endeavor to develop new strategies. Clinical effectiveness is probably in direct proportion to the range of effective tactics, strategies, and methods that a practitioner has at his or her disposal. Nevertheless, the rag-tag importation of techniques from anywhere or everywhere without a sound rationale can only result in syncretistic confusion. A systematic, prescriptive, technically eclectic orientation is the opposite of a smorgasbord conception of eclecticism in which one selects procedures according to unstated and unreplicable processes. It needs to be emphasized again that arbitrary blends of different techniques are to be decried.

The cognitive–behavioral literature has documented various treatments of choice for a wide range of afflictions including maladaptive habits, fears and phobias, stress-related difficulties, sexual dysfunctions, depression, eating disorders, obsessive–compulsive disorders, and posttraumatic stress disorders. We can also include dementia, psychoactive substance abuse, somatization disorder, multiple personality disorder and various other personality disorders, psychophysiologic disorders, pain management, and diverse forms of violence. There are relatively few empirically validated treatments outside the area of cognitive–behavior therapy.

III. APPLICATIONS AND EXCLUSIONS

Multimodal behavior therapy is not a unitary or closed system. It is basically a clinical approach that rests on a social and cognitive learning theory, and uses technically eclectic and empirically supported procedures in an individualistic manner. The overriding question is mainly "Who and what is best for this client?" Obviously no one therapist can be well versed in the entire gamut of methods and procedures that exist. Some clinicians are excellent with children whereas others have a talent for working with geriatric populations. Some practitioners have specialized in specific disorders (e.g., eating disorders, sexual dysfunctions, PTSD, panic, depression, substance abuse, or schizophrenia). Those who employ multimodal behavior therapy will bring their talents to bear on their areas of special proficiency and employ the BASIC I.D.

as per the foregoing discussions, and, by so doing, possibly enhance their clinical impact. If a problem or a specific client falls outside their sphere of expertise, they will endeavor to effect a referral to an appropriate resource. For example, if a client who speaks only Spanish is to be treated by multimodal behavior therapy, obviously a therapist who is fluent in Spanish will be chosen. Thus, there are no problems or populations per se that are excluded. The only exclusionary criteria are those that pertain to the limitations of individual therapists.

IV. EMPIRICAL STUDIES

A crucial question is whether or not there is evidence that a multimodal approach is superior to more narrow or targeted treatments. During the 1970s and 1980s issues pertaining to focused versus combined treatment modalities were addressed in several quarters. Interestingly, for some disorders, specialized or highly focused interventions appeared superior to broad-spectrum approaches. For example, in weight-loss programs a specialized stimulus-control procedure was often favored over multidimensional treatments. Similarly, several other problem areas may respond better to specialized procedures: some phobias, compulsive disorders, sexual problems, eating disorders, some cases of insomnia, tension headaches, and the management of oppositional children.

On the other hand, a strong argument for combined treatments can be made for the treatment of alcoholism. Studies have shown that those treated only by aversion therapy were more likely to relapse than their counterparts who had also received relaxation training. And more recently, several studies have indicated that a combination of imipramine and exposure is more effective in treating panic disorder with agoraphobia than either exposure treatment or drug treatment alone.

In a carefully controlled outcome study conducted by Tom Williams in Scotland, multimodal assessment and treatment were compared with less integrative approaches in helping children with learning disabilities. Clear data emerged in support of the multimodal procedures. In Holland, M.G.T. Kwee and his associates conducted a multimodal treatment outcome study on 84 hospitalized patients suffering from obsessive–compulsive disorders or phobias, 90% of whom had received prior treatment without success, and 70% of whom had suffered from their disorders for more than 4 years. Implementing multimodal treatment regimens resulted in substantial recoveries and durable 9-month follow-ups.

The main criticism of multimodal behavior therapy is that it is so broad-based, so flexible, so personalistic and adaptable that tightly controlled outcome research is virtually impossible. Thus, it depends too much on the artistry of the individual therapist. This reproach is only partly true. Multimodal behavior therapy endeavors first and foremost to apply empirically validated methods whenever fessible. Beyond the cognitive–behavioral parameters, there is suggestive evidence, rather than hard data, to confirm the clinical impression that covering the BASIC I.D. enhances outcomes and follow-ups. Similarly, although there is considerable clinical evidence that the multimodal approach keeps treatment on target and often brings to light issues that remain hidden from therapists of other orientations, there are no hard data to confirm these impressions.

Aside from outcome measures, there is research bearing out certain multimodal tenets and procedures. For example, multimodal clinicians often use a 35-item Structural Profile Inventory (SPI) that provides a quantitative rating of the extent to which clients favor specific BASIC I.D. areas. Factor analytic studies gave rise to several versions of the SPI until one with good factorial stability was obtained. The instrument measures the extent to which people are action-oriented (behavior), their degree of emotionality (affect), the value they attach to various sensory experiences (sensation), how much time they occupy with fantasy and day dreaming and "thinking in pictures" (imagery), how analytical they tend to be (cognition), how important other people are to them (interpersonal) and the extent to which they are healthy and health-conscious (drugs/biology). The reliability and validity of this instrument has been borne out by research conducted by Steven Herman. One of the most important findings is that when clients and therapists have wide differences on the SPI, therapeutic outcomes tend to be adversely affected.

V. CASE ILLUSTRATION

A case illustration should amplify and clarify all of the foregoing elements and details.

Ken, a 46-year-old accountant employed by a large corporation, suffered from bouts of depression, had problems maintaining an intimate relationship (he was twice divorced), expressed concerns about his relation-

ship with his son and daughter from his first marriage, and was unhappy at work. Previously, he had been in couples therapy, had seen various individual counselors and clinicians from time to time, but felt that he had derived minimal benefits from counseling and psychotherapy.

During the initial interview it was soon apparent that Ken tended to denigrate himself and seemed to have unrealistically high expectations for himself. These issues were broached and Ken agreed to read selected chapters of two books I handed him, one by Albert Ellis and the other coauthored by my son and myself. At the end of the initial interview, as is customary with literate clients who are not excessively depressed or otherwise too disturbed or distracted to focus on filling out questionnaires, Ken was handed the Multimodal Life History Inventory (LHI). This is a 15-page survey that covers the BASIC I.D. He was requested to complete it in his own time, but not to attempt to finish it in one sitting, and asked to bring the completed inventory with him to the next meeting. A depression inventory had also been administered and revealed that Ken's degree of melancholia fell within normal limits.

The therapist usually studies the LHI after session number 2, so by the time the client returns for the third session, the impressions gleaned from the inventory are discussed and treatment priorities are established. However, before perusing the entire document, it is my custom to turn to the bottom of page 4, which inquires about the client's "Expectations Regarding Therapy." Ken had written: "I want my therapist to remember the things I discuss with him. I also appreciate someone who will disclose pertinent things about himself. I am looking for someone to advise me, and point me in the right direction." Contrast this with another client's expectancies. She had written: "A good therapist is an active listener who says little but hears all." It would be naive to assume that clients always know what they want and what is best for them. But without slavishly following their clients' scripts, if therapists had more respect for the notion that their clients often sense how they can best be served, fewer blunders might result.

In Ken's case, the therapeutic trajectory was clearly enhanced by my willingness to self-disclose. (I revealed strategies that I found helpful in my own marriage and with my own children, and I discussed problems that I had encountered in various work situations and tactics that had proved useful for me.) He took very kindly to the fact that I transcended the usual clinical boundaries by meeting him for lunch on a couple of occasions. He also appreciated the fact that I was quite forthright in offering advice ("I don't see a down side to your asking for two things. (1) More challenging work. And (2) a raise.")

Several interconnected problems were brought to light. His behaviors were characterized by too much passivity; affectively, he was apt to depress himself needlessly; at the sensory level, generalized muscular tensions seemed widespread; his mental imagery was replete with pictures of his past failures; his cognitions were fraught with statements of self-denigration, perfectionism, and categorical imperatives; and his interpersonal relationships were characterized by unassertive and avoidant patterns.

Initially standard cognitive–behavior therapy strategies were employed: relaxation training, positive imagery exercises, cognitive restructuring (especially antiperfectionistic teachings), and assertiveness training. Ken made good progress across several dimensions but there seemed to be three sticking points: (1) Tensions between Ken and his woman friend were escalating; (2) he was feeling more resentful at work because his boss was so remote and unsympathetic; (3) his unsatisfactory relationship with his children remained a source of pain.

A Second-Order BASIC I.D. assessment was attempted by asking Ken to picture himself attaining some of his immediate goals—achieving harmony at home with his woman friend, coming to terms with his boss, mending fences with his son and daughter. These situations were addressed one at a time, and Ken was asked to discuss the repercussions in each modality.

It became clear that a few sessions with Ken and his significant other might prove beneficial and he agreed to ask Norma, his lady friend, to accompany him to our next session. Subsequently, during three meetings with Ken and Norma they were each able to express their specific complaints and learned how to derive more satisfaction from their relationship by avoiding traps into which they tended to fall. For example, Norma was inclined to dredge up negative events from the past, Ken was apt to say "No" too often even to simple requests, and they both rarely complimented one another. More intensive role-playing procedures were used to enable Ken to take the risk of approaching his boss and expressing his dissatisfactions. At his own initiative, Ken started actively pursuing a new job search.

With regard to his children, given they both lived too far for them to consider some family therapy sessions, Ken agreed to call them, express his love for them and his desire for a better relationship, and to continue a dialogue via letters and e-mail. These active methods

primed Ken to approach all problems now and in the future by deliberately cultivating a forthright, assertive, outgoing, and nonavoidant modus vivendi.

A. Outcome

Multimodal behavior therapists have no ironclad adherence to weekly sessions, especially when clients need time to practice homework assignments. Thus, Ken had 16 sessions over a period of 8 months. His gains were clearly evident. He no longer described himself as depressed, and as the result of his newfound nonavoidant behaviors he reported having greater levels of interpersonal satisfaction and closeness. At a follow-up interview 6 months later he mentioned that he had obtained a new job at a higher salary.

It is noteworthy that although Ken was not a resistant, or especially difficult, combative, or seriously disturbed individual, he could easily have continued to suffer needlessly for the rest of his life. Many strategies and tactics were covered in the 16 sessions (e.g., relaxation training, mental imagery methods, cognitive disputation, and assertiveness training), but significant psychosocial gains accrued only after he started taking interpersonal risks. Because the therapist–client relationship is the soil that enables the techniques to take root, it must be remembered that the therapeutic alliance was deliberately tailor-made to fit Ken's needs and expectancies.

VI. SUMMARY

Multimodal behavior therapy draws on the same principles of experimental and social psychology, as do other cognitive–behavioral therapies. It emphasizes that for therapy to be comprehensive and thorough it must encompass even discrete but interactive modalities—behavior, affect, sensation, imagery, cognition, interpersonal relationships, and drugs/biological considerations. The first letters of the foregoing dimensions yield the convenient acronym BASIC I.D. This results in broad-based assessment and treatment foci.

Whenever feasible, multimodal behavior therapy practitioners use empirically supported treatment methods. The therapeutic relationship is pivotal. Rapport and compatibility between client and therapist is the soil that enables the techniques to take root. It is also considered essential to fit the requisite treatment to the specific client.

Multimodal behavior therapy is technically but not theoretically eclectic. As has been emphasized by Lazarus and Beutler, one need not draw on any theoretical underpinnings that gave rise to a specific technique when borrowing that procedure and applying it in a different context. The multimodal approach makes effective use of methods from diverse sources without relinquishing its social learning and cognitive theoretical underpinnings.

See Also the Following Articles

Biofeedback ■ Integrative Approaches to Psychotherapy ■ Neuropsychological Assessment

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Negative Practice

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GLOSSARY

affective variable A feeling or emotional response that follows a behavior or event.
habit Any learned way of living or fixed way of responding.
ideational variable Thought or belief regarding a behavior or event.
negative practice A technique in which a problem behavior is deliberately repeated or practiced by a patient to decrease the response in the long term.
paradoxical intention Therapeutic technique in which a patient suffering from a certain problem is encouraged to focus upon it and try to induce it rather than ignore it or avoid it.
reactive inhibition Principle which states that after any behavior there is an immediate increase in motivation not to perform the behavior.

I. DESCRIPTION OF TREATMENT

Negative practice is a technique in which a problem behavior is deliberately repeated, or practiced, by a patient to decrease the response in the long term. Negative practice has been used as a response reduction procedure primarily for habits, such as tics or nail biting; or in the treatment of specific types of anxiety. To treat nail biting, for example, clinicians prescribe scheduled practice sessions in which patients deliberately bite their nails until they learn to control the habit. Less often, negative practice has been used as a response reduction procedure for the modification of maladaptive behavior in persons with developmental disabilities.

II. THEORETICAL BASES

The origin of negative practice is associated with the work of Knight Dunlap, Ph.D. (1875–1949), Professor of Experimental Psychology at Johns Hopkins University. Dunlap published several critiques of imagery, consciousness, and instinct; however, his interests in neuropsychology and the impact of cognition on learning were closer to what is currently labeled as cognitive-behaviorism.

In 1928, Dunlap published a brief paper in Science in which he hypothesized that errors could best be corrected by repeatedly practicing those errors while acknowledging their incorrectness. He applied this technique to the correction of common typing errors (e.g., "hte" instead of "the") and found that negative practice remediated the error more rapidly than positive practice. Dunlap then wrote a monograph entitled *Habits, Their Making and Unmaking* in 1932 that out-

lined both his views on the formation of habits and his method to decrease these behaviors. He defined a "habit" as any learned way of living or fixed way of responding. His innovative suggestion for treatment was to repeat deliberately the response to unlearn it, that is, to implement negative practice.

Dunlap discussed several classes of habits, including stuttering (inadequate speech habit) and tics (obsessive motor habits). Although previous methods prescribed simply stopping the habit, for Dunlap this was the end goal, not the means to an end. In Dunlap's conceptualization of negative practice, the patient must understand the inappropriateness of the habit and the benefits of breaking the habit, have the desire to break the habit, and commit to the effort required to break it. In short, both motivation and effort are essential treatment components. Although contemporary psychologists may see this approach as similar to the cognitive-behavioral orientation, at the time Dunlap labeled his methods atheoretical.

In his monograph, Dunlap further explained his methodology using the example of stuttering. He took what a person who stuttered could consistently do (stutter) and used it as the basis of the treatment by which the behavior could be modified. Dunlap felt that if the patient could voluntarily practice stuttering under the conditions of wanting to eliminate the habit, then the habit could be modified. Voluntarily stuttering was the initial part of the process of eliminating the habit. However, Dunlap said that it was the desire to eliminate the habit that was the foundation of the curative process. The patient was not to avoid stuttering but should voluntarily practice stuttering for at least 30 minutes daily. After three or four weeks of practice, most people could then attempt to practice normal speech. If stuttering resumed, negative practice should be reinitiated. Dunlap noted that after three months of treatment, many adolescents responded with no trace of stuttering.

Dunlap wrote that treatment of tics generally paralleled the treatment of stuttering. The treatment of tics may be more rapid, but relapses are more likely. After approximately a dozen deliberate movements, the tic itself may disappear for an hour or two. Sometimes a tic may be completely eliminated, but another may take its place (this should be treated concurrently). Initially, daily practice should be performed with a subsequent schedule to be determined by the psychologist. Dunlap also successfully treated other habits similar to tics, namely, thumbsucking in children and nail biting in college students. Dunlap proposed extending negative practice to a range of personal habits, such as eating noisily or laughing while telling a story. He believed that the key to negative practice was not to yield to the impulse but to initiate the practice voluntarily in the absence of the impulse. Negative practice was the beginning of the learning process of not performing the habit.

Knight Dunlap's use of negative practice was intended to bring an involuntary behavior under voluntary control. In his perspective, this shift occurred due to both affective and ideational variables. When patients practice the behavior, they do so with a different purpose (ideational variable) and experience the behavior with a different feeling (affective variable). Dunlap believed these variables were essential in achieving voluntary control over the behavior. In fact, the subjective state of the patient was seen as more important than the behavior of the clinician.

Negative practice has been compared to other techniques such as paradoxical intention and therapeutic paradox, both of which have their origins in analytic psychotherapy. Although the techniques vary by theoretical orientation, in each case patients are encouraged to continue their problematic behavior on a schedule established by the clinician. A major distinction between negative practice and these methods involves the role of the clinician: for paradoxical intention and therapeutic paradox, the patient–clinician relationship is seen as paramount; in negative practice, patient variables are considered essential to therapeutic success.

Whereas Knight Dunlap considered negative practice devoid of a theoretical basis, in 1959, Aubrey Yates suggested a formulation of negative practice based on Hullian learning principles of reactive inhibition. According to the principle of reactive inhibition, after any response there is an immediate increase in motivation not to perform the response. The repeated rehearsal of the target response would lead to reactive inhibition. The reduction of the aversive state of reactive inhibition achieved by not performing the tic would lead to conditioned inhibition of the tic.

In 1982, Richard Foxx offered a more parsimonious explanation of negative practice. Based on an applied behavior analytic perspective, he suggested that the high response effort of repeating the behavior served as a punisher for the behavior.

III. EMPIRICAL STUDIES

Although Knight Dunlap provided extensive descriptions of his procedure in his 1932 monograph, the first empirical evidence to support the effectiveness of

negative practice did not come until 1935. Winthrop Kellogg and colleagues compared the rate of maze learning across three conditions: in the first, participants were given no instructions regarding errors; in the second, participants repeated their errors (negative practice); and in the third, participants retraced a distance along the correct pathway that corresponded to the length of their error (positive practice). The negative practice group made significantly fewer errors than the original group and had a slight advantage over the positive practice group.

Since this time, negative practice has been researched periodically. Although initial studies showed successful results for repetitive behaviors and habits, positive outcomes tended to wane following the introduction of newer treatment approaches. This trend can be seen across research for the following behaviors.

A. Tics

Negative practice has been researched as a treatment for tics, although most studies used only one to two subjects. These studies were at least moderately successful in reducing tics such as eyebrow raising, eye blinking, mouth grimacing, head jerking, and multiple tics.

Frank Nicassio, Robert Liberman, Roger Patterson, and Eleanor Ramirez in 1972 used negative practice to treat successfully a single tic in one participant but had no success with a second participant who displayed multiple tics. In the case of the single tic, it subsided after 33 days of negative practice (approximately 16 hours total) and remained absent at 18-month followup. The second participant had multiple vocal and motor tics; three were targeted for intervention in a multiple baseline design. No reduction was observed in any of the tics, and rates remained at high at three-month followup. The authors suspected that this failure resulted from a lack of understanding of the complete behavioral complex (functions) of the multiple tics.

In 1974, Kenneth Knepler and Susan Sewall demonstrated rapid (80-minute) reduction of an eye-blink tic that maintained over a six-month period when smelling salts were paired with negative practice. The authors hypothesized that the use of smelling salts would accelerate the development of an aversive internal state. Negative practice was done as described by Aubrey Yates in 1958: five one-minute trials of practice interspersed with one-minute rest periods during clinic sessions.

Nathan Azrin, R. Gregory Nunn, and S. E. Frantz in 1980 compared negative practice to a newer procedure known as habit reversal. They found that habit reversal reduced tics by 92% by the fourth week, whereas negative practice only reduced tics by about one-third. Negative practice consisted of 30 seconds of practice every hour. With habit reversal, participants were taught to engage in a motor response incompatible with the tic.

Nathan Azrin and Alan Peterson (1988) reviewed the research to that date that had occurred with negative practice in the treatment of Tourette's Syndrome. Negative practice had a therapeutic effect in 10 out of 18 studies. For five studies with available data to analyze, there was an average of a 58% decrease in tics. Other studies showed an increase or recurrence in tics following treatment, and followup data indicated that the effect may not persist over time.

B. Nail Biting

Negative practice was used as an early treatment for nail biting by M. Smith, who eliminated the habit or markedly reduced it in about half of his sample of college students in 1957. During a two-hour session, the participants simulated nail biting in front of each other while telling themselves how ridiculous they looked. They were supervised by a therapist who explained the rationale, answered questions, and monitored practice. The participants were given instruction to practice nail biting for 30 seconds every hour until nail biting had been eliminated for four consecutive days. At that point, participants were to fade their practice schedule over a two-week period.

In 1976, however, John Vargas and Vincent Adesso found equal effectiveness between negative practice, self-imposed shock, and use of bitter taste. The effects for each of the three treatments were greater than those seen for self-monitoring (e.g., increased attention to the behavior) alone.

Nathan Azrin, R. Gregory Nunn, and S. Frantz in 1980 again compared habit reversal with negative practice in a study of treatments for nail biting. They found that habit reversal reduced nail biting by about 99%, whereas negative practice reduced it by only 60%, although both treatments had components of awareness, motivation to change, and repeated practice of a response. Negative practice within this study consisted of the identical method used by M. Smith in 1957. Azrin and colleagues then continued to pursue research on habit reversal, and subsequent studies of negative practice diminished in the research of treatments for this behavior.

C. Smoking

Negative practice has been used as a form of in vivo aversive conditioning to treat smoking. This procedure

was used by J. H. Resnick in 1968 and again by James Delahunt and James Curran in 1976. However, Delahunt and Curran compared four groups: (1) negative practice alone, (2) self-control alone, (3) a combined treatment package, and (4) a control group of nonspecific therapy. They found that each component separately did not differ from the control group, while the combined group had a significant reduction of 70% from baseline rates. The authors hypothesized that this effect was due to a combination of operant and respondent factors that were in effect in the combined treatments group; both factors appeared necessary to reduce smoking according to the body of research on the reduction of this behavior. The specific method of negative practice in Delahunt and Curran's study involved having subjects smoke 1.5 times more than their usual average for one day, a day of abstinence, smoking 2 times their baseline rate for one day, and then quitting.

Although early studies reported the success of negative practice in the modification of smoking behavior, subsequent studies demonstrated that the effect did not last in followup data and that this therapeutic technique led to relapse, as did most treatments for smoking at the time. In 1968, Edward Lichtenstein and Carolyn Keutzer conducted a followup study of 148 participants who were involved in a treatment study that compared breath holding, negative practice, and coverant control (use of high-probability behaviors to reinforce covert thoughts). Although initial treatment gains were seen across all treatment groups at the end of treatment, by a six-month followup, the differences between treated and untreated groups were barely distinguishable. Richard O'Brien and Alyce Dickinson in 1977 compared negative practice, satiation, and control groups following one week of treatment. Initially, each treatment group had a significant decline in daily cigarette consumption. However, this effect was lost at three-month followup. This effect occurred despite manipulation of variables such as cigarette consumption within the negative practice and the baseline frequency of cigarette smoking.

D. Anxiety

In 1976, Richard M. O'Brien demonstrated that negative practice in the form of repeated exaggerations of anxious behaviors could decrease test anxiety and improve course grades in college students. A comparison group of students treated with group desensitization (graduated exposure to test-related stimuli paired with relaxation training) reduced their anxiety but did not improve their grades. The students practiced for 10 minutes each hour on the first day, 10 minutes each 2 hours the next day, and 10 minutes three times per day for the remainder of a week. However, when Richard Levine and Richard O'Brien attempted to replicate these results with a control group and another test group of systematic desensitization in 1980, they saw no significant treatment effects for any condition. They hypothesized that since this group of participants had lower scores on a test anxiety measure, the negative practice schedule was not intense enough to produce the desired treatment effect.

Richard Wolff in 1977 employed negative practice to treat the compulsive checking rituals of a woman who feared the possibility of intruders in her home after enduring a rape attempt. The participant was a 20-year-old woman who had a 13-step checking ritual that she performed following each return to her apartment. The woman was instructed to repeat the ritual five times contingent on each incident of checking for two weeks. The ritual was eliminated and remained absent at 6- and 12-month followup.

E. Bruxism and Oral Habits

The use of negative practice to treat bruxism (teeth grinding) was first reported by William Ayer, who did his research in 1969, 1973, and 1976. In the 1976 study, he reported successfully treating a group of adults with bruxism by having them schedule negative practice sessions six times a day for a total of 30 to 45 minutes of practice during a two-week period. All participants reported a decrease in bruxism, and 75% remained free of the behavior at one-year followup.

Although Ayer reported successful treatment in the above studies, these data were limited to patient or spousal report of occurrence. In 1988 Ross Vasa and Holly Wortman conducted a single-case study with a 22-year-old woman in which they restricted the massed practice time intervals to the period before bed time. Practice sessions were faded to alternating nights once a treatment effect was observed. A 90% reduction was observed in 10 weeks' time.

Nathan Azrin, R. Gregory Nunn, and S. E. Frantz-Renshaw extended their previous work with negative practice and habit reversal to oral habits such as biting, chewing, licking, or pushing of cheeks, lips, teeth, or palate in 1982. Again, a single-session treatment with followup across 22 months resulted in significantly

greater reduction in the group treated by habit reversal (99%) as compared to that treated by negative practice (65%). The treatment method was identical to that used in their earlier studies treating tics. That is, a two-hour practice period was followed by 30 seconds of practice every hour until the behavior was eliminated. As previously mentioned, Azrin and colleagues proceeded to investigate habit reveral further and discontinued their work in nagative practice.

F. Applications for Individuals with Mental Retardation

In all reported applications, negative practice has been used as a contingent procedure for persons with mental retardation. That is, following an occurrence of an inappropriate behavior, the procedure is implemented with the anticipation that it will serve as a punisher and thereby decrease the chance of recurrence. For example, following an instance of clothes ripping, an individual may be guided to repeatedly tear a rag for a specified period of time. When used in this context, negative practice typically is considered a moderately aversive procedure.

Richard Foxx described the use of negative practice with persons with mental retardation and autism. He cautioned that the applicability of this procedure with this population was limited for several reason. First, negative practice as described in the general research literature requires a certain degree of motivation by the patient to eliminate a problem behavior, something that may not be present to the same level in persons with mental retardation. As a result, the use of negative practice would require physical guidance by a caregiver, which may lead to the patient becoming combative. Next, the treatment acceptability of this procedure may be low among caregivers. Both research and clinical observations have long held that if staff do not find a treatment acceptable, the will be less likely to implement it resulting in less behavior change in the client. Finally, this procedure is limited to a subgroup of the wide range of problem behaviors that are typically exhibited by the this population. It would not be appropriate, for example, to implement negative practice with aggressive behavior, self-injury, or destructive behavior that significantly disrupts a person's environment. The majority of these studies have shown effectiveness, especially when the problem behavior appeared not to be maintained by environmental consequences.

Lombana Durana and Anthony Cuvo in 1980 used negative practice in conjunction with differential reinforcement of other behavior (DRO) and restitution to eliminate public disrobing in a woman with profound mental retardation. This treatment proved effective even though DRO plus restitution plus positive practice (repeatedly putting on clothes) failed to significantly reduce the behavior.

Pieter Duker and Monique Nielen in 1993 decided to use a response-contingent negative practice procedure to reduce the pica (ingestion of inedible items) of a 33-year-old woman with mental retardation. Pica is a behavior that is often resistant to intervention and is therefore rarely researched. Negative practice in this case consisted of a caregiver approaching the participant when she engaged in pica attempts and pressing the object she was attempting to chew to her lips for a two-minute period. Pica was significantly reduced, and the authors concluded that the contingent negative practice served as a punisher for pica behavior. The authors hypothesized that the continuous repetition of the behavior may have become aversive to the participant.

G. Unique Applications

Several isolated studies exist that describe the application of negative practice to unique topographies of behaviors. For example, in 1974, Howard Wooden described the case of a 26-year-old married man who reportedly displayed nocturnal headbanging for 25 years. After four nights of negative practice (carried out before bed until the patient subjectively experienced physical fatigue), the behavior dissipated and recurred only twice in six months on followup data.

The effectiveness of negative practice for improving spelling ability has been researched with mixed results. Constance Meyn and others in 1963 compared negative practice and positive practice as correction techniques when fourth grade students misspelled words in a research study. There was no difference in outcome between positive and negative practice techniques. Other studies reported both increased errors and improvement in correct spelling with negative practice.

Negative practice has been used in conjunction with other elements of a treatment package treatment of fire-setting. Typically, the practice component would involve having the child set a fire (or as many fires as possible within a time period) while supervised by an adult who verbally reviewed fire safety procedures. The child would set the fire in a designated area and then be responsible for cleanup. The outcome of this study is difficult to discern because treatment was evaluated as a package and not by the individual components.

In summary, negative practice initially seemed promising as a treatment for many repetitive behaviors. As research progressed, however, most findings tended to show a lack of sustained effect in followup data or more beneficial effects from newer treatment approaches.

IV. SUMMARY

Negative practice is a therapeutic technique in which the patient deliberately repeats a problem behavior until the behavior is reduced or eliminated. Originally, it was hypothesized that negative practice functioned through the principle of reciprocal inhibition, a concept in Hullian learning theory. Due to a lack of supporting data, more recent hypotheses suggest that guided repetition of a behavior may lead to fatigue or another aversive state, thereby defining the technique as a punisher. Negative practice has been used to treat a limited number of symptoms with some success, although many of these symptoms (e.g., tics, smoking, anxiety) can be successfully treated with newer and more comprehensive approaches. In some cases, it can be successfully applied to certain problem behaviors exhibited by persons with mental retardation.

See Also the Following Articles

Avoidance Training ■ Habit Reversal ■ Negative Punishment ■ Negative Reinforcement

Further Reading

Azrin, N. H, & Peterson, A. L. (1988). Behavior therapy for Tourette's Syndrome and tic disorders. In D. J. Cohen, R. D. Bruun, & J. F. Leckman (Eds.), *Tourette's Syndrome and tic disorders: Clinical understanding and treatment*. New York: John Wiley & Sons.

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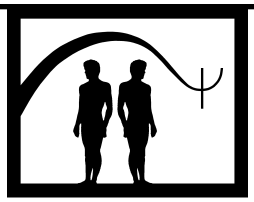

Negative Punishment

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GLOSSARY

aversive A nontechnical term often used to refer to punishment and negative reinforcement procedures.
behavior Any action of a living creature. Behavior can be overt or covert.
consequence An event that follows and is produced by a behavior.
environment The natural world in its entirety, including all events that occur inside and outside living creatures.
functional assessment Procedures that are used to identify the variables responsible for a problem behavior.
negative punishers Punishers that involve removing or preventing the delivery of a stimulus.
negative punishment A procedure (or process) in which the removal or prevention of the delivery of a stimulus as a consequence of behavior weakens (e.g., reduces the likelihood of) that behavior in the future.
operant conditioning A form of learning in which behavior is controlled primarily by its consequences.
positive punishers Punishers that involve adding something to an individual's environment.
positive punishment A procedure (or process) in which the presentation of a stimulus after a behavior weakens that behavior in the future.
punishers Consequences that weaken behavior.
response cost A negative punishment procedure that involves removing something of value from an individual after an inappropriate behavior occurs.
rules Overt or covert statements of relations among stimuli and responses. Rules describing the consequences of behavior can evoke behavior similar to that associated with direct exposure to those consequences.
stimulus A physical event.
time out A negative punishment procedure that involves the temporary removal of an individual from an environment in which positive reinforcers are available.
token economy A therapeutic system based on providing appropriate consequences for important behaviors.

Most human behaviors considered by psychologists as important are operant behaviors. That is, these behaviors operate on the environment to produce particular changes, called consequences. Consequences are reinforcers if they strengthen the behavior that produced them and punishers if they weaken it. Punishment occurs when a behavior is weakened by its consequences. In 1953, B.F. Skinner noted that punishment was the most common form of behavior control. He strongly opposed its use in clinical applications and in society in general, and many other prominent people have done likewise. Nonetheless, punishment continues to be ubiquitous in everyday life. It is also used systematically to improve behavior in therapeutic applications, although ethical, practical,

and legal considerations limit where, how, and with whom punishment can be utilized.

I. DESCRIPTION OF TREATMENT

Psychologists commonly distinguish between negative and positive punishment. Positive punishment occurs when the presentation of a stimulus, termed a positive punisher, weakens the behavior that caused this consequence to occur. In contrast, negative punishment occurs when the removal or prevention of delivery of a stimulus, termed a negative punisher, weakens the behavior that produced this consequence. As an everyday example of negative punishment, envision two friends who are sitting together having a friendly conversation when one makes a highly critical comment about a presidential candidate. The other person likes the candidate and is angered by the comment and abruptly gets up and walks away upon hearing it. If this results in fewer negative comments about the politician in the future, then negative punishment has occurred. In this hypothetical example, and in most cases, the response-weakening effect of punishment involves a decrease in the frequency of responding, although other changes in behavior (e.g., increased latency to respond or decreased intensity of responding) may be indicative of a punishment effect.

For negative punishment to be effective, the stimulus that is removed or avoided must have positive hedonic value. In general, such stimuli serve as positive reinforcers, which are stimuli that strengthen behaviors that produce them. Many writers describe negative punishment as a procedure that weakens a particular kind of behavior because that behavior removes a currently available positive reinforcer or prevents the delivery of an otherwise forthcoming positive reinforcer. Although this conception of negative reinforcement makes intuitive sense, stimuli that serve as negative punishers for a particular individual's behavior may never have served as positive reinforcers for that individual's behavior. For instance, a child who has been given CDs by family members may value them, and taking them away following an undesired behavior, perhaps cursing, might function as negative punishment. Thus, the CDs are negative punishers. But they were given to the child independent of her behavior, and no behavior was strengthened by their delivery. Thus, they have not functioned as positive reinforcers for any behavior of the individual in question. Whether they have the capacity to serve this function is not a fixed characteristic of the CDs but depends on the context in which their presentation follows behavior.

Basic and applied studies demonstrate conclusively that the behavioral function of a given stimulus is not fixed but rather depends on historical and current circumstances. Although stimuli that serve as negative punishers often also serve as positive reinforcers, this is not always, nor necessarily, the case. Moreover, thinking of the stimuli that are removed or avoided as positive reinforcers may cause confusion about the behavioral effects of negative punishment. Reinforcement always strengthens behavior, and punishment always weakens it; this principle holds regardless of whether either procedure is "positive" or "negative." In addition, these terms refer only to whether the procedure involves adding something to an individual's environment or taking something away. They do not refer to the kinds of behavior that are affected or to the "goodness" of the consequences that are arranged.

Although the behavioral functions of stimuli are not fixed, they are not capricious, and it is usually possible for psychologists and others to predict with some accuracy whether an event will function as a negative punisher in a given context. Personal experience, scientific reports, and theoretical deductions are all useful in predicting that a specific event will punish behavior, although the ultimate test is to arrange the event as a consequence for the behavior that is to be reduced. Operations that fail to weaken behavior do not constitute punishment, even if the persons who designed and implemented them intended them to reduce responding.

When used therapeutically, negative punishment is used to weaken inappropriate target behaviors. The two most commonly used procedures that involve negative punishment are time out (also spelled timeout or time-out) and response cost. As discussed later, these procedures have been effective in reducing a variety of target behaviors in various settings with diverse client populations.

Time out generally involves temporarily removing an individual from an environment in which positive reinforcers are available whenever the behavior that is to be reduced occurs. That is, when the client performs the undesired behavior, she or he loses the opportunity to earn positive reinforcers. The two broad classes of time out are exclusionary and nonexclusionary. In exclusionary time out, the client is moved from a setting that provides many positive reinforcers to a setting that provides few, if any, positive reinforcers. For example, a child who misbehaves in a classroom may be moved from the classroom to an empty room for a two-minute

period as a form of exclusionary time out. If successful, this procedure would reduce the subsequent rate of occurrence of the undesired behavior.

Time out has been used most extensively in educational settings. In such settings (and some others as well), exclusionary time out commonly is implemented in one of three ways. In one, the client is required to spend the duration of the time out in a secluded time-out room whenever the behavior targeted for reduction (e.g., swearing) occurs. Time-out rooms should be well ventilated, well lit, and reasonably comfortable but should not contain obvious sources of positive reinforcement (e.g., toys, chairs that rock). If necessary, such rooms should be padded to protect clients from injuring themselves. Provision should be made for observing clients during time outs (e.g., through one-way mirrors) and intervening rapidly to terminate dangerous activities. Clients should not spend more than a few minutes in the time-out room. Long periods of time out do not necessarily reduce behavior more effectively than do short periods, and the former may be abusive to the client.

A second exclusionary time-out method uses a partitioning wall that separates the time-out area from the normal setting (e.g., a classroom). This method is similar to the use of a time-out room in that it involves a move from a more to a less reinforcing environment, but the client is moved to a place behind the partition instead of being moved to a separate room. One problem associated with the partition method is that disruptive clients can continue to disrupt normal activities from behind the partition. Furthermore, other individuals can still reinforce problem behaviors by laughing, making comments, or otherwise responding to the misbehavior.

A third, and perhaps the most popular, method of arranging exclusionary time out, involves taking the client to the hallway outside of the room where the problem behavior occurred. Although this method may be the only practical option for some situations, hallway time outs should generally be avoided because hallways typically contain many sources of positive reinforcement, such as other students, drinking fountains, windows into other rooms, bulletin boards, and posters.

To ensure the safety of students and to prevent them from running away, arrangements must be made for monitoring students placed behind partitions or in hallways during time out. These forms of time out, like all others, should be as brief as possible.

Exclusionary time out is likely to be effective in reducing behavior if four criteria are met. First, the time out must involve a move from an environment that provides a relatively high frequency of positive reinforcers to an environment that provides a relatively low frequency of positive reinforcers. If the frequency and quality of reinforcers in the time-out environment are equal to or greater than those in the regular environment, then time-outs will not punish, and may even reinforce, the undesired behavior.

Second, time outs must occur immediately after the problem behavior occurs. Delays in implementing time outs are apt to reduce their effectiveness substantially. Third, time outs should be ended only when the individual is engaging in appropriate behaviors. If time outs end while the individual is behaving unacceptably, or immediately thereafter, termination of the time out and return to the normal environment could reinforce the undesired behavior.

Finally, time-out procedures should be clearly explained to the client. This allows for rules about the consequences of behavior, as well as direct exposure to those consequences, to affect the target response. Rules specify relations among stimuli and responses and can engender behaviors similar to those produced by actual exposure to those relations. Helping clients to formulate and follow appropriate rules is apt to increase the effectiveness of any intervention and should be part of almost all treatments. This includes response-cost procedures.

Sometimes it is not possible or desirable to remove a misbehaving client from the situation in which the misbehavior occurs. In such cases, nonexclusionary time out is often used. In nonexclusionary time out, the individual remains in the setting where the problem behavior occurred but loses the opportunity to earn positive reinforcers. For example, a teacher may briefly ignore a student who behaves inappropriately. Ignoring, in this case, prevents the student from earning social reinforcers from the teacher.

Psychologists have developed four general methods of nonexclusionary time out: time-out ribbon, planned ignoring, contingent observation, and prevention of preferred activities. The time-out ribbon provides an excellent example of nonexclusionary time out. This method requires that all clients receive a ribbon when they enter the treatment setting. Possession of the ribbon indicates that the individual is allowed to participate in the reinforcement system (usually a token economy, which will be described later). Whenever a client performs a behavior targeted for reduction, the ribbon is taken from the client, indicating that the client can no longer obtain reinforcers from staff for

some predetermined time. Unfortunately, this intervention is unsuited for reducing behaviors not maintained by staff-delivered reinforcers, or behaviors (e.g., self-injurious responding) maintained by staff attention that cannot be withheld for ethical or practical reasons.

As the name implies, planned ignoring involves having caregivers ignore predetermined problem behaviors. For example, in a therapy group designed to reduce interpersonal aggressive behaviors, the therapist (and others) may briefly ignore a client every time the client makes an aggressive remark (e.g., "I'm gonna kill you"). Planned ignoring tends to be most effective when the individual's social environment is highly reinforcing and when the therapist consistently implements the intervention. One problem with this intervention is that some behaviors are difficult or dangerous to ignore. Using the therapy group example, if a client actually engaged in an aggressive act against another person, it would be unethical simply to ignore this behavior. Another problem with planned ignoring is that this intervention is effective only if the client's behavior is maintained by social reinforcers that caregivers control.

Contingent observation is usually implemented in a group setting, such as a classroom. In contingent observation, a misbehaving client is asked to sit outside of a group of individuals and observe the group for a brief period of time (e.g., two minutes). During this time, the client cannot participate in group activities and, hence, cannot receive social reinforcers. In addition, the client observes others behaving appropriately and receiving reinforcers. Thus, this intervention uses negative punishment and modeling to achieve its effects. As with other time-out procedures, contingent observation requires that reinforcers are not available for the misbehaving client during observation periods and that the intervention be applied consistently and immediately after the problem behavior occurs.

A final nonexclusionary time-out procedure consists of preventing the client from engaging in a preferred activity, such as playing cards, whenever the target behavior occurs. For example, one study demonstrated that children's thumbsucking could be reduced by turning off the television the children were watching immediately following each incident of thumbsucking. In some cases, it may be appropriate and possible to reduce problem behaviors without clients' knowledge using this time-out technique. This may be important in situations where other behavior-weakening techniques have produced disruptive or aggressive behavior in clients.

There are obvious benefits and drawbacks to both exclusionary and nonexclusionary time out. Nonexclusionary time out is thought to be more beneficial to the client because he or she is allowed to remain in the educational (or therapeutic) environment. In addition, if the client does not have to be removed from the environment, there is less chance that he or she will become aggressive or hostile. As previously mentioned, however, nonexclusionary time out allows highly disruptive individuals to remain in the setting, providing them with the opportunity to disrupt further the ongoing activities. Exclusionary time out, on the other hand, has the virtue of removing disruptive individuals from the setting, allowing other clients to benefit from ongoing activities. Unfortunately, exclusionary time out removes from the instructional situation the very individuals who may need instruction the most. There is no obvious solution to these problems, and therapists must find a way to weaken inappropriate behavior while ensuring that clients receive the educational opportunities they require.

Whereas time out involves removing the opportunity for an individual to gain access to positive reinforcers, response cost involves taking valued stimuli away from an individual when misbehavior occurs. That is, response-cost interventions make problem behaviors "costly" in that the individual who emits these behaviors loses something of value. Put simply, the client has to pay for engaging in inappropriate behavior. Examples of response-cost procedures often appear in our daily lives in the form of fines and points lost in classroom settings. Implementing a response-cost procedure in no way guarantees that negative punishment will occur. In order for response cost to weaken behavior, the individual must lose something of greater value than whatever the individual gains by misbehaving.

Response-cost procedures are commonly implemented in four ways. First, response cost can be combined in a package intervention with procedures, such as differential-reinforcement-of-incompatible-behavior (DRI) schedules, that increase appropriate behaviors. Here, reinforcers earned under the DRI schedule for appropriate behavior would be lost if the undesired behavior occurred.

Second, response cost involving fines of specific amounts through loss of points, money, tokens, or quantifiable amounts of other valued stimuli already in the individual's possession can be used alone. Third, "bonus" or "free" reinforcers can be delivered at the start of the response-cost period and then removed if inappropriate behaviors occur. Finally, response cost

can be implemented for a group of clients such that inappropriate behavior on the part of one group member will result in the loss of valued items for the entire group. In this case, the response-cost procedure results in group members exerting "peer pressure" on other members to remain well behaved. Although such peer pressure can maintain appropriate behavior, it may be too stressful for some clients. Thus, group procedures should be monitored carefully.

Psychologists often implement time out and response-cost procedures in settings where token economies operate. Token economies are behavior management systems that provide tokens, such as poker chips or points, for appropriate behaviors. The tokens can then be traded for a variety of backup reinforcers, such as tangible items like candy, soda, and toys, or for privileges like going to the park or checking out a book at the library. As a result of being exchanged for a variety of backup reinforcers, the tokens eventually come to function as generalized conditioned reinforcers and effectively maintain appropriate behaviors. In this way, tokens allow the psychologist to deliver consequences immediately following the performance of target behaviors, thereby maximizing the likelihood of the desired behavioral effect.

In the context of a token economy, time out involves the restriction of a client's ability to participate in the token system for a short period of time (e.g., two minutes) whenever the individual engages in an inappropriate behavior. Response cost in a token economy is relatively straightforward and involves the removal of a specified number of tokens whenever an individual engages in inappropriate behavior.

The implementation of a token economy requires: (a) specification of observable, easily measured behaviors to be reinforced or punished; (b) delivery or removal of tokens when the behaviors specified in (a) occur; (c) identification of effective backup reinforcers for which tokens can be exchanged; and (d) specification of rules by which the economy runs, including rules concerning exchange rates, magnitude of reinforcers and punishers, schedule of consequence delivery, and frequency of exchanges. In theory, token economies can be of any size if sufficient resources to manage the system are available.

Token economies must be flexible enough to support each client's personalized treatment goals and to provide consequences that may differ widely across individuals. As systems become more individualized, however, they become more complex, which can result in staff performance problems. No token system will function perfectly all of the time, so they should include mechanisms that allow treatment providers to monitor how well the system is performing and to correct any problems that arise. One way to increase the possibility that the token system will function smoothly is to obtain client's cooperation and input when designing the system. Including clients in the system development process increases their involvement in the system and gives them a greater degree of control over their lives.

Regardless of whether or not response cost is implemented as part of a token economy, the procedure is not likely to be successful unless the undesired behavior leads rapidly and consistently to the loss of enough of a valued item to be of significance to the client. A potential problem with the procedure is that, if response cost is implemented repeatedly, there may be no more of the specified valued item to take away. This difficulty sometimes can be averted by arranging a number of "different costs" for a target behavior. For example, tokens might be taken away until none are left; then loss of a specified series of privileges could occur.

What might be termed intermittent response cost is regularly used in educational settings. Here, something of value is lost after the target behavior occurs a specified number of times. For example, a teacher might make a check mark on the board each time a student talks out in class. When the third check mark appears, the child loses access to the playground during the next recess period. Although this procedure is often effective, some students might "figure out the system" and misbehave twice before behaving appropriately. This outcome might or might not be acceptable to the teacher, depending on the nature of the undesired behavior.

The procedure described in the preceding example was presented as a response-cost manipulation; this is legitimate because the student lost something of value—access to recess—because of misbehaving. But the procedure could also be construed as time out because the child lost access to reinforcers associated with the playground dependent on misbehaving. Although it is of heuristic value to distinguish between time out and response cost, the distinction often blurs in everyday applications.

II. THEORETICAL BASES

Punishment has generated a great deal of theoretical interest, although positive and negative punishments characteristically are not distinguished in these discussions. From the earliest days of psychology as a formal

discipline, it has been widely acknowledged that consequences can weaken as well as strengthen behavior. For instance, Edward Thorndike pointed this out early in the 1900s in his famous Law of Effect. The version that appeared in his 1905 book, *The Elements of Psychology,* reads:

> Any act which in a given situation produces satisfaction becomes associated with that situation, so that when the situation recurs the act is more likely than before to recur also [this is reinforcement]. Conversely, any act which in a given situation produces discomfort becomes disassociated from the situation, so that when the situation recurs the act is less likely than before to recur [this is punishment].

Over time, however, Thorndike became convinced that punishment did not produce enduring effects. This view was based on limited studies of positive punishment that he conducted. The preeminent behavioral psychologist B. F. Skinner supported this view in his 1953 book, *Science and Human Behavior,* and elsewhere. Skinner contended that not only does punishment typically fail to produce lasting response suppression, but it also characteristically engenders negative reactions, including aggression, escape, and attempts at countercontrol. Consequently, punishment (and negative reinforcement, claimed to have similar adverse effects) should be avoided in clinical applications and in society at large. Skinner described a society without aversive control in his utopian novel, *Walden Two,* published in 1948.

Despite arguing forcefully against the use of punishment, Skinner recognized that operant behavior was sensitive to both negative and positive punishment. In fact, throughout Skinner's long life, both were included as principles of behavior in his analysis of operant conditioning. Skinner did not argue that behavior could not be reduced by negative punishment. Rather, he argued on practical and ethical grounds that behavior should not be reduced in this way because there are better alternatives (e.g., positive reinforcement).

Arguments against the use of punishment similar to those first advanced by Skinner half a century ago have been repeated and extended in the ensuing years. Over this same period, laboratory studies with nonhumans and humans and clinical studies with various client populations have provided clear evidence that both negative and positive punishment can produce strong and enduring reductions in operant behavior. Insofar as theory in psychology should be based on data, there is substantial theoretical support for the effectiveness of procedures based on negative punishment.

Whether such procedures are appropriate for therapeutic use in general, or in specific cases, is another issue altogether. Some theoreticians argue for and against therapeutic techniques based on the principles of behavior that underlie their effects. They claim, for instance, that positive reinforcement is good and negative punishment (along with positive punishment and negative reinforcement) is bad. But in the everyday world of the clinic and classroom, and in courts of law, the acceptability of procedures is usually based on their details (who does what to whom, for what reason, and with what real or anticipated result?), not on their mechanism of action. In the following section, we discuss general restrictions on the use of negative punishment and discuss appropriate safeguards for the use of procedures that involve negative punishment. Although such procedures should always be used with care, mild and generally accepted interventions (e.g., teachers' use of nonexclusionary time out for classroom management) typically are not subjected to the same scrutiny as more unusual and potentially intrusive interventions (e.g., time out in a secluded room to reduce severe self-injury in a person with severe mental retardation).

III. APPLICATIONS AND EXCLUSIONS

Even though negative and positive punishment can be distinguished procedurally and arguments against punishment have focused on the latter, procedures involving both forms of punishment (and negative reinforcement) are commonly considered as "aversive" and relatively restrictive (harmful) interventions. Therefore, the use of negative punishment is limited by both ethical and legal considerations, although the extent of these restrictions depends on the specific procedure, client, problem behavior, and setting under consideration. Like all "aversive" interventions, procedures involving negative punishment may generate negative affective behavior (e.g., crying), aggression, and escape responding. Moreover, negative punishment procedures are easily misused by ill-informed or ill-intentioned caregivers, as when clients are placed in a time-out room for long periods for staff convenience.

In view of the foregoing considerations, negative punishment should not be used until less restrictive interventions have proven ineffective. As with positive punishment, a clear decision-making process regarding the use of negative punishment should be in place. Specific guidelines must be established regarding the

exact nature of the proposed punishment procedure, including who is to implement it and the specific standards of accountability. Unambiguous rules regarding the behavioral data that will support continuation, modification, and termination of punishment must be established and followed by a vigilant, expert, and caring treatment team before punishment is implemented. Input from clients, client's advocates, behavior-change experts, and the individuals responsible for implementing procedures is invaluable in formulating guidelines for the use of negative punishment in schools and other settings.

Before a negative punishment procedure is implemented, the treatment team, as Ray Miltenberger suggests in his excellent 1997 text *Behavior Modification,* should

1. Conduct a functional analysis to ascertain the consequences and other variables that are maintaining the problem behavior. This information is invaluable for planning effective interventions.
2. Determine whether the proposed intervention (e.g., time out or response cost) is practical in the present situation.
3. Determine whether the proposed intervention is safe.
4. Determine whether the client can readily escape from or avoid the proposed intervention.
5. Determine whether the intervention can be implemented consistently.
6. Determine whether all parties with a legitimate interest in the intervention find it acceptable.

Adhering to these guidelines often requires substantial time and effort. But doing so is essential to ensuring the well-being of clients.

In general, with the proviso that clients with special needs require special protections, issues of client diversity do not strongly enter into whether or not procedures based on negative punishment are appropriate. Interestingly, such procedures are frequently used with children and with adults with mental illness or mental retardation, and these are the very people most in need of special protections.

IV. EMPIRICAL STUDIES

The clinical literature relevant to negative punishment is sizable; numerous studies have shown that time out and response cost, if properly arranged, can effectively reduce a wide range of target behaviors in numerous settings with a variety of client populations. Time out is the negative punishment procedure most often examined in published studies, and it has a long history of success in the treatment literature. Published studies have demonstrated time out to be effective in reducing cursing, off-task behaviors, stereotypic behaviors, thumbsucking, pica, self-injury, disruptive meal-time behaviors, tantrums, self-stimulation, perseverative speech, noncompliant behaviors, physical aggression, verbal abuse, hoarding, and rule violations. Settings in which time-out procedures have been successfully implemented include psychiatric hospitals, elementary and high schools, juvenile facilities, and day-treatment schools. Among the clients with whom time-out procedures have been effective are children with autism, people with mental retardation and other developmental disabilities, people with mental illness, and children, adolescents, and adults without disabilites.

Response-cost interventions have been shown to be effective in decreasing smoking, cocaine use, opiate use, rule violation, off-task behavior, hyperactivity, aggressiveness, psychotic speech, stuttering, overeating, tardiness, perseverative speech, anxious and depressive behavior, and self-injurious behavior. Furthermore, response-cost interventions have been effective in improving academic performance and vocational training activities.

The effectiveness of response-cost procedures has been demonstrated in a wide range of settings. The literature shows these procedures to be effective in settings such as preschools, middle schools, high schools, and vocational education schools, as well as in prisons, psychiatric hospitals, day-treatment facilities, and home settings. This intervention has been used successfully with many client populations, including children with autism, people with mental retardation and other developmental disabilities, people with mental illness, prison inmates, predelinquent boys, and people without diagnostic labels. Furthermore, therapists often use behavioral contracts with response-cost components to benefit married couples, families, teachers, and individual clients. Behavioral contracts are agreements among committed parties regarding the consequences of specified behaviors.

V. CASE ILLUSTRATION

The director of a residential treatment facility wished to reduce the relative frequency of episodes of

nonsensical speech in Ronald, a 15-year-old male diagnosed with schizophrenia. Ronald had engaged in nonsensical speech frequently over the past two years, and his statements usually centered around conversations with Ashtar, described by Ronald as the captain of an omnipotent space fleet. Because of his frequent episodes of nonsensical speech, other residents avoided Ronald. Indeed, nonsensical speech prevented Ronald from engaging in conversations with most people. In addition, the director realized that Ronald's bizarre speech interfered with the staff's ability to gather useful information about Ronald's needs. For example, when Ronald became ill, a reasonable description of symptoms might well facilitate his treatment, whereas statements concerning spacecraft and the beings who pilot them would be of no benefit whatsoever.

The director observed Ronald for five minutes at 30-minute intervals over a five-day period. During these baseline observations, the director recorded the percentage of intervals in which nonsensical speech occurred. In the process of collecting baseline observations, the director noticed that a few of the staff members spent time talking with Ronald about his conversations with Ashtar. From this, the director hypothesized that social reinforcers might help maintain Ronald's nonsensical speech.

The data indicated that Ronald engaged in nonsensical speech in 91% of the intervals. After collecting these data, the director met with Ronald's treatment team to discuss the results of the baseline observation. It was decided that a treatment package in which sensible speech was strengthened through positive reinforcement and nonsensical speech was weakened through a negative punishment component would be implemented. The positive reinforcement component consisted of a DRI schedule. The incompatible behavior that was reinforced was sensible speech (i.e., speech that did not contain references to Ashtar or the space fleet). Specifically, if Ronald spoke sensibly when a staff member came to observe him, then the staff member spent two minutes in conversation with Ronald and provided social reinforcers, such as smiles, eye contact, and questions about Ronald's interests. The negative punishment component consisted of a planned ignoring procedure in which the staff member turned and walked away when Ronald made a nonsensical remark.

After 10 weeks of treatment, the percentage of intervals in which Ronald made a nonsensical remark decreased from the baseline level of 91% to less than 25%. Unfortunately, in the eleventh week of treatment, volunteers from the local university visited the facility and spent much time speaking with the residents. After the volunteers' visit, the relative frequency of Ronald's nonsensical speech increased to nearly 50% and remained at that level for three weeks but declined to around 20% after another month.

At this point, a decision was made to add token reinforcers to Ronald's treatment package. These tokens (poker chips) were delivered when Ronald spoke sensibly. When he spoke nonsensically, one token was taken away. Social reinforcers continued to be provided when Ronald spoke meaningfully, and staff interacted only minimally when taking the tokens, then walked away. This altered intervention reduced intervals with nonsensical speech to approximately 5%. At that point, the frequency of reinforcement was gradually reduced, although the response-cost component stayed in effect. Ronald continued to talk appropriately most of the time, and there was general agreement that the problem was solved.

VI. SUMMARY

Negative punishment refers to a procedure (or process) in which the removal or avoidance of a stimulus as a consequence of behavior weakens such behavior. Response cost and time out are two common clinical interventions based on negative punishment. Published studies have shown these interventions to be effective in reducing a wide variety of inappropriate behaviors in several client populations in a variety of settings. Nonetheless, procedures based on negative punishment are widely construed as aversive and restrictive, and both ethical and legal considerations limit their range of utility.

See Also the Following Articles

Aversion Relief ■ Conditioned Reinforcement ■ Functional Analysis of Behavior ■ Negative Practice ■ Negative Reinforcement ■ Positive Punishment ■ Positive Reinforcement ■ Self-Punishment ■ Time-Out ■ Token Economy

Further Reading

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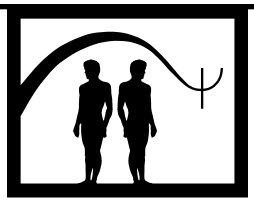

Negative Reinforcement

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GLOSSARY

aversive A nontechnical term often used to refer to punishment and negative reinforcement procedures.

avoidance conditioning A procedure in which behavior postpones or prevents the delivery of an otherwise forthcoming negative reinforcer and is therefore strengthened.

behavior Any action of a living creature. Behavior can be overt or covert.

conditioned negative reinforcer An event that acquires its capacity to serve as a reinforcer through learning.

consequence An event that follows and is produced by a behavior.

environment The natural world in its entirety, including all events that occur inside and outside living creatures.

establishing operation An event that alters the reinforcing or punishing value of a consequence.

escape conditioning A procedure in which behavior terminates or reduces the intensity of an ongoing stimulus and is therefore strengthened.

extinction A procedure (or process) that reduces behavior by failing to reinforce a previously reinforced response.

functional assessment Procedures that are used to identify the variables that maintain a problem behavior.

negative reinforcement A procedure (or process) in which the removal or postponement of a stimulus after a behavior strengthens (e.g., increases the likelihood of) that behavior in the future.

operant A behavior that "operates" on the environment and is controlled by its consequences.

reinforcer A consequence that strengthens operant behavior.

respondent conditioning A procedure in which a previously neutral stimulus comes to control behavior by virtue of reliably preceding a stimulus that controls behavior at the onset of and throughout stimulus–stimulus pairings.

response A defined unit of behavior.

rules Overt or covert verbal descriptions of relations among stimuli and responses. Rules describing consequences can engender behavior similar to that produced by actual exposure to the consequences.

stimulus A physical event.

unconditioned negative reinforcer An event that does not require learning to serve as a reinforcer.

The term negative reinforcement refers to one of the basic principles of operant conditioning rather than to a specific therapeutic technique. Operant conditioning is a form of learning in which behavior is controlled primarily by its consequences, that is, by changes in an individual's environment that are produced by the behavior. When the consequences of behavior increase the future probability of that kind of responding occurring under similar circumstances, or otherwise strengthen behavior, the consequences are termed reinforcers and the process

(and procedure) through which responding is strengthened is called reinforcement. Although a number of prominent psychologists have argued against the practice, theoreticians and practitioners commonly distinguish between positive and negative reinforcement. The definitions and examples provided here illustrate the similarities and differences between them.

I. DESCRIPTION OF TREATMENT

When a stimulus (physical event) strengthens behavior by virtue of being presented (or increased in intensity) following the occurrence of such behavior, the stimulus is called a positive reinforcer and the procedure is termed positive reinforcement. For example, the behavior "bringing home flowers" is strengthened when a pleasantly surprised spouse says, "Thank you, sweetheart. You are really thoughtful." The positive reinforcer is the appreciative statement, and bringing home flowers is strengthened because the behavior resulted in its occurrence.

When behavior is strengthened because it terminates (or reduces the intensity of) a stimulus, or prevents or postpones the delivery of an otherwise forthcoming stimulus, the procedure is termed negative reinforcement and the stimulus is called a negative reinforcer. For example, a teenager who picks up his room thereby prevents or postpones his mother's angry lecture about responsibility and cleanliness. Picking up the room is strengthened because it results in a negative reinforcer. The negative reinforcer (i.e., the angry lecture) is also commonly called an aversive stimulus.

The designation aversive stimulus is also applied to stimuli that serve as positive punishers. Perhaps for this reason, many people confuse negative reinforcement with positive punishment. The two procedures can be distinguished on one primary basis. While negative reinforcers strengthen behavior, positive punishers weaken (decrease the rate or intensity) behavior when delivered as consequences. For example, a child reaches toward a sharp knife (behavior) and a watchful parent exclaims sharply, "no" (positive punisher). The surprised child draws the hand back and does not reach for sharp knives again (weakened behavior). Stimuli that function as a negative reinforcer in one context frequently serve as a positive punisher in similar contexts. Nonetheless, negative reinforcement and positive punishment are independent processes that produce opposite effects on behavior, and the terms should never be used interchangeably.

Two variants of negative reinforcement can be distinguished: escape conditioning and avoidance conditioning. When behavior terminates or reduces the intensity of an ongoing stimulus and is therefore strengthened, the procedure is called escape conditioning and the behavior is termed an escape response. The reader should note that with escape conditioning the aversive stimulus is ongoing and thus is always present when the escape response occurs. For example, a person who is listening to the radio when a program that she dislikes comes on may turn a knob on the radio labeled "OFF–ON" to the left, terminating the aversive sound. If turning the knob to the left terminates the sound and knob-turning is strengthened, escape conditioning is evident. Here, the response-strengthening effects of negative reinforcement would most likely be evident not as a progressive increase in the rate of turning off the radio over time, but rather as reliably doing so each time a disliked program was aired. Reinforcement increases the rate of responding initially and subsequently maintains established rates and patterns of behavior.

When behavior postpones or prevents the delivery of an otherwise forthcoming aversive stimulus and is therefore strengthened, the procedure is called avoidance conditioning and the behavior is termed an avoidance response. Because the avoidance response prevents or postpones the occurrence of the aversive stimulus, the aversive stimulus is not present when the avoidance response occurs. A child who regularly says "please" when making requests because failing to do so historically has led to parental reprimands provides a good example of avoidance conditioning. Here, if "please" is not included as part of a request, then a reprimand is forthcoming. If, however, the child says "please," there is no reprimand. These consequences cause the child to say "please" consistently, as an avoidance response when no aversive stimulus is present.

Some stimuli, termed unconditioned (or primary) negative reinforcers, "automatically" strengthen behavior as consequences. That is, no conditioning history is required for them to serve this behavioral function. High-intensity sensory stimulation in any modality (e.g., loud sounds, bright lights, forceful pressure on the skin, extreme heat or cold) characteristically serves as a primary negative reinforcer.

As their name implies, conditioned (or secondary) negative reinforcers require a particular conditioning (learning) history to strengthen behavior as consequences. Respondent conditioning, in which a previously neutral stimulus reliably and immediately

precedes presentations of an unconditioned negative reinforcer, can serve to establish the neutral stimulus as a conditioned negative reinforcer. So, too, can verbal mediation, as when a friend tells a person holding illegal drugs "that the guy in the brown sweater is a cop," and the drug-holder subsequently avoids the officer.

II. THEORETICAL BASES

A large number of studies have examined escape and avoidance conditioning in laboratory animals and in humans under laboratory settings. These studies provide clear evidence of the effectiveness of negative reinforcement in initially increasing the rate of, and then maintaining, operant behavior. They also have revealed much about the variables that influence the effectiveness of negative reinforcement in strengthening behavior, and therapeutic applications of negative reinforcement are built on a solid experimental foundation.

Since B. F. Skinner's early writings, most behavioral psychologists have favored explanations of operant behavior based on its more-or-less immediate consequences. Such explanations, which are termed molecular, work well with respect to escape conditioning. The usual theoretical explanation of escape conditioning is that responses immediately terminate an aversive stimulus, and this change in the environment is responsible for the strengthening of behavior. This analysis is straightforward and poses no conceptual difficulties. Explanations of avoidance conditioning are conceptually more difficult and have occasioned some debate.

Two variants of avoidance conditioning, signaled and unsignaled, are commonly distinguished. In signaled (or discriminated) avoidance, presentations of a forthcoming aversive stimulus are preceded (signaled) by a warning stimulus. A response during the warning stimulus terminates the warning and prevents the occurrence of the aversive stimulus. In unsignaled (also termed free-operant or nondiscriminated) avoidance, no specific stimulus precedes delivery of the aversive stimulus.

Signaled avoidance is easy to explain theoretically in terms of a two-factor theory initially proposed by Mowrer in the late 1940s. The essence of this widely accepted account is that the warning stimulus, which is highly predictive of the aversive event, comes through respondent conditioning to elicit what is commonly termed "fear." Fear is unpleasant. It ends when the warning stimulus ends, and this happens as soon as the avoidance response occurs. Therefore, the avoidance response does have an immediate consequence—it terminates the aversive warning stimulus and the accompanying "fear."

This account must be substantially modified to explain unsignaled avoidance, where there is no apparent warning stimulus. The general approach taken by molecular theorists is to posit that the passage of time since the last occurrence of the aversive stimulus, or of the avoidance response, serves as a warning stimulus that elicits fear. Occurrence of the avoidance response, which is never immediately followed by the aversive stimulus, terminates the fear, and it is this immediate outcome that strengthens responding. Although the results of some studies support this view, the results of others do not. Particularly troublesome for two-factor theories of avoidance are that (1) studies often fail to find unequivocal evidence of "fear" in subjects responding under avoidance procedures, and (2) studies regularly find that avoidance responding persists for long periods even though subjects never contact the aversive stimulus. This latter effect is evident when, for example, extinction is arranged for avoidance responding.

Unsignaled avoidance responding is notoriously slow to extinguish, in part because an individual who is efficient at avoidance responding never contacts the aversive stimulus either prior to or during extinction. Therefore, it is impossible to discriminate between the negative reinforcement and extinction conditions. This difficulty can be overcome by presenting the aversive stimulus regardless of whether or not the behavior that previously was an effective avoidance response occurs.

Because of the difficulties that molecular explanations of avoidance conditioning pose, molar, or one-factor, alternatives have been offered. The essence of these theories is that behaviors need not have immediate consequences to be strengthened by negative reinforcement, but need only produce a detectable reduction in the overall frequency of exposure to the aversive stimulus. Therefore, hypothesized fear produced through respondent conditioning is not necessary for unsignaled avoidance conditioning to occur.

Although the relative merits of various one- and two-factor explanations of avoidance responding have been debated for decades, and alternatives to both approaches have been offered, there is no general agreement as to which theory of avoidance conditioning is best. With respect to clinical applications, the matter is not of crucial importance, and the primary virtue of the debate has been in fostering a wealth of laboratory studies of avoidance conditioning.

III. APPLICATIONS AND EXCLUSIONS

Negative reinforcement is important clinically in two regards. First, procedures that involve negative reinforcement may be systematically arranged to strengthen desired behaviors of clients. Second, negative reinforcement may play a role in the genesis and maintenance of undesired behaviors. Therapeutic procedures that involve the direct (contrived) arrangement of negative reinforcement have not been used as often as procedures involving positive reinforcement because of the ethical considerations involved in presenting unpleasant stimuli to clients, just so those clients can learn appropriate behaviors that allow them to escape or avoid these stimuli.

More often than they arrange contrived negative reinforcement, therapists help clients to understand the role of negative reinforcement in controlling their own troublesome actions in naturally occurring aversive situations and assist such clients in developing appropriate escape and avoidance responses. For instance, many teenagers engage in risky behaviors (e.g., drinking and driving) in part to avoid criticism and ridicule from peers. A therapist may help the teenager by pointing out less dangerous response options (e.g., staying away from situations where risky behavior is encouraged and peers who encourage it) that also are effective avoidance responses.

Interestingly, as Brain Iwata points out in an excellent 1987 review, negative reinforcement appears to play a generally unrecognized role in a number of procedures generally construed as "positive." For example, an educator may arrange consequences such that (a) a student's incorrect responses to problems result in statements of disapproval or remedial trials and (b) correct responses lead to praise. The educator assumes that improvements in the student's performance occur because praise is a positive reinforcer. Although positive reinforcement may contribute to the improvements, correct responses may also be strengthened because they allow the student to avoid aversive statements (of disapproval) and repetitions of an unpleasant task. That is, negative reinforcement may play an important but unrecognized role in producing the treatment gains.

Similarly, a therapist may think that positive reinforcement stemming from social interaction is responsible for a married couple's self-reported completion of an instruction to spend a half-hour of quiet time alone each evening. Instead, negative reinforcement in the form of avoiding the therapist's disapproval may be responsible for the couple's inaccurate report that they spent time together. In truth, unintended negative reinforcement is very common in therapeutic settings, as in everyday life.

Even though negative reinforcement is common, clinicians should be cautious about its use because of the potential for engendering negative emotional responding, aggressive behavior, and escape from or avoidance of the situation in which negative reinforcement occurs. In these regards, negative reinforcement is similar to punishment, and the two often are considered together as aversive and relatively restrictive (harmful) strategies for changing behavior. For example, throughout his long life the eminent behavioral psychologist B. F. Skinner argued against the use of both punishment and negative reinforcement in clinical settings and in general society, although he recognized their ubiquity. Similarly, Murray Sidman (1999) considers procedures based on negative reinforcement as well as punishment "coercive" and advocates nonaversive alternatives to them wherever possible. These views are shared by many therapists as well as theoreticians.

Issues of client diversity bear on the use of negative reinforcement primarily when clients who are unable to make informed choices regarding their own treatment are concerned. For example, children and people with substantial intellectual impairment require special protections with respect to aversive interventions, including punishment and contrived negative reinforcement. In brief, a clear decision-making process regarding the use of negative reinforcement should be in place. This process should recognize that negative reinforcement is a restrictive (harmful) intervention and adhere to the doctrine of the least restrictive alternative intervention, which states that other, less restrictive interventions must be evaluated and found ineffective before negative reinforcement is considered.

Clear guidelines must be established regarding the exact nature of the negative reinforcement procedure, including who is to implement it and the specific standards of accountability. Input from clients and client's advocates, as well as behavior-change experts, should play a crucial role in determining treatment details, including who is to arrange negative reinforcement and how its effects are to be monitored. Unambiguous rules regarding the behavioral data that will support continuation, modification, and termination of the negative reinforcement procedure must be established by a vigilant, expert, and caring treatment team before treatment is implemented. These rules must be followed unless the good of the client dictates otherwise in the

opinion of the team. When possible, negative reinforcement should be avoided entirely.

IV. EMPIRICAL STUDIES

Relatively few clinical studies have evaluated interventions that involved intentionally arranging aversive stimuli that clients could escape or avoid by emitting appropriate behaviors. Most of the studies that have appeared involve clients with mental retardation, although other client populations (e.g., people with schizophrenia, children and adults with no diagnostic label) have been studied. Several different target behaviors (e.g., slouching, naming pictures, recognizing objects, approaching adults, speaking appropriately, solving math problems, stretching burned joints, sitting quietly during dental procedures) have been increased through escape and/or avoidance conditioning. A variety of aversive stimuli have been used, including electric shock, unpleasant noises, dental procedures, and required work or exercise. Clearly, procedures that involve systematically arranging aversive stimuli that clients can escape or avoid can be effective in generating appropriate behavior. Unless, however, those stimuli are only mildly aversive and generally accepted as part of the client's everyday world (e.g., requiring a student to work on math during a study session, unless the assignment was completed during math class), the use of such procedures is widely restricted. Moreover, too little work has been done with specific procedures to allow for general statements regarding the costs and benefits of specific interventions based on negative reinforcement relative to alternative interventions.

In recent years, behavioral psychologists have emphasized that an important early step in the treatment of many troublesome operant behaviors is isolating the reinforcers that maintain those behaviors, as well as any events that reliably precede them. The term functional assessment refers to a variety of procedures used to identify important environmental variables that maintain behavior. Functional assessment provides a basis for developing rational interventions that directly address the causes of the troublesome behavior. As noted previously, naturally occurring negative reinforcement can be responsible for a variety of behavioral problems. Once this is recognized, it may be possible to plan effective interventions. Many different interventions have been used to treat troublesome behaviors maintained by negative reinforcement; we will make no attempt to review this extensive literature. Instead, we will describe a single intervention strategy for dealing with inappropriate escape/avoidance responses.

This strategy involves teaching clients an appropriate alternative to inappropriate behaviors. It is exemplified by functional communication training, an intervention developed by Edward Carr and Mark Durand. This procedure has proven effective in reducing a variety of inappropriate behaviors acquired because they historically produced reinforcement. As a case in point: a student with a developmental disability may have learned to scream and strike out during demanding academic tasks because doing so terminated the tasks. Functional communication training involves arranging conditions so that the inappropriate behavior no longer produces reinforcement (i.e., extinction is arranged) and teaching the person an appropriate communication response that allows the individual to escape the aversive situation. For instance, the student in our example might be taught to raise a hand to "request help" with aversive schoolwork rather than to engage in disruptive behavior. The value of functional communication training and similar interventions has been demonstrated in a number of published studies.

Strategies that involve reducing the aversiveness of the situation that a client historically has escaped or avoided by emitting an undesired response also can be effective in reducing troublesome behavior. For example, a 1999 study by Jennifer Asmus and her colleagues determined through functional assessment the variables that influenced the problem behavior of children during academic tasks. The results were idiosyncratic for each child, but relevant variables included the novelty of the task, the person administering the task, and the setting in which the task was conducted. In a similar vein, Richard Smith and his colleagues reported in 1999 that task variables such as rate of presentation of demands, task novelty, and duration of task affected the rate of problem behavior. Any of these task variables could be altered to decrease the aversiveness of the instructional situation without diminishing educational opportunities. Typical interventions might involve interspersing easier tasks with more difficult tasks, altering the task to match the student's current performance level, decreasing initial task requirements, and allowing additional time to complete difficult tasks. Such interventions should serve as establishing operations, reducing the effectiveness of escape or avoidance of academic tasks as a negative reinforcer and reducing the probability of occurrence of responses that historically have produced this outcome.

The clinical literature regarding negative reinforcement is neither extensive nor focused. Brian Iwata contends that further research in the area is warranted, and he suggests three interesting directions for it to take:

> First, negative reinforcement may provide an alternative means for establishing behavior when attempts to use positive reinforcement fail… If so, we will want to know the behaviors for which specific contingencies are useful and the conditions under which they should be applied. Second, it appears that the acquisition of adaptive behavior in our training programs is at least partially a function of negative reinforcement. Further research must evaluate the roles of escape and avoidance within the training context so that (a) we will have a proper estimate of the effectiveness of commonly used positive reinforcers (the results of this estimate may indicate that more potent reinforcers are needed), (b) we can determine whether procedures such as remedial trials, physical assistance, and so on, serve any useful function and if that function is one of negative reinforcement, and (c) we can base future training successes on the planned rather than the accidental use of negative reinforcement. A third promising application involves further elaboration of behavioral replacement strategies. If we are willing to entertain the assumption that it is impossible to eliminate all sources of aversive stimulation, the use of such stimulation to alter the topography of escape and avoidance behavior, from an undesirable one to a tolerabe one, makes eminent sense from a clinical standpoint…. As with punishment, we should conduct research on negative reinforcement with great care and under the appropriate conditions to determine how it might be used effectively and humanely, its limitations, and its proper role within the larger realm of currently available treatment. (1987, p. 78)

Negative reinforcement may well be coercive and unappealing, but it is also ubiquitous. Better understanding of its role in the genesis and maintenance of behavior disorders, and of its current and ideal role in treating those disorders, can only benefit psychologists and their clients.

V. CASE ILLUSTRATION

A study published by Nathan Azrin and his colleagues in 1968 provides a clear example of the logic of negative reinforcement. They treated postural slouching in 25 adults through the use of an automated device that detected slouching and, when it occurred, produced an audible click followed three seconds later by a loud tone. The click and tone could be avoided by standing upright (not slouching), and escape from the tone could be effected by standing upright after the tone had started. This procedure reduced slouching in all clients exposed to it. The aversive stimulation that they received was mild, and they agreed to its appropriateness. These factors helped to make negative reinforcement an acceptable intervention.

A study published in 1986 by Hegel, Ayllon, Vanderplate, and Spiro-Hawkins provides an excellent example of the therapeutic use of negative reinforcement in another kind of situation, one in which a necessary medical procedure caused pain. The clients treated were three men who were recuperating from extensive burn wounds in a hospital. As part of their rehabilitation, they were required to stretch burned joints to increase and maintain flexibility. The stretching, which was initially arranged as part of mandatory staff-directed physical therapy sessions held each day, was quite painful. None of the patients showed increased range of motion in the burned joint during the period of staff-directed physical therapy. Range of motion increased substantially in all of them in a subsequent condition, where staff-directed physical therapy sessions could be avoided by engaging in sufficient self-directed exercise to meet daily goals. If the client failed to meet a daily goal, he was required to participate in staff-directed exercise. Thus, self-directed exercise was maintained by negative reinforcement in the form of avoidance of staff-directed physical therapy. Although the exercise undoubtedly was painful, no alternative would produce the same long-term benefits for the client. Unfortunately, aversive situations and activities are sometimes an intrinsic part of the human situation.

VI. SUMMARY

Negative reinforcement, one of the basic principles of operant conditioning, is evident when behavior is strengthened because its occurrence results in the termination or avoidance of aversive stimuli. The technique is important clinically in two general ways. First, negative reinforcement can be responsible for the development and maintenance of both healthy and pathological behaviors. Knowing this can help therapists understand and, more importantly, develop effective interventions for their client's troublesome behaviors. Second, procedures that involve negative reinforcement can be systematically implemented to strengthen

the desired behaviors of clients. Ethical and practical considerations place substantial limits on the range of situations where it is appropriate to use negative reinforcement as part of therapy, and whenever it is used due caution and appropriate safeguards are necessary.

See Also the Following Articles

Conditioned Reinforcement ■ Covert Positive Reinforcement ■ Differential Reinforcement of Other Behavior ■ Functional Analysis of Behavior ■ Negative Practice ■ Negative Punishment ■ Operant Conditioning ■ Positive Punishment ■ Positive Reinforcement ■ Reinforcer Sampling

Further Reading

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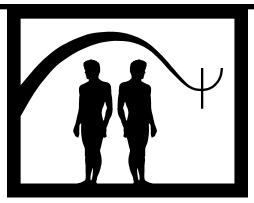

Neurobiology

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GLOSSARY

amygdala A limbic system structure adjacent to the hippocampus that is responsible in part for regulation and valence of emotions (especially fear) and their related somatic expression.

brain-derived neurotrophic factor (BDNF) A molecule that is released by the targets of neurons and that promotes chemical alterations in the neuron responsible for its growth and maintenance.

explicit (or declarative) memory Learned factual knowledge and autobiographical information that requires conscious awareness and intact hippocampus.

glutamate An important excitatory neurotransmitter.

hippocampus The limbic system structure (extremely sensitive to high levels of stress hormones) responsible for significant aspects of both learning and memory.

hypothalamic-pituitary-adrenal (HPA)axis A feedback circuit between the hypothalamus, pituitary, and adrenal gland that regulates the release of glucocorticoids or stress hormones such as cortisol.

implicit (or nondeclarative) memory Nonconscious simple learning that although out of a patient's awareness, often has significant impact on behavior and perception.

neuronal plasticity The capacity of the central nervous system to strengthen and create neural connections (neurogenesis).

positron emission tomography (PET) A functional neuroimaging technique employing radioactive tracers that can demonstrate activation of brain regions through measurement of blood flow.

selective serotonin reuptake inhibitor (SSRI) A group of antidepressants that increase levels of the neurotransmitter serotonin in the synaptic cleft by impeding its degradation.

working memory A type of short-term memory, often referred to as the "blackboard of the mind," most often anatomically associated with the prefrontal cortex, that facilitates moment to moment perception, information processing, and explicit memory retrieval.

I. INTRODUCTION

Mental disorders and their treatments have long been viewed within a flawed intellectual framework, namely, that mental diseases are either biologically or psychologically based, and that treatment is best conducted with biological or psychotherapeutic tools, respectively. Many mental health professionals have adopted this view, as has an insurance industry that has often enforced criteria whereby treatment for "biological" illnesses (such as schizophrenia or bipolar disorder) is reimbursed while the treatment of "psychological" maladies (dysthymia or personality disorders, for instance) are less well supported. The very nature of professional

practice has been affected, with a dramatic reduction in the number of hours that psychiatrists or hospital-based (and sometimes community-based) nonpsychiatric clinicians spend in the performance of psychotherapy. Combined treatment with psychotherapy and medication, although a common practice, founders within this theoretical quagmire, often leaving practitioners without a logically consistent theoretical framework in which to skillfully and rationally deliver treatment.

This conceptual dichotomy is indeed ironic and unfortunate, for a careful review of the remarkable contributions from the neurosciences and cognitive psychology describe a very different intellectual framework, one in which psychology and biology are indistinguishable, and in which mental disturbances may be understood simultaneously on both levels in a heuristically harmonious manner. As Nobel laureate Eric Kandel asserted, "all mental processes, even the most complex psychological processes, derive from operations of the brain." However, elucidating the neurobiological correlates of mental processes should not preclude the patient's need for the psychotherapist to appreciate their unique meaning.

In this article, we will attempt to explain the relation of biology to psychotherapy. Current knowledge about certain critical brain functions, particularly learning and memory, which form the basis for our understanding of the biology and cognitive psychology of all psychotherapies, will be reviewed. We will discuss the remarkable capacity of the brain to adapt to environmental changes, expressed in the construct of neural plasticity and findings related to new cell growth in the adult brain, followed by a brief review of the effects of stress on the brain. Finally, we will conclude by offering evidence that psychotherapy does indeed exert measurable biological effects in the brain, findings that may ultimately guide therapeutic decision making.

II. LEARNING, MEMORY, AND NEURAL PLASTICITY

A. Phenomenology of Memory

Memory is not a unitary function of the brain. Indeed, memory can be categorized into at least two major functional and neurobiological categories, namely, explicit (or declarative) memory and implicit (or nondeclarative) memory. Explicit memory refers to factual knowledge such as place, people, things, and autobiographical information. Working memory is one variety of explicit memory that is distinct from long-term explicit memory. Working memory refers to the short-term memory that facilitates active, conscious perceptual attention and initial processing of information, and later permits the purposeful retrieval of stored explicit memories. Implicit memory refers to the nonconscious effects of past behavior, and involves a heterogeneous set of abilities and knowledge, such as (1) associative learning (classical and operant conditioning); (2) procedural memory (learned skills and habits); (3) sensitization and habituation (exaggeration or attenuation, respectively, of behavioral responses to specific environmental stimuli); and (4) priming (enhanced recall aided by prior exposure to related stimuli, such as words or objects). In other words, and perhaps more germane to our understanding of psychotherapy, implicit memory refers to those past experiences that influence our current behavior even though we do not consciously remember them. Implicit memories form the rules that govern the interpretation of later life experiences. Because implicit knowledge is not readily available for conscious reflection, these rules self-perpetuate, even in the face of new life experiences that might demand a different (and more adaptive) perceptual bias.

As we might expect, there is an interaction between explicit and implicit memories that is utilized in psychotherapy. Implicit biases are examined and made explicit, creating an opportunity for conscious processing, reflection, and new experiences, hopefully leading to an adaptive change in the implicit memory system. To be more specific, the phenomenon of transference is understandable, for example, in light of the repetition of specific behaviors and beliefs that are governed by early experiences encoded in both implicit and explicit memories. In psychoanalytic psychotherapy, distortions that characterize transference within the doctor–patient dyad as well as throughout all sectors of a patient's interpersonal world can be examined and interpreted within a safe, nonjudgmental, and empathic new relationship.

It is worth pointing out that this discussion of memory, particularly as it applies to our understanding of psychotherapy, is by necessity simplistic. Most notably it neglects the phenomenon of consciousness, the neurobiology of which would justify an entire article. (For such a treatise, please see the reference to Regina Pally's work in the Further Reading section.) Consciousness, most often defined simply as awareness, probably represents a complex interaction between multiple brain functions and regions in the cortex and brain stem (at a minimum). Although a full elaboration of these systems and

relationships is beyond the scope of this article, several points of relevance to psychotherapy are worth mentioning. If conscious perception is the product of the shaping influences of our conscious belief systems on environmental reality, then we may resist not only unconscious material, but the conscious as well if it conflicts with our belief systems. Yet the essential function of consciousness is, according to Pally, to "provide … a means by which we notice changes and can flexibly choose the most adaptive response to that change." This is true of changes in the environment, as well as changes in our responses to those environmental events. Therefore, we simply cannot appreciate the processes of learning, growth, and therapeutic change without accounting for the role of conscious self-reflection.

Similarly, this article cannot address the broad field of human development as it relates to learning and memory. Questions about the relative stability versus alteration in these mechanisms at different stages in the individual's life cycle clearly have implications for clinical intervention as well as general understanding of learning and memory. This is a critically important area for further study.

B. Functional Neuroanatomy of Memory

An abundance of experimental data (human and animal, lesion and brain imaging studies) indicate that explicit and implicit memory depends on different brain structures and systems. Explicit memory relies on intact medial (i.e., inner surface) temporal structures, including the hippocampus, parahippocampal gyrus, and the entorhinal and perirhinal cortices, as well as association areas in the neocortex. New facts and event information are first processed in the association areas of the frontal, temporal, parietal, and occipital lobes. Working memory in particular relies on regions of left frontal lobes such as the prefrontal cortex. From the association cortices, information is conveyed to the parahippocampal and perirhinal cortices, and then to the entorhinal cortex, hippocampus, and adjacent structures (Fig. 1). Taken together, these steps represent the encoding and consolidation steps of memory formation. The specific functional tasks of each area remain unclear, and current investigations are under way to clarify the distinct roles. For example, the parahippocampal gyrus may support the encoding of information about the occurrence of an item, whereas the hippocampus may support the encoding of relationships between the item and its context.

The newly formed explicit memories return through the aforementioned systems back to the association cortices where long-term storage occurs. The fact that storage occurs in the association cortices explains why people and experimental animals that have bilateral lesions of the medial temporal lobes that damage the hippocampus are relatively unable to form new explicit memories but can recall previously stored (prelesion) knowledge. There is no single cortical storage area. Knowledge is distributed throughout the necortex and is "reconstructed" into a single data set during the retrieval process.

The functional neuroanatomy of implicit memory, taken as a whole, is somewhat less well defined than that for explicit memory, in part because of the heterogeneity of cognitive phenomena collectively grouped as implicit memory, but also due to methodological problems involved in the study of implicit memory (preventing the "contamination" of implicit memory processing with conscious or explicit memory activation). However, it is fairly clear that the striatum, a component of the basal ganglia (a system of several nuclei, or functionally related collections of neurons, located deep within the cerebral hemispheres) is involved. The striatum actually includes several discrete nuclei: the caudate, putamen, and ventral striatum. The striatum plays a role in a variety of brain functions, including cognitive functioning, mood regulation, and motor and nonmotor behaviors. As with explicit memory, various areas of the neocortex are also involved with implicit memory.

Another brain structure of paramount importance to memory function, especially as it relates to our understanding of trauma and psychotherapy, is the amygdala. The amygdala sits in the anterior temporal lobe, just in front of the hippocampus. It plays a central role in the regulation of emotions, including the mediation of conscious emotional feelings (such as fear) with related somatic expressions (autonomic and motoric expressions). Electrical stimulation of the amygdala in humans results in feelings of fear and apprehension. Rare bilateral lesions of the amygdala disrupt the ability of the individual to apprehend fearful facial expressions and discern other fear cues in the environment.

The amygdala is involved in the encoding and consolidation of emotion-laden explicit and implicit memories. Emotional arousal activates the amygdala, resulting in the modulation of other memory regions influenced by the amygdala, thus regulating the strength and persistence of affectively charged memories. Larry Cahill, James McGaugh, and colleagues at the University of California, Irvine, have performed a

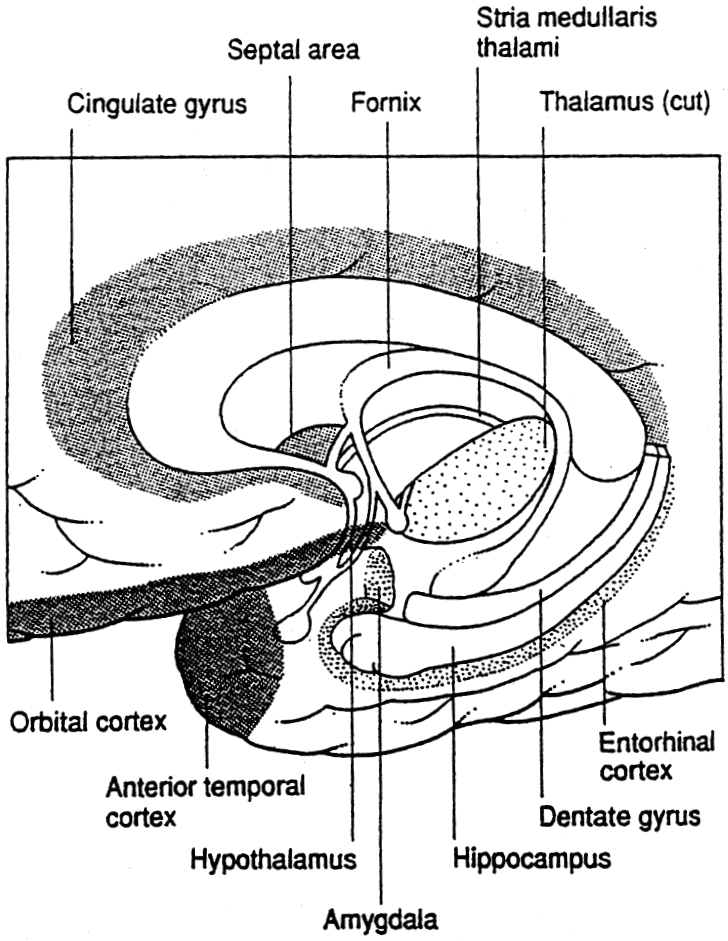

FIGURE 1 Medial view of cortical and subcortical limbic areas. From Fitzgerald (1992). "Neuroanatomy: Basic and Clinical," 2nd ed., W.B. Saunders Co.

number of experiments that demonstrate this phenomenon. For example, they showed emotionally neutral and emotionally arousing film clips to healthy volunteers who then underwent a functional brain imaging study (fluorodeoxyglucose positron emission tomography, or FDG PET) designed to demonstrate relative activation of various brain regions. The amygdala activated during viewing of the arousing films, but not the emotionally neutral clips. Later, the subjects were better able to recall the arousing clips, with the degree of amygdala activation correlating with the degree of recall.

The amygdala's memory role is therefore a selective one, with little involvement in the absence of emotional arousal. Furthermore, the amygdala is involved only in memory encoding and consolidation (prestorage activities), not retrieval.

C. Cellular Mechanisms of Learning and Memory: Neural Plasticity

We have reviewed known elements of how the brain, as a collection of macroscopic brain regions, obtains and retains new knowledge. But how do the actual individual functional units of the brain, that is, the nerve cells (or neurons), facilitate these changes?

Neurons communicate with one another through a process of chemical signaling known as neurotransmission. An impulse (action potential) traveling down the outbound fiber (axon) of a neuron reaches its terminus

at the juncture between the signaling neuron and another nerve cell. This juncture is known as the synapse. The synapse may impinge on the body of the target neuron, or on one of its projections (an axon, or an inbound fiber, or dendrite). At the synapse, the "upstream," or presynaptic neuron releases chemicals (neurotransmitters) into the synaptic space. The neurotransmitter diffuses across the space and comes into contact with special proteins (receptors) imbedded in the outer membrane of the "down-stream" (postsynaptic) neuron. When the neurotransmitter interacts with the receptor in a chemical "lock-and-key" fashion, an excitatory or inhibitory effect is exerted on the postsynaptic neuron. The intended action of the signaling neuron is thus accomplished.

We now know that the brain possesses a remarkable capacity for structural change throughout the life cycle. This idea was first articulated in 1911 by the neuroanatomist Santiago Ramon Y Cajal, who postulated that repeated behavior must cause the neuron's dendrites and axons to undergo structural changes, revising the preexisting pattern of neuronal interconnections. In other words, learning is the product of new or enhanced connections between nerve cells. The neurophysiologist Donald Hebb experimentally demonstrated this phenomenon in 1949, resulting in what has become known as "Hebb's Rule." Hebb wrote: "When an axon of cell A … excites cell B and repeatedly or persistently takes part in firing it, some growth process or metabolic change takes place in one or both cells so that A's efficiency as one of the cells firing B is increased." Hebb asserted that this change is the result of a strengthening of the connections between neurons. This phenomenon is known as neural (or neuronal) plasticity, and represents the process whereby learning experiences are physically encoded.

Eric Kandel was awarded the 2000 Nobel Prize in Physiology or Medicine for demonstrating the molecular mechanisms of this process in the marine sea slug *(Aplysia californica),* an invertebrate with a relatively simple nervous system consisting of about 20,000 nerve cells. The structural simplicity of *Aplysia*'s nervous system facilitated Kandel's demonstration of the mechanisms of implicit learning. A mild touch of the animal's siphon (a structure used to expel waste and seawater) normally elicits a reflexive withdrawal of its gill and siphon. This reflex is known as the gill-withdrawal reflex. Repeated stimulation of the reflex leads to habituation, or attenuation, of the reflex. On the other hand, the administration of a noxious stimulus to its tail produces a sensitization, or exaggeration, of the reflex. Briefly repeated trials of either kind of stimulus lead to a change in the reflex that is relatively short-lived (i.e., lasting minutes). However, the administration of four or five series of stimulations administered periodically over hours results in a change that lasts from days to weeks. Therefore, habituation and sensitization have short- and long-term forms. Kandel discovered that short-term habituation and sensitization result from a decrease or increase, respectively, in the amount of neurotransmitter released into the synapse (in the case of *Aplysia,* the connection between the sensory neuron bringing information about the stimulus and the motor neuron that mediates the withdrawal reflex). Importantly, although the exact mechanism of this alteration is unclear, changes in protein synthesis do not appear to be necessary.

Long-term alterations in the reflex were observed after repeated stimulus applications. It is noteworthy, although of little surprise to many behavioral scientists, that spaced training (small amounts of training spaced over many minutes or hours) produced substantially greater behavioral alterations than did massed training (a lot of training all at once). Long-term alterations were facilitated by changes in gene expression and the protein-manufacturing apparatus of the cell. This cascade of molecular events described by Kandel and subsequent investigators can be simplified as follows.

During repeated stimulation, a neurotransmitter known as glutamate accumulates in synapse. Activation of a subtype of the glutamate receptor, the so-called NMDA (*N*-methyl-D-aspartate) receptor, opens membrane channels that permit the entry of calcium into the neuron. In the interior of the cell, calcium triggers a series of enzymes (adenylate cyclase and protein kinases) to initiate gene expression in the nucleus of the cell. The activated genes encode proteins important for the regulation, growth, or elimination (pruning) of synaptic connections. When the cell's protein synthesis apparatus is turned on, and regulatory or structural proteins are manufactured, new receptors or synaptic sites are created, or existing ones functionally or physically eliminated. The ultimate result is a long-term change in synaptic excitability, effectively altering the way in which the brain's circuitry responds to later stimulation.

Evidence for anatomical changes in the brains of stimulated individuals is found in the work of Anita Sirevaag and William Greenough, who during the 1980s showed that different rearing conditions affect brain structure. Rats raised in a complex toy-rich environment showed indications of enhanced brain development compared to rats raised in isolated, uninteresting

conditions. Specifically, the stimulated rats' brains had a greater density of synaptic nerve endings (boutons), higher volume of dendrites per neuron (more complex branching, implying more neuron-to-neuron communication), and more support structures, indicating more active neuronal activity (more blood vessels, for instance).

The individual genetic traits of an individual modulate the robustness of the plastic cellular adaptations. For instance, Joe Tsien and colleagues at Princeton University bred a genetic strain of mouse (dubbed "doogie the supermouse") in which the postsynaptic NMDA receptor density was intentionally increased (overexpressed). Compared to unaltered control mice, the mutant mice showed superior abilities in learning and memory in various behavioral tasks, as would be predicted by the neural plasticity model.

D. Neurogenesis

In addition to the above scenario, another mechanism may explain the remodeling of the nervous system in response to life experiences. Until the 1960s, neuroscientists had long believed that the adult brain was incapable of generating new neurons. In 1965, Joseph Altman at MIT described the production of new neurons in the brains of adult rats. Inexplicably, little work was done to further the study of the remarkable phenomenon of neurogenesis until the past decade or so, when several investigators resumed work on this critically important area of neuroscientific study. Elizabeth Gould of Princeton University has studied factors that appear to regulate neurogenesis in various animals, including primates. One of the most important findings was that neurogenesis is stimulated by environmental complexity and learning. Experimental training activities resulted in increased formation of adult-generated nerve cells (granule cells) in the black-capped chickadee. Training conditions also enhanced the survival of those cells. Conversely, conditions of deprivation reduced the generation and survival of new cells. Another important finding was that adrenal hormones, normally released in greater quantity during times of stress, suppresses the formation of precursor cells. We will discuss other effects of stress on the brain later in this article.

Even after neurogenesis was demonstrated in a wide variety of animals, the scientific community was resistant to accept that neurogenesis occurs in humans. That changed when Fred Gage and his colleagues at the Salk Institute for Biological Studies in La Jolla, California, studied the postmortem brains of cancer victims who had received a dosage of a diagnostic drug called bromodeoxyuridine (BrdU) before they died. BrdU is incorporated into the DNA of dividing cells and can be used as a marker for dividing and newly formed cells in the body. Gage found BrdU-containing cells in the studied brains, conclusively establishing that adult humans grow new neurons. Of great significance to our topic, the new cells were found in the hippocampus, already shown to be essential to learning and memory.

Last, although the exact mechanisms that regulate neurogenesis are still undetermined, existing work gives us every reason to believe that neurogenesis, like neural plasticity, results from interactions between experience and genes. Indeed studies by Liu and colleagues support that early life experiences can profoundly determine both brain structure and function. For example, high levels of maternal rat behavior promote hippocampal synaptogenesis, enhance memory and learning in adult offspring, and increase both NMDA receptors as well as brain neurotrophic factors that play a central role in the growth and maintenance of neurons. Conversely, rats experiencing maternal separation early in their postnatal development have decreased brain neurotrophic factors (BDNF) and in the presence of elevated levels of stress hormones that accompany acute stress, are unable to modulate BDNF as are sibs who are not separated from their mothers.

E. Implications

The implications of these findings about the biology of learning and memory are indeed broad. We now have an elegant scientific framework with which to understand the interaction between genes and environment. These models give us an idea why different individuals, with diverse genetic "blueprints," may respond to nearly identical environmental circumstances in strikingly different ways, including why some trauma victims may develop posttraumatic stress disorder (PTSD) whereas others survive with little detriment to their mental health. It also helps us to understand why identical (monozygotic) twins (with identical genetic content, but different life experiences) may have such divergent personal features. For example, we know that a monozygotic twin of an individual with schizophrenia—a mental disorder considered to be highly "genetic"—has no more than a 50% chance of developing the disease. Life experiences, through the previously described (and related) mechanisms, determine whether genetic predispositions and vulnerabilities are

realized, or whether they remain latent throughout our lives.

In the case of depression, Kenneth Kendler studied more than 2100 female twins over 17 months. The probability for those twins at lowest risk for major depression increased from 0.5% to 6.2% and those at highest risk from 1.1% to 14.6% if a twin had experienced stressors such as a recent death, assault, marital problems, and divorce or separation. David Reiss' work with more than 700 multiconfigured families has demonstrated that when a parent differentially and persistently relates to one adolescent in a conflictual or negative manner, nearly two thirds of the variance in the teenager's antisocial behavior and one third in his depressive symptomatology can be accounted for by the conflicted parent–child relationship. Life experiences through the previously described (and related) mechanisms determine whether genetic predisposition and vulnerabilities are realized, or whether they remain latent throughout our lives. Moreover, recent research appears to support the possibility that psychotherapy and medication may share salutary effects through moderating the genetic effects of those with vulnerable phenotypes.

III. THE BIOLOGICAL EFFECTS OF STRESS

Most people who seek psychotherapy, or any mental health treatment for that matter, do so during times of increased subjective life stress or following a highly stressful, even traumatic, life experience. Psychosocial stress has long been recognized as a major contributor to the onset of mental disorders and to the recurrences or exacerbations of those maladies. For that reason, any attempt to understand the neurobiology of psychotherapy requires some understanding of the biological effects of stress.

Biologists have long been fascinated by the natural phenomenon of animal population crashes. Typically, environmental conditions favoring the exponential growth of a particular species' population results in intra- and interspecies competition for food and mates, and territory. When the population exceeds the carrying capacity of the environmental niche, vast numbers of the affected community die, sometimes losing 90% or more of its members within a very short period of time. Examinations of population crash victims typically reveal multiple organ abnormalities, including enlarged adrenal glands—the small hormone-producing organs that sit on top of each kidney and secrete adrenalin (also known as epinephrine) and corticosteroids. These substances are known collectively as the body's stress hormones.

Using less dramatic experimental and naturalistic research designs, many investigators have explored the consequences of stress in animal and human nervous systems. These investigations demonstrate that stress is associated with disruption or alteration of various mechanisms involved in learning and memory, and presumably, adaptation. We will illustrate this point with a description of selected findings.

A. Studies of Care-Related Stress

Stephen Suomi performed a series of experiments with rhesus monkeys that shed light on the interaction between genetic vulnerability, stress, and potentially corrective experiences. He first observed that infant monkeys separated from their mothers developed social anxiety–like behavioral responses. They were later reared by peers raised by the subject monkey's own mothers. The peer interaction resulted in some amelioration of the behavioral disturbance, but the subject monkeys remained prone to a return of the behavioral disturbance when placed in novel or stressful circumstances, accompanied by high levels of stress hormones (see later discussion). Suomi then observed that a minority of monkeys that were raised by their own mothers showed exaggerated separation disturbances that were similar to those shown by the original subject monkeys. This latter group of disturbed monkeys was placed in the care of highly nurturant foster monkeys. The change in rearing resulted in the relief of behavioral problems. But more surprisingly, the offspring that were "adopted" by the "supermothers" went on to rise to the top of the colony hierarchy, implying that the constitutional sensitivity of these monkeys was preserved in a way that conferred an attunement to the needs and cues of the colony, allowing them to respond in a socially adaptive and successfully manner.

A more dramatic example of the deleterious effects of separation (without subsequent surrogate caregiver nurturance) can be found in René Spitz's historic study of infants of unwed mothers placed in foundling homes in the 1940s. In order to reduce infection risk to the infants, handling was kept to a minimum, and the infant's view of caregivers' faces was blocked by masks and sheets. Despite receiving sufficient nutrition and an attractive physical environment, almost all of the infants died or developed mental retardation within 1 to 2 years. Spitz contrasted this to the healthy,

normal outcomes of children raised by their mothers in a squalid prison environment. He concluded that nurturant human contact was as essential for growth and survival as was food and sanitary conditions.

Rosenblum and Andrews studied infant monkeys raised by either normal mothers or by mothers made anxious by an unpredictable feeding schedule. The monkeys with anxious mothers demonstrated social impairment and biochemical abnormalities (serotonin and norepinephrine abnormalities). Interestingly, the changes did not appear until adolescence, lending credence to clinical observations that early environmental disturbances may have long-ranging effects that do not manifest until later in life.

B. Role of Stress Hormones

The stress hormones have been an important focus of stress response studies. For the purposes of this discussion we will focus on the most important of the stress hormones—the category of corticosteroids known as the glucocorticoids—exemplified by cortisol. The glucocorticoids are involved in immune function and a number of other physiological processes as well as the stress response. Glucocorticoid release is regulated by a homeostatic feedback mechanism involving the hypothalamus, pituitary gland, and the adrenal glands (the hypothalamic-pituitary-adrenal, or HPA, axis). Many studies have examined the role of the HPA axis during stress, showing that glucocorticoid concentrations (and the levels of other brain chemicals that stimulate glucocorticoid production and release, such as adrenal corticotropic hormone [ACTH] and corticotropin releasing hormone [CRH]) go up during times of brief or prolonged stress. Elevated glucocorticoid levels are found in laboratory animals separated from their mothers or social groups, or otherwise placed in stressful conditions. Stress-related human cortisol elevations were demonstrated as long ago as the Korean War, when urinary cortisol levels of soldiers under random artillery bombardment were higher than during periods away from the battle zone.

The hippocampus, equipped with a high density of glucocorticoid receptors, is the principal target location in the brain for the glucocorticoids. The hippocampus is also an important inhibitory regulator of the HPA. Under conditions of modest stress, a resultant facilitation of hippocampal plasticity appears to enhance cognition. This is consistent with the observation that people tend to perform better when mildly or moderately challenged. However, major or prolonged stress produces sustained high levels of glucocorticoids that seem to have deleterious effects in the brain, including cell loss. The mechanisms of glucocorticoid-mediated harmful effects are unclear, but may involve inhibition of the chemicals inside the neuron that turn on gene transcription and protein synthesis. The consequences may include inhibition of neural plasticity (with reduced dendritic branching and alterations in synaptic structure) and/or neurogenesis, a decreased rate of new neuronal survival, and actual neurotoxicity with permanent cell loss (i.e., a direct lethal effect on hippocampal neurons, possibly through mechanisms involving the neurotransmitter glutamate, resulting in activation of programmed cell death processes known as apotosis). Animal studies and human brain imaging studies have demonstrated atrophy (shrinkage) of the hippocampus (and to a lesser extent, other brain regions) during prolonged periods of stress. As well, enduring hormonal changes throughout the life of an animal subjected to early maternal separation have been demonstrated. More will be said about the role of the HPA axis in depression and PTSD later in this article.

IV. EVIDENCE FOR THE BIOLOGY OF PSYCHOTHERAPY

In this section we will review present evidence that psychotherapy is a powerful tool that exerts its effects by changing the structure and function of the brain. Before presenting that evidence we will briefly describe background material regarding brain imaging methods, findings related to the biology of human emotions, and comments regarding the biology of personality.

A. Brain Imaging

It is beyond the scope of this chapter to attempt even a modest brain imaging primer. However, these tools have permitted the study of cognition and emotion, in normal and pathological states, to an extent that was previously impossible. A very brief description of imaging methods may therefore assist the reader as we subsequently present imaging data that inform the primary subject at hand.

Neuroimaging methods may be separated into structural and functional imaging techniques. Structural imaging methods provide information about the anatomy of the brain but say nothing about its present physiology. Many readers will be quite familiar with the two major structural imaging methods: computed tomography

(CT) and magnetic resonance imaging (MRI). Although CT has many valuable clinical applications, its resolution is inadequate to quantify the structural changes reflective of the processes described in this article. Therefore, research questions about brain structure are generally answered using MRI.

Functional imaging methods are less familiar to most clinicians as they have only recently found a limited role in clinical medicine. For now, their major role is still limited to research. These methods share a common theme: They provide information about the present physiology of the brain. Depending on the method chosen information about the metabolism or blood flow in a specific brain region (reflective of regional brain activity), and receptor and/or neurotransmitter levels, can be acquired. Brain activation studies may be performed under a variety of conditions, including a resting state, or when the subject is engaged in a specific sensory, cognitive, or emotional task. The most common functional imaging tools used to study emotional and cognitive function are positron emission tomography (PET), single photon emission computed tomography (SPECT), both of which involve introduction of a radioactive tracer into the subject's body, and functional magnetic resonance imaging (fMRI).

B. Functional Neuroanatomy of Human Emotions

Functional imaging tools can show us "real-time" information about brain activation during various emotional states and tasks. Eric Reiman performed a series of experiments with normal subjects and sufferers of panic or phobic disorders to characterize the biology emotions using functional brain imaging methods (PET), each constructed around a distinct mental task. His findings indicate that human emotional functioning is highly complex, involving multiple brain regions. To illustrate this point, we will present a selection of his findings.

A group of normal subjects underwent PET imaging while watching a series of silent film clips, some that were emotionally neutral and others that were emotionally arousing. He later performed a similar study using cognitive rather than visual stimuli. Subjects were instructed to recall (rather than view) happy and grievous events. A wide variety of regions again activated during the performance of both emotional tasks. However, when comparing the results of the studies, Reiman was able to make the following generalizations. Limbic areas (the hippocampal formation and amygdala) and paralimbic areas (anterior temporal cortex and parahippocampal gyrus) long thought to participate in emotion, while activated in both sets of subjects, were preferentially involved in the response to externally presented (film clips) emotional stimuli. In contrast, a region in the vicinity of the anterior insular cortex was preferentially involved in the response to distressing cognitive stimuli (recalled experiences).

Reiman concluded that the anterior insular region might serve as an internal alarm system, investing potentially distressing thoughts and bodily sensations with negative emotional significance. On the other hand, the anterior temporal region might serve as an external alarm system. Several structures activated in a way that indicated that they serve a general role in emotional response, irrespective of the quality or valence of the emotion. These areas included the thalamus and medial prefrontal cortex, the latter seeming to facilitate conscious experience of emotion, inhibition of excessive emotion, and monitoring of one's emotions in order to make personally relevant decisions.

Louis Gottschalk and Monte Buchsbaum also used PET to study the emotional phenomena of hope and hopelessness. Twelve healthy male volunteers were imaged during a state of silent, wakeful mentation. The thoughts that they experienced during the study were later rated using the "Gottschalk Hope Scale." As with Reiman's subjects, many regions activated during the mental task. The interesting conclusion made by the authors was that the metabolic changes associated with hope and hopelessness had some different regional locations and characteristics, indicating that from a neurobiological standpoint, hope and hopelessness are not simply opposite manifestations of a single emotional phenomenon.

It is too early to attempt a broad neurobiologically based explanation for mood and mood regulation. As can be surmised from the above discussion as well as earlier sections of this article (such as the role of the amygdala), the answer is likely to involve a complex interplay between numerous brain areas. In addition to those already mentioned, the anterior cingulate almost certainly plays a key role. John Allman at the California Institute of Technology has asserted that the anterior cingulate appears to be an area in which functions central to intelligent behavior, such as emotional self-control, focused problem solving, error recognition, and adaptive response to changing conditions, are juxtaposed with the emotions.

Whether mood disorders reflect a primary disturbance of the brain systems that control emotion, or involve dysregulation in other brain systems with secondary

"downstream" disruption of mood regulation, remains to be seen. For additional reading beyond this discussion or that found in Section D later, see the reference to Dennis Charney's text in the Further Reading section.

C. Personality

If implicit learning is the result of experiential and genetic interactions, we are left to wonder about the biology of personality development. To what extent is personality already genetically directed at birth, versus a series of implicitly learned rules, perceptions, and emotional and behavioral responses? Anyone who has spent much time with infants has certainly observed the striking differences in behavioral responsiveness from one infant to another, yet we still traditionally think of personality as an acquired constellation of personal characteristics.

Robert Cloninger of Washington University has attempted to explain this conundrum with a psychobiological model of personality development. He suggests that personality consists of two independent multidimensional domains that he terms "temperament" and "character." Temperament consists of four independent dimensions, including novelty seeking, harm avoidance, reward dependence, and persistence. Temperament involves automatic, preconceptual, or unconscious responses to perceptual stimuli, reflective of biases in information processing by perceptual memory systems. Temperamental factors are independently heritable, manifest early in life, and are highly stable over time. The factors may be observed in childhood and predict adolescent and adult behavior.

The dimensions of character are self-directedness, cooperativeness, and self-transcendence, or, respectively, identification as an autonomous individual, integral part of human society, and integral part of the universe. In contrast to temperamental factors, character factors are concept-based and less stable (i.e., more malleable) over time, although genetics may still play a role in character development. Someone low in the first two character traits is, according to the author, likely to suffer a personality disorder. Although the importance of self-transcendence is of questionable value to the person early in life, it takes on great importance during times of death, illness, and misfortune.

This model has implications for the treatment of personality disorders. For instance, it is possible that temperamental factors may be attenuated using certain medications (some of which have already found an effective adjunctive role in the treatment of certain personality disorder traits). On the other hand, the factors of character may be more productive targets for psychotherapeutic interventions. Clearly more work must be done to test the validity of this construct, particularly as it translates to clinical settings with disturbed individuals.

D. Depression

1. Psychotherapy versus Antidepressant Medication: Imaging Findings

Psychotherapy of depression in its various forms is among the most well-validated of all psychological treatments. Yet fundamental questions about which form of psychotherapy to apply, when, to which patient, and whether a depressed person should receive psychotherapy, medication, or both, remain largely unanswered. Information from the neurosciences may soon inform these issues, and is already offering exciting clues.

Two investigators performed functional neuroimaging with depressed people treated with psychotherapy or antidepressant medicine. In the first study, Arthur Brody and Lewis Baxter used pre- and posttreatment PET imaging to examine regional brain metabolism changes in 24 people suffering from major depression treated with 12 weeks of either paroxetine or interpersonal therapy (IPT). The posttreatment changes in brain activation were very similar, with both groups showing a normalization of excessive pretreatment activation in a variety of brain regions (the right dorsolateral prefrontal cortex, left ventrolateral prefrontal cortex, right dorsal caudate, and bilateral thalamus). Only the medicated group showed a significant reduction in the right ventrolateral prefrontal cortex, possibly reflecting the fact that the medicated subjects were less symptomatic pretreatment and experienced a proportionately more robust response to treatment.

In a study performed in the United Kingdom, Stephen Martin used SPECT to measure changes in regional cerebral blood flow (rCBF) in 28 depressed people who were treated for 6 weeks with either venlafaxine or IPT. The two groups had a similar degree of pretreatment symptoms, and again, the drug group showed a more robust improvement, although 6 weeks of treatment is minimally adequate for an antidepressant trial, but probably not for IPT. The imaging studies showed that both groups showed increased rCBF in the right basal ganglia. Only the IPT group showed increased rCBF in the right posterior cingulate, an ambiguous finding due to potential confounding effects.

A preliminary study by Viinamaki and colleagues in Scandanavia suggests that psychodynamic psychotherapy, as is the case with CBT and IPT, may change brain function. A patient with both depression and borderline personality disorder was treated for 1 year with psychoanalytic psychotherapy and compared to another patient with the same conditions who received no treatment, as well as with 10 normal controls. Pre- and posttreatment SPECT scans demonstrated normalization of serotonin uptake in the prefrontal cortex and thalamus of the treated patient but not in the untreated subject.

Although not an imaging study, it is worth mentioning work done by Russell Joffe in which he treated 30 mildly depressed people with 20 weeks of cognitive therapy (CT), 17 of whom responded to treatment. Blood was drawn from the subjects before and after treatment, and assayed for concentrations of thyroid hormone. Prior studies have shown that thyroid hormone, a general regulator of the body's metabolic activity, is elevated in many people with depression, and tends to normalize after effective treatment with antidepressant medicines. Joffe found that thyroid hormone levels came down in CT treatment responders, but not in nonresponders. Although the implications of abnormal thyroid function is unclear as it relates to depression and its treatment, this study provides another piece of evidence that psychotherapy resembles medication treatment in terms of biological changes that follow effective treatment.

From these very preliminary studies we may conclude that there is little neurobiological evidence of differential antidepressant medicine–psychotherapy treatment effects, suggesting that a unitary pathway for relieving depressive symptoms might exist, shared by antidepressant medicines and psychotherapy. Yet even if there is, on some level, a common biological antidepressant mechanism, that possibility does not help us to decide which treatment might best help a given patient. Biological markers that predict response to one treatment or another could help the patient and clinician rationally choose the most promising treatment. Better understanding of the involved pathways may also provide a biological basis for synergistic antidepressant–psychotherapy combinations, analogous to the strategy commonly used in anticancer chemotherapy in which drugs are combined that attack a common biochemical pathway at different steps in the sequence.

2. Sleep Studies

Sleep studies have been used to identify just such a marker. Michael Thase and others at the University of Pittsburgh performed three studies of almost 300 depressed people treated with either antidepressant medication or psychotherapy (CBT in the first study; IPT in the subsequent studies). Prior to treatment, subjects underwent a sleep electroencephalogram (sleep EEG, or polysomnography). This test uses measurements of the brain's electrical activity to characterize a subject's sleep, in terms of the amount of actual sleep and the relative normalcy of the pattern of sleep stages. The investigators found that people with abnormal sleep profiles responded less well to CBT, and had a higher recurrence rate. Interestingly, the sleep EEG did not predict response to medication.

3. A Cellular Mechanism of Antidepressant Treatment

Hypotheses concerning the cellular mechanisms of effective psychotherapy are entirely conjectural at this time. However, the mechanisms of antidepressant medication action are being elucidated, and may offer us testable hypotheses about the mechanisms of action for psychotherapy.

Ronald Duman and colleagues at Yale University have studied the biology of mood disorders as well as possible cellular mechanisms of antidepressant treatments. Chronic administration of four different classes of antidepressant drugs and electroconvulsive shock increased levels of brain-derived neurotrophic factor (BDNF)—a chemical inside of the nerve cell that indirectly turns on gene transcription, and inhibits cell death pathways—in the hippocampus of unstressed rats. Furthermore, the antidepressant treatment blocked the expected downregulation of that chemical in response to stress. They concluded that antidepressant treatments might work by enhancing neural plasticity and supporting neogenesis and neuronal survival. Although this offers a hypothetical cellular mechanism of action for antidepressant treatments, it also raises the intriguing prospect, albeit conjectural at this time, that psychotherapy may act in a similar fashion. Duman hypothesized that depression (and possibly other psychiatric conditions) may result from a failure of neural plasticity in various brain regions, particularly the hippocampus and prefrontal cortex. Might effective antidepressant therapies, somatic or psychotherapeutic, act by restoring normal neural plasticity?

E. Posttraumatic Stress Disorder

Human history quickly dispels any notion that tragedy and trauma can ever become infrequent occurrences. Despite the best of societal intentions, wars

rage, terror menaces, and trusted caregivers violate. Trauma survivors persevere in states ranging from health to mental debilitation. PTSD is a potential consequence of trauma that renders its victim chronically anxious and phobic, prone to awful reexperiencing episodes, avoidance behavior, and a range of behavioral, cognitive, and affective symptoms.

Our earlier discussion of the biology of stress is highly relevant to the study of PTSD. Douglas Bremner at Yale University has studied the biology of PTSD in combat veterans and victims of domestic violence. He and others have concluded that PTSD is associated with hippocampal defects that may result from the deleterious effects of stress-induced glucocorticoid exposure. Bremner showed that combat veterans had hippocampal volumes 8% smaller than control subjects. He also found that memory deficits correlated with hippocampal volume reduction. Later studies with abuse victims showed hippocampal volume reductions of 12 to 16% in people with abuse-related PTSD compared to abuse victims who did not develop PTSD. The age of traumatization (stage of development) may influence the nature of the memory deficits and hippocampal atrophy. For example, imaging studies of children who were maltreated demonstrate smaller hippocampal volumes than children who were not abused. Because of its central involvement in multiple memory- and stress-related functions, the hippocampus may also provide an anatomical explanation for the fragmented or delayed recall of highly stressful or traumatic memories.

Lisa Shin and Scott Rauch at Harvard University examined 14 Vietnam combat veterans, 7 with PTSD and 7 without, using PET. The subjects viewed pictures with various themes (emotionally neutral Vietnam-unrelated themes; emotionally negative Vietnam-unrelated themes; and emotionally negative Vietnam-combat-related themes). The PTSD subjects showed increased blood flow in the anterior cingulate gyrus and right amygdala when they were exposed to combat-related stimuli. They also had decreased blood flow in an important language area of the brain (Broca's area), which the authors conjectured "may be consistent with diminished linguistic processing while subjects with PTSD viewed and evaluated combat pictures." The subjects without PTSD did not show these changes.

Chris Brewin at the University College London has posited a novel "dual representation" theory of memory that he extends to understand PTSD and its behavioral treatment. He postulates the presence of two memory systems, which he terms verbally accessible memory (VAM) and strategically accessible memory (SAM). VAM relates to ordinary autobiographical information. Memories stored in the VAM system can interact with the rest of autobiographical memory base, and deliberate retrieval is straightforward. On the other hand, SAM is characterized by the processing of information from "lower level perceptual processing of the traumatic scene and of bodily response to it." Perceptions stored as SAM memory undergo less initial conscious processing, and such memories (that may take the form of "flashbacks") are more detailed and affect-laden.

Brewin extends this construct to psychotherapy, asserting that "therapy assists in the construction over time of detailed, consciously accessible memories in the VAM system which are then able to exert inhibitory control over amygdala activation." The therapy process creates new representations of critical retrieval cues stored in the VAM system. The new, verbally processed, trauma-related cues are identified as belonging to a specific past event that does not now constitute an ongoing threat ("that was then, this is now"). Initially, memories in the SAM and VAM systems compete when the patient is confronted with trauma reminder. VAM may be given a retrieval advantage if treatment strategies are used to "make the new representation highly distinctive," which may lead to encoding effects that improve memory retrieval. Brewin hypothesizes that EMDR may do just that: the EMDR cue (therapist's finger, for instance) encodes a very distinctive attribute to the new VAM representation. "Imaginal reconstructions" (i.e., deliberate fantasies about acting differently in the trauma) may also lend a distinctive cue to the new representations. His hypothesis, while intriguing, awaits experimental validation.

F. Obsessive–Compulsive Disorder

Perhaps no mental disorder has so represented each of the conceptual poles of the psychological–biological dichotomy as obsessive–compulsive disorder (OCD). Only a few years ago OCD was considered the classic psychological disorder, requiring the rigorous application of psychoanalytic psychotherapy. In recent years it has been conceptually transformed into the prototype of a "biological" malady that can only be truly relieved with serotonin-elevating drugs, with or without the aid of adjunctive behavioral or cognitive psychotherapy. However, as we learn more about OCD, and pay heed to the robust therapeutic potency of psychotherapy or pharmacotherapy monotherapy (as well as combinations), both models are revealed to be simplistic distortions of a complex environment–genetic interactive

phenomenon (as we believe to be the case with the great majority of mental disturbances). Much research has been accomplished regarding the biology of OCD. We will concentrate on evidence for biologic change in response to psychotherapy.

Lewis Baxter and Jeffrey Schwartz at UCLA have published results from several experiments involving PET imaging of people treated for OCD. In their first study, they treated nine OCD sufferers with behavior therapy (BT) and nine with an SSRI antidepressant, fluoxetine (Prozac^{R}). Similar proportions from each group responded to treatment (6 of 9 BT, 7 of 9 fluoxetine). The responders' pre- and posttreatment PET images showed the same change, specifically a reduction in the metabolic activity of a part of the striatum called the caudate nucleus. They later treated nine more OCD patients with structured exposure and response-prevention behavioral and cognitive treatment. Again, PET scans showed a reduction in the metabolic activity in the caudate of responders, but not nonresponders. The shared ability of BT and SSRIs to reduce OCD symptoms may be partially explained by studies on classical conditioning in dogs. Injecting serotonin into the anterior limbic cortex of low-serotonin dogs decreases the effects of classical conditioning. Furthermore, high levels of conditioned and unconditioned reflexes in dogs are accompanied by low levels of serotonin in the blood. During exposure treatment, one tries to extinguish pathological, classically conditioned responses.

Baxter, Schwartz, and Arthur Brody conducted another study to attempt to identify a PET marker that might differentially predict response to BT or fluoxetine. They treated 27 OCD sufferers, 18 with BT and 9 with fluoxetine. Remarkably, the degree of pretreatment activity in a part of the left frontal lobe called the orbitofrontal cortex (LOFC) appeared to differentially predict response to the two treatments. Higher pretreatment activity in the LOFC was associated with a better response to BT, whereas lower LOFC activity was associated with response to fluoxetine. The investigators postulated that this effect can be explained by considering two of the (many) functions of LOFC. Specifically, the LOCF appears to (1) mediate behavioral responses to situations in which the affective value of a stimulus changes, and (2) mediate extinction. The authors pointed out that successful behavior therapy leads to a change in the affective value assigned to stimuli that had previously brought on compulsions. Subjects with higher pretreatment LOCF activity may possess a greater capacity to "change the assignment of affective value to stimuli and be better able to extinguish habitual, compulsive responses. These abilities may lead to a better response to BT." This represented the first study in which a single biological marker provided an explicit guide to differntial treatment planning.

G. Psychotherapy and Cancer

The study of the biology (and effectiveness) of psychotherapy need not be limited to psychiatric diseases. Fawzy I. Fawzy examined the outcomes of 80 people with malignant melanoma, an aggressive skin cancer with high mortality rate, who were treated at the John Wayne Cancer Clinic at UCLA. Some of the patients were enrolled in a 6-week supportive therapy group that provided education, stress management, enhancement of coping skills, and psychological support from group members and staff. The investigators compared the 6-year survival of the group-treated subjects and subjects who did not participate in the group. A significantly greater proportion of the group-treated patients were alive after 5 years than those who did not receive group therapy. Group-treated subjects also showed a trend toward lower recurrence rates.

David Spiegel studied 86 women with metastatic breast cancer. Fifty of the women participated in 1 year of weekly supportive group therapy, while 36 women did not. Because of the advanced stages of breast cancer in all subjects, most women (83 of 86) died within 10 years of participation. However, the mean survival time in the women who had group therapy was 36.6 months, whereas the control group lived for an average of 18.9 months.

Clearly, psychosocial factors influence the outcome of many (if not all) general medical illnesses. The mechanisms of this interaction deserve the attention of neuroscientists and psychotherapists alike.

V. CONCLUSIONS

We have sufficient evidence, some of which has been presented in this article, to reach certain neurobiological conclusions related to psychotherapy:

1. Psychotherapy is a powerful tool that produces functional and/or structural changes in our patients' brains.
2. These changes tend to reflect a relative normalization of the biological anomalies characteristically associated with the underlying illness.
3. Psychotherapy-induced changes occur in a variety of brain regions, including those involved in learning and memory.

4. Psychotherapy may exert its effects through the cellular mechanisms related to learning and memory, namely neural plasticity and possibly neurogenesis.
5. Psychotherapy may promote neural plasticity by inhibiting the cellular effects of stress.
6. Genetic diversity among individuals almost certainly contributes to the remarkable range of individual responses to stress, traumatic and nontraumatic life events, and to treatment.

Present knowledge and research tools (most notably brain imaging techniques) enable us to propose myriad testable hypotheses pertaining to psychotherapy and related topics. For instance, how is the interaction between implicit and explicit memory processes influenced or utilized by psychotherapy? Details about this interaction might guide the design of specific psychotherapeutic interventions.

Studies of stress and trauma raise many critically important issues. It is quite foreseeable that psychotherapy might be used to protect the brain from the deleterious effects of stress. Identification of the environmental conditions that are most likely to produce "toxic stress" (traumatic and subtraumatic) can facilitate that eventuality. As we clarify the interactions between genes and the environment, we may be able to identify genetically at-risk individuals to whom we could target our preventive approaches. Used in that manner, psychotherapy might reduce the likelihood of symptomatic mental illness (new onset or recurrence) during or following times of stress. It is worth noting that recent evidence indicates that critical incident stress debriefing (CISD) may not be as effective as we had thought in reducing the incidence of posttraumatic psychopathology in people who have recently experienced traumatic events. Thus, effective prophylactic psychotherapies must be as carefully tailored, delivered, and validated as therapies for existing mental disturbances.

Another important consideration involves the refinement of psychotherapies to best address specific mental diagnoses or symptoms. The scientific basis for selecting one psychotherapy over another is still weak, relying, at best, on empirical evidence that a particular type of therapy did or did not work in a particular sample population. A time may come when we will be able to rationally design optimal psychotherapy based on the neurobiology of the mental disease and the proposed treatment. On a related note, we hope that Cloninger's theories of personality development (or similar work) will be refined in a way that might also guide specific psychotherapeutic strategies.

Research described earlier in this article involving sleep EEG (in depression) and PET (in OCD) provides a tantalizing glimpse at the potential of diagnostic tools to identify predictors of treatment response. Brain imaging methods, HPA axis parameters, and other biological markers may someday offer accurate and practical ways to monitor progress in psychotherapy.

Substantial advancement in the effectiveness of combined psychotherapy and pharmacotherapy will certainly require additional research. Important questions concerning strategies for optimizing combined treatment abound. Ideally, combined therapies would offer synergistic, rather than redundant or even antagonistic mechanisms of action.

Do different psychotherapies act on different parts of the brain? Some have suggested that psychoanalytically oriented psychotherapy may have greater influence on the lateral hemispheres since this type of treatment focuses on internal representation and expectations of others. In contrast, behavioral therapy often focuses on simpler forms of learning and memory that may involve more directly the amygdala, hippocampus, and basal ganglia.

The healing professions have long paid insincere homage to the biopsychosocial model of human cognition, emotion, health, illness, and behavior. A true integration of biology and psychology into a coherent conceptual framework, subscribed to by medical and nonmedical clinicians and researchers, is essential if we hope to take full advantage of the remarkable healing power of psychotherapy and move from a reductionistic mind–brain dichotomy in understanding our patients in health and illness.

See Also the Following Articles

Biofeedback ■ Collaborative Care ■ Comorbidity ■ Neuropsychological Assessment ■ Organic Brain Syndrome ■ Psychopharmacology: Combined Treatment

Further Reading

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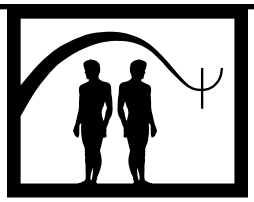

Neuropsychological Assessment

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GLOSSARY

dominant hemisphere The hemisphere of the brain dominant for language functioning.

frontal/prefrontal lobe: The area of the brain anterior (in front of) the precentral gyrus.

intelligence Measures of overall capacity to process external and internal stimuli.

neuroimaging tools Nuclear medicine tools used to picture the functional and structural components of the brain in a systematic manner.

neuropsychological assessment (NPA) Systematic evaluation of the brain-behavior relationships in an individual.

neuropsychologist Clinician with specialized training in neuropsychology and involved in neuropsychological assessment.

normative sample Sample from population of interest with no known neurological impairments.

pathognomonic approach Use of a variety of measures that are designed to identify symptoms associated with characteristics of a particular disease.

premorbid ability Abilities prior to the neurologic event resulting in brain injury.

referral question The question for which the client was referred for the evaluation.

I. DESCRIPTION OF ASSESSMENT

Neuropsychological assessment (NPA) is the systematic evaluation of the brain–behavior relationships in an individual. The purpose of an NPA is to define the client's specific cognitive strengths and weaknesses and to identify the relationships between the neuropsychological findings and the client's medical and psychiatric condition. Tools used to complete the NPA are measures of cognition and intelligence that have been standardized on a neurologically normal sample. By administering the measures in the identical, systematic manner, as described in the instruction manual for the testing instrument, the evaluator can compare the individual's performance on the measure to the performance of a normative sample. It is optimal if the normative sample is subdivided by gender, age, and years of education. In that way a very specific comparison can be made. Neuropsychological test performance has been generally shown to vary according to gender, age, and years of education in control samples.

Localization of brain injury was the intent of neuropsychological testing in the 1970s but with current functional and structural neuroimaging tools, there is a reduction in the need to "localize" the brain injury. The purpose of neuropsychological evaluation is currently

multifaceted and often is dependent on the referral question. A complete NPA helps the client, clinician, and referral source gain an understanding of the client's cognitive processes such as memory, language, and perception. In addition it can assist in diagnosis and identification of difficulties in cognition that might be related to psychiatric conditions and motivation. Finally, a thorough NPA can help to determine rehabilitation potential by identifying pathways for compensation and extent of cognitive involvement.

II. CASE ILLUSTRATION

The NPA report and raw data shown below provide an example of a case referred by a neurologist. This 55-year-old man was referred because, during a standard mental status evaluation, visual perceptual problems were observed.

A. Neuropsychological Testing Report

1. Relevant Past History

Dr. C is a right-handed, 55-year-old, Caucasian male, previously employed as an optometrist. Dr. C reported that he first noticed changes in his cognition while on an out-of-town visit. He became disoriented and he reported that he got lost for many hours while driving to a known location. He reported that he is happily married and has two children who have been very successful in their own vocations. Both his mother and father are deceased. His father died recently from a series of illnesses, including a bowel obstruction and pneumonia. His mother died in 1985 of Alzheimer's disease. Dr. C reported a recent fall from a horse while on a vacation, but he denied receiving a head injury from it, only reporting minor bruises. He also reported that last summer he was camping and his dog was exposed to ticks. He is concerned that the current problems that he is having may be related to Lyme disease. Dr. C denied other significant stressors in his life and continues to remain active, playing tennis regularly. He is on no medications.

2. Behavior During Evaluation

Dr. C arrived late for the interview because he was unable to find the location of the room. He was very guarded during the initial interview and overtly frustrated during some of the more difficult portions of the evaluation. Mood was observed to be slightly depressed but toward the end the session Dr. C was able to talk more freely and seemed to become more relaxed. His attention and effort were adequate and the current evaluation is thought to be an accurate measure of his current abilities.

3. Tests Administered

Tests administered included the Wechsler Adult Intelligence Test-R, Wechsler Memory Scale-R, Wide Range Achievement Test (Reading subtest), Stroop, Trails A & B, and the Adaptive Category Test.

4. Results of the Evaluation

Dr. C's full-scale intelligence was estimated to be within the very high average range but a significant discrepancy was noted between his verbal abilities and his visual–perceptual skills (Full-Scale IQ 124, Verbal IQ 130, Performance IQ 110). Dr. C demonstrated an exceptional vocabulary and understanding of the world around him. His speech was fluent and detailed, and no signs of expressive speech limitations were observed. When presented with visual stimuli Dr.C had difficulty identifying missing essential details within a visual percept. Dr. C also had great difficulty reproducing visual spatial designs. He was unable to segment accurately the design and work on parts to complete the whole design. Graphic motor speed was high average and he was able to copy simple figures accurately and rapidly. It is expected that, given his educational background and his vocation's emphasis on visual perception, his current visual perceptual skills represent a significant decline for him.

Speed of processing was found to be average and high average given simple material. Verbal short-term attention was average for his age. Dr. C was able to maintain seven digits in his head and present them forward. When asked to recall the numbers in reverse order, he was only able to recall four digits. Simple reading speed was average. In addition, Dr. C was able to keep a strategy in mind while he quickly read given words. When asked to scan for specific numbers and letters Dr. C demonstrated greater difficulty and he was unable to accurately alternate between number and letters. His performance on a difficult task requiring sustained attention and visual scanning with interference was significantly impaired.

Memory abilities were also variable and his pattern of performance is reflective of his memory complaints. Verbal memory skills are within the high average to superior range given his age. He was able to recall lengthy stories (98th percentile and 92nd percentile) immediately after

presentation and again report the stories 20 minutes later accurately. He was also able to rapidly learn pairs of words. Dr. C had more difficulty recalling visual material presented. He was unable to encode essential details of the visual stimuli and his recall of the given visual designs was between the 25th percentile and 33rd percentile. Once he had learned the material, Dr. C was able to accurately reproduce the visual information even given a significant delay. His visual memory impairments are most likely related to his recent difficulty getting lost when not using a map. In addition, his memory is hampered by his difficulty identifying essential details and visual–spatial relationships in abstract visual percepts.

The complex visual problem-solving task administered on the computer was also difficult for Dr. C. He was inefficient in his ability to develop effective problem-solving strategies to apply to the sets of figures presented. He demonstrated difficulty planning and tended to act impulsively in response to the presented stimuli. This task was frustrating for him and his performance was severely impaired. Dr. C demonstrated excellent verbal abstraction abilities when he was given uncommon proverbs as part of the intelligence test.

Dr. C was administered the Symptom Checklist 90-R and denied all types of psychiatric symptoms. On this survey form, he did not acknowledge difficulty in thinking or a change in his appetite even though he had recently gained 65 pounds. His response pattern on the checklist and during the interview indicates that Dr. C is unable to fully acknowledge the significance of his cognitive changes. When his difficulties were pointed out, Dr. C had a tendency to use his excellent verbal skills to externalize the existing problem.

5. Summary

Dr. C has experienced significant neuropsychological changes that involve moderate visual–perceptual and visual–spatial impairments, moderate visual memory limitations, and moderate impairments in problem solving. In contrast, Dr. C continued to demonstrate exceptional verbal skills and verbal memory. Dr. C denied problems with mood or the recent occurrence of psychiatric symptoms.

Because of the importance of memory and visual-perceptual abilities in his work, it is not recommended that Dr. C return to his current job. It is recommended that Dr. C consider cognitive rehabilitation therapy to help him learn to compensate for his current limitations. In rehabilitation there will be an attempt to help him learn to use his verbal skills to compensate for his visual memory limitations. Because Dr. C displayed limited insight regarding his difficulties, his family will need to be involved in helping him learn to use compensation strategies. Supportive psychotherapy for himself and family members is also recommended.

Dr. C meets the criteria of dementia because of a decline in visual memory and problem solving. It is suspected that Dr. C is experiencing degeneration in both the right temporal and frontal lobes. This may be associated with frontal-temporal dementia. Repeated testing in 6 months will determine if the condition is progressive.

TABLE I
Neuropsychological Testing Scores

Wechsler Adult Intelligence Test-R

Verbal Tests		Performance Tests	
Information	15	Picture Completion	8
Digit Span	10	Picture Arrangement	9
Vocabulary	16	Block Design	7
Arithmetic	14	Object Assembly	9
Comprehension	15	Digit Symbol	13
Similarities	14		

Verbal IQ = 130 Performance IQ = 110 Full-Scale IQ = 124

Trail Making A: T = 38 *Trail Making B:* T = 36

Stroop Word T = 57, Color T = 55,
Color Word Interference T = 57

Wechsler Memory Scale-R

Logical Memory I	98th percentile
Logical Memory II	92nd percentile
Visual Reproduction I	25%
Visual Reproduction II	33%

Symptom Checklist 90-R
All 90 questions responded with "0" score.

Adaptive Category Test
Total Adaptive Error Score = 122

III. THEORETICAL BASES

Russia was one of the first countries in the world to begin NPA. In the early 1900s, A.R. Luria used a flexible, clinical evaluation approach in his work with patients who had brain injury. His model of brain functioning, published in English in 1970, outlined

"three principal functional units of the brain … a unit for regulating tone or waking, a unit for obtaining, processing and storing information …, a unit for programming, regulating and verifying mental activity." Luria defines the purpose of NPA as being twofold: "to pinpoint brain lesions responsible for specific behavior disorders … provide us with a factor analysis that will lead to better understanding of components of complex psychological functions" (p. 66).

In the United States in 1986 Donald T. Stuss and Frank Benson provided a behavioral anatomical theory of brain functioning to guide NPA. They stressed the global influence of the frontal/prefrontal lobe on mental activity. In their theory, executive functioning attributed to the frontal/prefrontal lobes of the brain provides conscious direction and efficient processing of internal and external stimuli. The second unit of the brain is associated with the posterior region of the brain and involves attention, visual–spatial processing, language, sensory perception, memory, motor, and emotional status. In their theory they create a hierarchy of brain functioning and they identify *self-awareness* as the highest cognitive attribute of the frontal lobes. Although many individual mental functions, assessed by neuropsychological tests, can be maintained without prefrontal and frontal participation, the responses are automatic and insight and planning are lacking. Adequate frontal/prefrontal functioning is essential for control of intelligence, consciousness of self, and independent thinking.

It has not been possible for neuropsychologists to develop specific measures that are 100% diagnostic of any type of brain injury. Instead most neuropsychologists now use a pathognomonic approach. This approach involves the use of a variety of measures that are designed to identify symptoms associated with characteristics of a particular disease. In the United States most neuropsychologists use a flexible battery approach. Instead of using standardized test battery in its entirety, a selection of tests from a variety of batteries and separate, individual tests are utilized. Standardized batteries that have been developed over the years are the Luria-Nebraska Neuropsychological Battery and the Halstead-Reitan Neuropsychological Battery. A flexible battery approach allows the clinician to match the referral question and the examinee's pattern of abilities to the test battery. It is the aim of the neuropsychologist to understand the reason for the evaluation, the questions being presented by the individual being evaluated, and the functional implications of the symptoms in making decisions concerning the assessment tools to be used in the evaluation. Although NPA batteries may differ, generally, a core set of assessment tools are used in each case. This core is included because the psychologist is most familiar with these assessment tools, understands the cognitive component skills that are part of the measure, and has appropriate normative data available. Flexibility in the NPA derives from the needs of the individual being evaluated. Clinical neuropsychologists regularly address a large range of referral questions, clinical behaviors, and patients with very disparate capacities. So although there is an overall structure to the NPA, there is significant diversity in the details of each NPA.

Generally a measure of intelligence is administered as part of the NPA battery. By administering a measure of overall general abilities such as an intelligence test, the clinician can compare overall level of functioning to specific cognitive skills such as memory, attention, and problem solving. Examination of the subtests may also provide clues to premorbid functioning. Most NPA batteries also include measures of expressive and receptive language, visual perception, visual scanning, and visual–spatial processing. A variety of measures of attention and memory are commonly included. Finally tests of executive processing such as problem solving are administered. Also included in an NPA will be at least a basic measure of emotional or psychiatric status. Because depression and anxiety can influence cognitive abilities, a measure of psychiatric symptoms needs to be administered to determine if there is an emotional component to the client's current cognitive status.

The battery of tests will generally be preceded by a clinical interview. Background information concerning the client's social history, present life circumstances, medical history and current medical complaints, and reasons for referral are obtained.

Information regarding social and medical history, psychiatric history, drug and alcohol abuse history, neurotoxin exposure, history of head injury, a list of current medications, family psychiatric and dementia history, and client's social, employment, and educational history should be obtained because these factors can influence test interpretation. The NPA will include an observation of the client's general appearance, ambulation, sensory limitations, and behavior. In an NPA the examiner needs to observe attention, distractibility, and motivation on all tests administered.

The entire test battery may require anywhere from a few hours to a day or two to complete, depending on the client's attention and stamina.

IV. APPLICATIONS AND EXCLUSIONS

NPA is most often not attempted in children younger than the age of 4 years. Normative data are available for the geriatric population on a select number of neuropsychological tests. Therefore, NPA is possible in individuals between the ages of 5 to 95 years.

Currently relatively few NPA tools used in the United States have been translated to languages other than English. The Wechsler Intelligence tests for children and adults are available in Spanish. Since the intelligence tests are some of few tests translated and normed for Spanish-speaking individuals, full NPA often takes place using informally translated NPA tools. It is very important to consider ethnic variations in administering NPA tools to individuals outside the normative sample on which standardization took place. Fortunately, many countries have developed NPA tools within their own culture.

NPAs vary extensively in length. Length of the testing will vary depending on the referral question, finances of the individual being evaluated, and complexity of the presenting symptoms or neurological condition. Therefore, testing is limited to individuals able to tolerate the interpersonal and lengthy testing situation. NPA is managed by a clinical psychologist trained in NPA but in many environments a student in clinical psychology or a testing technician may give some of the assessment tools. Because the assessment tools used in NPA are standardized in their administration, students and technicians can be trained to administer many of the tests. Close supervision is essential because the clinical neuropsychologist needs to be available if problems arise and to ensure that the tests are administered in the standardized manner.

As can be surmised, a psychologist involved in NPA needs to have extensive expertise. Generally specific neuroscience training while in a school of clinical psychology is required. Classes concerning normal child and adult brain functioning and neuropathology (neuroanatomy and neurophysiology principles) should be part of the student's experience. The clinician completing the NPA needs to have a broad understanding of brain function and its neuroanatomical correlates. Clinical experience in assessment of both neurologically normal and impaired individuals needs to be extensive. Given the complexity of each examinee's cognition and emotional status at the time of the evaluation, every NPA completed offers new learning experiences to the student in training. Currently graduating clinical psychologists are asked to continue their supervised experience for 2 years after completing an internship specializing in neuropsychology. This further training is called postdoctoral training in neuropsychology. The division of neuropsychology within the American Psychological Association offers these specialized training opportunities.

V. EMPIRICAL STUDIES

In 1981 Heaton and Pendleton completed one of the earliest studies of the predictive abilities of neuropsychological testing on everyday function. They reviewed the relationship between neuropsychological testing results and various aspects of everyday life: self-care, independent living skills, and academic and vocational achievement. They found that intelligence tests scores relate to the clients' ability to care for themselves and their understanding of everyday routine situations. The Category Test from the Halstead-Reitan battery was related to judgment and decision making in routine daily activities. Memory measures were related to learning capacity and forgetfulness in everyday functioning.

There is a continuing need for neuropsychologists to effectively address functional questions after the neurologic diagnosis has been established. Central to the success of NPA is its ability to present useful and valid information regarding issues for everyday living. Neuropsychologists, using the NPA, need to be able to identify the client's individual cognitive strengths and deficits. It is especially important for the NPA to identify residual strengths that can be used to improve everyday functioning within work and home situations. NPA should address the client's ability to function safely and efficently within an existing or new work environment, assess ability to perform adequately in school, and determine whether the client is able to remain at home without supervision. These are just a few of the many question needing to be addressed in a thorough NPA.

VI. SUMMARY

NPA is an applied science involving systematic measurement of brain–behavior relationships. It involves the complete and detailed assessment of behavioral expression of brain dysfunction. It is generally a lengthy process involving a clinical interview, a flexible battery of standardized cognitive measures, and measures of

psychological functioning. The time and effort required of the client is compensated by the clinical neuropsychologist's careful consideration of questions concerning cognitive strengths and weaknesses, rehabilitation strategies, work and educational potential, and safety within home and outside environment.

See Also the Following Articles

Behavioral Assessment ■ Collaborative Care ■ Comorbidity ■ Formulation ■ Medically Ill Patient: Psychotherapy ■ Neurobiology ■ Projective Testing in Psychotherapy ■ Trauma Management Therapy

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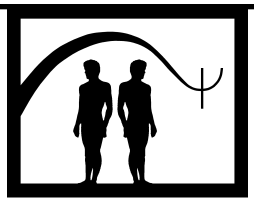

Nocturnal Enuresis: Treatment

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GLOSSARY

classical conditioning Learning that occurs when a response is elicited by a particular stimulus. This process occurs when a previously neutral stimulus (e.g., a tone) occurs in conjunction with another (unconditioned) stimulus (e.g., food presentation) that results in a unconditioned response (e.g., salivation). Over repeated pairings, the neutral stimulus obtains the properties of the unconditioned stimulus and elicits the same response. The neutral stimulus is then referred to as the conditioned stimulus and the response is referred to as the conditioned response. Also known as Pavlovian conditioning.

dry bed training An intensive treatment for nocturnal enuresis that involves a combination of procedures, including urine alarm, retention training, and practice of correct toilet skills.

negative reinforcement Form of operant conditioning that occurs when a behavior is immediately followed by the removal of a stimulus that results in an increase in the future likelihood of the behavior.

nocturnal enuresis Repeated voiding of urine in one's bed or clothing at night that is inappropriate at a given age (5 years). Can be classified as primary (child has never been continent) or secondary (child previously has been continent). Also referred to as bedwetting.

operant conditioning Learning that occurs based on the consequences that follow a response. This process occurs when a behavior is emitted and the resulting consequences either increases or decreases the likelihood of the behavior occurring in the future.

positive reinforcement Form of operant conditioning that occurs when a behavior is immediately followed by the presentation of a stimulus that results in an increase in the future likelihood of the behavior.

punishment Form of operant conditioning that occurs when a behavior is immediately followed by a consequence such that there is a decrease in the future likelihood of the behavior.

retention training Treatment involving a gradual increase in bladder capacity by delaying urination for successively longer periods of time.

urine alarm Common treatment for nocturnal enuresis involving a pad placed on the child's bed and an alarm that is activated when the child urinates. Also known as the "bell-and-pad" treatment.

I. INTRODUCTION

Enuresis, the repeated voiding of urine into one's bed or clothing, is a fairly common childhood behavior problem. Based on the criteria described in the *Diagnostic and Statistical Manual, Fourth Edition,* a diagnosis of enuresis is appropriate if incontinent voiding has occurred for a minimum period of 3 months, and the

child must be at an age where appropriate continence is expected (i.e., 5 years). The diagnosis of enuresis is divided into three types: diurnal, nocturnal, and combined, with the most frequently diagnosed type being nocturnal enuresis. Because of the frequency of the diagnosis, the majority of this article focuses on nocturnal enuresis.

As implied by the name, nocturnal enuresis refers to incontinent urination at nighttime. More commonly, the behavior is referred to as "bedwetting." Nocturnal enuresis can be classified as either primary or secondary, depending on the child's history of continence. If the child has never been continent, primary enuresis is diagnosed; conversely, secondary enuresis is diagnosed if the child previously has experienced a period of continence.

Nocturnal enuresis is a relatively common childhood problem. Prevalence estimates for the disorder vary widely; however, the occurrence of the behavior tends to decrease with age such that approximately 20% of 5-year-olds display the behavior compared to 10% of 10 year-olds. In addition to the variation with age, the prevalence of nocturnal enuresis varies with gender with an approximate 3:2 male to female ratio. Enuretic children often have an immediate family member who also displayed bedwetting. As noted by Shaffer this relationship is poorly understood. That is, it is unknown if this relationship is genetic in origin or if the families of enuretic children are more permissive in their views of the behavior (i.e., parents who displayed enuresis are more accepting of its occurrence).

Several hypotheses have been reviewed regarding the development of enuresis. A psychodynamic hypothesis posits that enuresis is related to the presence of an unresolved internal conflict. Psychological stressors (e.g., parental separation, poor academic performance) might also be related to the occurrence of enuresis. Some researchers have hypothesized that enuretic children have smaller bladder capacities than their nonenuretic peers. Finally, in some cases, it appears that enuretic children simply have not learned correct bladder control. The latter opinion is perhaps the most tenable hypothesis given that the teaching of correct skills has been shown to lead to a decrease in enuresis and other toileting accidents.

II. DESCRIPTION OF TREATMENT

As with all childhood behavior problems, the treatment of enuresis should begin with a comprehensive medical and psychological examination. Friman and Jones described several factors to consider in the assessment of enuresis. Examples of these factors include parental beliefs about the severity of the problem, parent and child motivation to implement treatment, and the child's concerns over the bedwetting. Knowledge of these factors may predict treatment efficacy in some cases. For example, Butler, Brewin, and Forsythe found that children who are not concerned with their enuresis are more likely to demonstrate treatment relapse than children who are concerned. Finally, it is recommended that the assessment of nocturnal enuresis include data collection prior to the onset of treatment. Such baseline data will assist in identifying the frequency of the behavior as well as other dimensions of the behavior (e.g., the time at which wetting occurs). In some cases, additional assessment procedures such as direct observation may be used to develop treatment alternatives.

Following assessment, treatment development should occur in accordance with the desires and needs of the child and the caregivers. That is, treatments of enuresis may vary in terms of caregiver vigilance in implementation or the occurrence of behavioral side effects. In addition, caregivers may find certain therapies unacceptable and may be less likely to implement the procedures. Regardless of the type of intervention employed, treatment application and its effectiveness should be monitored by either the prescribing physician or psychologist.

In general, treatment of nocturnal enuresis consists of medication or behavioral intervention. Among medications, the most frequently prescribed for the treatment of enuresis are the antidepressants, particularly imiprimine. Imiprimine has been shown to produce an immediate reduction in enuresis in many cases; however, withdrawal of the medication may produce a relapse in treatment in over 60% of cases as well as behavioral side effects (e.g., nausea, drowsiness). In addition, the use of imiprimine and other medications does not teach the child appropriate toileting skills.

Behavioral interventions have been the focus of many empirical investigations and have been demonstrated to be effective in reducing nocturnal enuresis. Thus, the remainder of this article summarizes the procedures and empirical support for the use of behavioral interventions in the treatment of nocturnal enuresis.

III. THEORETICAL BASES

Some research suggests that the occurrence of enuresis may be due to the improper learning of bladder retention

and toileting skills. Thus, interventions that teach new skills (i.e., behavioral interventions) generally are more effective than pharmacological interventions. Various behavioral interventions have been described in the extant literature, with the most commonly employed procedures consisting of the urine alarm, bladder retention training, and dry bed training.

In general, the effectiveness of the various behavioral interventions has been attributed to both classical and operant conditioning. For example, it was initially hypothesized that classical conditioning was responsible for behavior change when using a urine alarm. That is, the alarm was conceptualized as the unconditioned stimulus, passing of urine was the condition stimulus, and waking was the conditioned response. More recently, an operant hypothesis has been used to interpret the learning mechanism that occurs with the urine alarm. Specifically, the alarm is an aversive stimulus and a full bladder or urine release is a stimulus associated with the activation of the alarm. The child awakens when the bladder is full and urinates in the toilet to avoid the activation of the alarm. Successful avoidance of the alarm increases the future likelihood that the child will urinate when internal cues (i.e., a full bladder) are present.

Successful retention training and dry bed training have been attributed to a combination of operant mechanisms. For example, the use of extrinsic reinforcers (contingent on bladder control) functions as positive reinforcement for bladder retention in both retention training and dry bed training. Waking and urinating in the toilet at night may function as negative reinforcement through the elimination of a full bladder and the avoidance of wet clothing and bedding. Finally, repeated practice of correct toilet skills and the changing of clothing and bed linens as a component of dry bed training may alter behavior through punishment.

IV. EMPIRICAL STUDIES

A. Urine Alarm

The urine alarm, also known as the bell-and-pad procedure, is one of the most well known and commonly used treatments for enuresis. Although there are variations of the treatment, the basic procedure is similar to that originally described by Mowrer and Mowrer. The child sleeps on a specially constructed pad covered by two foil outer shells. The top layer of the pad has holes, which are separated by an absorbent paper connected to a buzzer. The presence of urine on the absorbent paper activates an electric circuit that produces an alarm (e.g., a buzzer). Presumably, the alarm quickly awakens the child and teaches the child to associate a full bladder with awakening. The alarm may also inhibit additional urination as the bladder contracts. The child then progresses to the toilet and finishes urinating.

To produce maximum treatment effects, several manipulations should occur prior to the child's going to bed and following activation of the alarm. Before going to bed, the child should drink extra amounts of fluid. The buildup of fluid in the child's bladder throughout the night increases the probability that he or she will contact the "wetness equals alarm" contingency during the initial stages of treatment. In addition, the child should be put to bed with minimal clothing to ensure that only a small amount of urine is necessary to activate the alarm. That is, as less urine activates the alarm, the child awakens with more fluid in the bladder thus enhancing the training by teaching the child to associate a relatively full bladder with awakening. Other training procedures should be implemented following activation of the alarm. For example, if a child is clothed, he or she may be required to clean the soiled clothing or change into clean clothing. In addition, the child should be required to change the bed linens and wash the pad before going back to sleep. Finally, in an attempt to decrease the probability of relapse, an intermittent schedule of alarm activation has been effective in some cases (e.g., alarm activation on 50% of trials).

It is essential that parents become actively involved in the implementation of the treatment. For example, parents should be responsible for collecting data following each accident. Data may be collected on the frequency of accidents per night or week, the time of the accident, or the diameter of the wet spot. Such data are useful in determining minute treatment gains following repeated exposure to the alarm. In addition to data collection, parents should be responsible for reinforcing the absence of bedwetting and the occurrence of correct elimination in the toilet. For example, in our clinical practice, we often suggest that parents provide access to a highly preferred item or activity following no incontinence for a period of time (e.g., one or two nights, or one week). Toward this end, it is recommended that the supervising therapist conduct an assessment with the child and parents to identify potential reinforcing stimuli.

Training with a urine alarm is relatively brief and the results are relatively durable. In addition, the procedures implemented in urine alarm training are also easily modified for training skills in other settings. For example, one common modification involves the attachment of an

alarm to a child's underwear. The alarm is connected to a pad that, when wet, sounds the alarm. Using a similar method, Edgar, Kohler, and Hardman successfully reduced the occurrence of urinary incontinence in 8 of 10 participants with profound mental retardation. More recently, Friman and Vollmer used a modified urine alarm to treat one girl's diurnal enuresis. Results showed that the use of the alarm produced an immediate reduction in enuresis; however, Friman and Vollmer noted that the participant experienced some social embarrassment on activation of the alarm.

B. Retention Control Training

It has been hypothesized that enuretic children have a smaller bladder capacity than nonenuretic children. Retention control training involves gradually increasing the bladder capacity of the child. As reviewed by Friman and Siegel and Smith, retention training involves a child drinking an amount of fluid (e.g., 8 oz.) and delaying urination for a set amount of time (e.g., 3 min) or for as long as possible after the initial urge to void. On subsequent days, the child is encouraged to refrain from urination for a longer period of time (e.g., progressing from 3 to 5 min). Successful bladder control should be reinforced through the use of extrinsic reinforcers. During the training, parents should collect data on the latency to urination after drinking and on the amount of urine emitted. Across successive days, the child holds the urine for longer periods of time, thereby increasing bladder capacity. Increasing bladder capacity within the course of a day indirectly may reduce the enuresis at night.

Retention control training does not yield as high of a success rate as does the urine alarm. However, this procedure may be preferred to the urine alarm because it does not require nighttime awakenings, and new bladder control skills are mastered.

C. Dry Bed Training

Dry bed training consists of a combination of the urine alarm and retention control training procedures. Due to the combination of these two practices, in addition to the incorporation of several other procedures, dry bed training is the most labor-intensive treatment for nocturnal enuresis. Dry bed training consists of a therapist coming into the child's home during at least the first night of treatment. In addition to the basic retention training and urine alarm procedures, Azrin and colleagues also suggested presleep practice of correct toileting skills, practice of changing clothes, and practice of changing the bed linens. That is, prior to going to bed, the child is exposed to the events that will take place should he or she wet the bed. Scheduled nighttime awakenings (e.g., once each hour) combined with prompts to go to the bathroom, checks for wetness, and additional fluids are incorporated into the treatment as well. At each waking, the child is reminded what will occur if the bed is wet. If the child appropriately urinates in the toilet when awakened, parents provide effusive praise. By contrast, if the bed is wet, the child is responsible for repeatedly practicing appropriate urination and is made responsible for cleaning all bedding and clothing. For each night without an accident, a reinforcement-based component is included such that the child receives access to a highly preferred reinforcer and praise contingent on appropriate bladder control. Using these procedures, Azrin and colleagues reported a 100% success rate in training 24 children within 7 days. It should be noted that almost 30% of the children relapsed following treatment; however, once the treatment was reimplemented, accidents decreased again. Finally, Azrin and colleagues found that the multicomponent dry bed procedure was more effective than the more commonly used urine alarm.

V. SUMMARY

In this article, several potential treatments for nocturnal enuresis were reviewed. One consistent finding in the literature is that behavioral treatments (i.e., urine alarm, retention control training, dry bed training) are generally as effective as pharmacological treatments. For these reasons, behavioral treatments represent the best practice for the treatment of nocturnal enuresis.

Initial implementation of behavioral treatments varies across children, with most children requiring several weeks of exposure before significant treatment gains are noted. Thus, the length of treatment exposure, combined with the treatment procedures that must be implemented by the parent and child, make behavioral interventions relatively labor intensive relative to medication. However, the relapse rate of children treated with behavioral interventions generally has been lower than relapse associated with medication. Finally, the focus of a medication-based treatment is the amelioration of enuresis, whereas the focus of behavioral treatment is the amelioration of enuresis plus the acquisition of appropriate replacement skills

Follow-up data suggest that behavioral treatments produce very durable effects. For example, Gustafson exposed 50 children to urine alarm treatment as described by Mowrer and Mowrer. All children were referred for the treatment of primary nocturnal enuresis, and each participant had displayed the behavior for at least 6 years. Results showed that 90% of the participants were trained successfully following one to three exposures to the treatment procedures. Furthermore, only five of the trained participants (11%) were reported to show relapse (defined as one or two wet nights) in the year following treatment. These results suggest that the use of the urine alarm is an effective and long-lasting method for treating nocturnal enuresis.

Regardless of the type of intervention used, practitioners should be aware of their patients' goals and their willingness to engage in various treatments. If caregivers find it unacceptable to awaken multiple times per night, or if they feel that certain procedures are unfair to the child, treatment with medication may be indicated. By contrast, if the child and caregivers are interested in teaching new skills with the lower probability of relapse, behavioral treatments should be prescribed.

One final consideration in treatment development should be the willingness of the caregivers or child to collect objective data on the occurrence of enuresis. Observational data can be graphed to yield a pattern of behavior that can be visually reviewed to determine the child's progress toward continence. In addition, data collection may facilitate child and caregiver implementation of a rather strenuous treatment (e.g., dry bed training) such that a visual representation of improvement may directly reinforce these behaviors.

See Also the Following Articles

Arousal Training ■ Bell-and-Pad Conditioning ■ Primary-Care Behavioral Pediatrics ■ Retention Control Training

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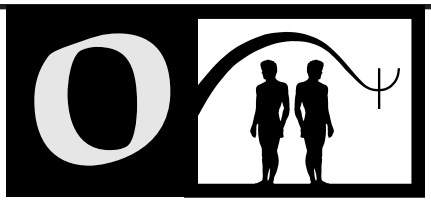

Object-Relations Psychotherapy

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GLOSSARY

borderline syndrome A severe form of character pathology characterized by a high degree of instability, low frustration tolerance, impulsivity, demandingness, and little regard for others.

ego The part of the psyche charged with the responsibility of mastering competing pressures while maintaining the functional capacity of the organism.

narcissism An early state of infancy, often carried into adulthood in pathological states, in which the child is organized around the self and self-pleasures with little awareness of the desires of others.

object relation A relationship to an other seen from the viewpoint of the experiencing participant; includes both the way of relating to the other and the experience of the other in fantasy.

psychoanalytic therapy Any of a variety of psychotherapeutic approaches that seeks to uncover unconscious material and, thereby, achieve a depth understanding of the psyche.

resistance The tendency of psychotherapy patients to defend against the therapeutic process to protect against the uncovering of painful, unconscious material.

transference The unconscious tendency of psychotherapy patients to perceive the therapist in ways similar to important figures of the past, such as parents.

Object-relations psychotherapy is a growing and commonly used branch of psychoanalytic therapy. Beginning with the roots of this form of psychoanalytic therapy and its deviation from the classical model, this article shows the fundamental developmental principles on which this form of therapy is based and then demonstrates the basic concepts that define this therapeutic approach. Finally, the contributions of object-relations therapy to psychoanalytic treatment will be reviewed.

I. THE ORIGINS OF OBJECT-RELATIONS THEORY

When Sigmund Freud developed psychoanalytic theory and therapy, he did so on the basis of his view that repressed childhood memories were the source of neurotic symptoms, especially hysteria, the most prevalent form of psychopathology of his day. When he changed his view of pathogenesis from actual memories to fantasies, or wishes, he shifted psychoanalytic theory to a drive model. That is, Freud believed that the child's sexual wishes for the parent were the repressed material, rather than events. Freud's belief in the ubiquity of childhood sexual longings for the parent of the opposite sex led him to a drive-based view of human motivation. The eventual addition of the aggressive drive did not alter his view that our adult behavior manifests either repression or sublimation of our endogenous drives. These drives are biological in origin, seek satisfaction via tension relief, and have a fixed quantity of energy. The object of the drive is

the means for its satisfaction. The child becomes attached to figures who provide this tension relief. Interpersonal relationships, for Freud, are motivated by tension relief. The child is born under the sway of the pleasure principle, the need for tension relief, and gradually, through the necessary frustrations of life, becomes adapted to the reality principle, the recognition that the world will not provide the gratification of drive pressures whenever and wherever the need is felt. Out of this frustration, the ego, the adaptive capacity of the organism, is born, and in the healthy personality, the ego is primarily in charge of the individual's relationship to both drives and the world.

W. D. R. Fairbairn was the first psychoanalyst to question the drive basis of human motivation and propose an alternative based on object relationships. Fairbairn contended that the baby is not pleasure seeking as Freud thought, but "object seeking." Fairbairn believed that Freud's theory ignored the role of the self's relationship to the object. That is, the ego can grow only through satisfactory object relationships. If the parental figures do not provide good care, the ego cannot develop, and pathology results. Consequently, according to Fairbairn, the child seeks relationships before pleasure. Indeed, he pointed out that one sees pure pleasure seeking only in states of severe pathology in which the ego is "fractionated." Fairbairn pointed out that children, and even adults, prefer painful relationships to none at all. This would not be the case were the child governed by the pleasure principle, as Freud thought. Part of Fairbairn's evidence was the behavior of abused children. According to the pleasure principle, children should not attach to their abusers. However, in fact, as Fairbairn and others have found in their work with such children, they actually attach more stubbornly to their abusers than other children do to their caretakers. Fairbairn took this as evidence of the primacy of object attachments over pleasure in human motivation. On this basis, Fairbairn developed a theory of the personality as formed from attachments to early figures. These object relationships, not reducible to drive gratification or any other motive, are, according to Fairbairn, taken in, or "internalized" in the form of objects. That is, the child makes a part of the psyche the images of the caretakers, and these images become the blueprint for all later relationships.

The idea of internalization was not new with Fairbairn or object-relations theory. Psychoanalytic theory since Freud had seen the ego as formed from the legacy of early relationships. The decisive difference between Freud and object-relations theory is that the latter does not see the motivation to internalize early relationships as reducible to any other motive, whereas for Freud the child internalized the image of the parent in an effort to master the frustration of childhood desires. That is, according to Freud, when the child finally realizes that longings will not be fulfilled, the child abandons the desire for the parent and internalizes the object to manage the loss. By contrast, object-relations theory sees internalization as motivated by the needs for self-development and a guide to navigate the interpersonal world.

II. DEVELOPMENTAL AND ETHOLOGICAL EVIDENCE

Fairbairn's intuitive insight that the infant seeks objects rather than tension reduction has now been substantiated by controlled empirical investigations. As early as 1960, Harry Harlow reported his famous experiment that baby monkeys attach to a cloth monkey that provides no nourishment rather than a wire monkey that gives them milk. At about that time John Bowlby began reporting ethological studies showing that subhuman primates will attach to whatever figure is available, even a different species, irrespective of whether the figure has a role in tension reduction. Bowlby also concluded that the available evidence indicated that human children also will attach to figures who have no role in the meeting of biological needs. Since this early pioneering work, a great deal of carefully controlled empirical investigations by a variety of researchers such as Daniel Stern and Beatrice Beebe has shown that the human child is "prewired" for a relationship with the caretaker. Distinguishing mother's voice and face from others in the early days of life, the child seeks interaction with others and shows pleasure when it is attained. This desire takes place irrespective of the meeting of drive reduction needs. The infant will learn tasks for the sole purpose of interacting with others. Furthermore, child and mother tend to form a relationship based on an interactional pattern from the inception of life. Independent of the meeting of tension reduction needs, the child not only seeks and helps to form and sustain this rule-based interactional system but also expects it. If the established patterns are not followed, the child becomes distressed. This evidence is but a small sampling of the data substantiating Fairbairn's claim that object relationships are autonomously motivated.

III. CLINICAL AND THEORETICAL BASIS

Since Fairbairn's pioneering work, a large group of psychoanalytic clinicians have adopted a clinical stance

based on the primacy of object relationships. These psychotherapists follow a psychoanalytic model in that they believe in the importance of unconscious motivation, the patient's defenses against awareness of unconscious motivation, and the uncovering of underlying meaning. However, they are decisively different from classical psychoanalysts in that they do not adhere to the drive model. Rather, they see the human organism as autonomously motivated to form object relationships and personality formation as a product of the object relationships internalized in the developmental process. This theoretical shift, based on clinical findings and an abundance of experimental results, has led to the development of a variety of clinical approaches built on the importance of object relationships. Each theory within the object-relations model has a somewhat different emphasis, but each is built on the principle that object relationships are the primary building blocks of the psyche.

Object relationships are interpersonal relationships seen from the point of view of the experiencing participant. They differ from interpersonal relationships in that they are not the relationship viewed in terms of its external behavior as seen from the viewpoint of a third person. For example, a third party might describe two people as having a "good" or "friendly" relationship, or a "bad" or "hostile" relationship, but an object relationship is the experience of one party to the relationship. So, while an observer might say two people have a "bad" relationship, one person might experience the self as trying to please an implacable other whom this person regards as possessing exceptional qualities. That is the object relationship. As can be seen from this example, an object relationship always includes a self-state, an "object," who is the target of the experience, and an affective link between the two. The object relationship tends to be complex, including unconscious motives and affects and complex interplays between participant and object. As long as the relationship is viewed from the viewpoint of the experiencing participant, it is an object relationship.

Because of the overriding importance of the attachment to the caretaker, the child will do whatever is necessary to secure this attachment. If the relationship requires the suppression of aspects of the self, those potential components of the self are arrested, thus crippling self-development. For example, if the caretaker will not tolerate aggressive feelings and requires that the child avoid all angry or aggressive expression, the child will learn not to feel or act in an aggressive manner. The aggressive component of the personality will be arrested, thus crippling all areas that rely on aggression, such as self-assertion, ambition, and competitiveness. In this way, the object-relations viewpoint replaces the Freudian theory of symptom formation as rooted in internal defenses against drives with the conflict between the need for the object and the development of the self. What appears to be the repression of a drive is the child's burial of those potential aspects of experience that the child fears will be threatening to early caretakers. To some degree, such adaptations are an expectable part of life, as all caretakers require some adaptation from the child that does not allow for full self-development. However, when such accommodations interfere with the development of crucial components of the self, such as excitement, interest, enjoyment, aggression, and sexuality, the self will be fundamentally split in a way that arrests the development of essential components of the self. Winnicott called this division the split between the "true self" and the "false self." Those buried aspects of the self continue to seek expression and will gain it only through symptom formation. To continue with our example, the aggressive component of the self may seek veiled expression as a somatic pain or become part of a sadomasochistic sexual fantasy life.

From the object-relations viewpoint, all psychogenic pathology is a function of self-arrest induced by anxiety-driven object attachments. Pathological differences being due to the phase, degree, and type of arrestation, object-relations theory does not make decisive distinctions among causes and types of pathology. This view puts all psychopathology on a spectrum and makes distinctions among types of pathology a matter of degree.

All object-relations theories are built on the principle that development and psychopathology are a product of the object relationships internalized in the developmental process. However, theorists from various schools differ in emphasis and in details For example, followers of Melanie Klein, known as Kleinians, tend to see drives as important to the formation of object relationships even if they see object relationships as the building blocks of all development beginning in early life. Kleinians view problems with the aggressive drive as fundamental to pathological states, although they acknowledge that all drives are seen only within object relationships. Fairbairn, as mentioned earlier, sees no role for drives in development or pathology. In contrast to the Kleinians, Fairbairn saw the child's most fundamental motive to be the need to love and have that love accepted by the caretaker. Donald Winnicott, a primary English object-relations theorist, saw the child's dependence on the mother and the phases of its relinquishment to be the most important variable in development and psychopathology. According to Winnicott, each infant is born with potential that cannot be

changed, but can be either facilitated or interfered with by caretakers. Impingement by the caretaker interferes with the maturational process, and this arrest in the development of the true self is the source of psychopathology, including the most severe forms. Many followers of Winnicott, such as Mhasud Khan, Margaret Little, and Andre Green, have used his work to apply object-relations concepts to the treatment of severe character and even psychotic disorders, thus broadening the scope of psychoanalytic therapy beyond the neurotic patients who tend to be the target of classical technique to the treatment of more severe emotional disorders.

Christopher Bollas, a contemporary Winnicottian, has shown how the mother's ministrations to the infant are taken in or "internalized" by the growing child. Bollas has pointed out that the original mother–child relationship becomes embedded in the psyche of the child in a way that results in a unique personal idiom the growing child and adult is unaware of, but always knows is there. Bollas calls this personal idiom the "unthought known."

Heinz Kohut developed a school of psychoanalysis that has come to be known as self psychology. In Kohut's view, the child is born with a nascent self that comes to fruition as a function of the interplay between the child's "nuclear program of the self" and the caretaker's ministrations. The child's experience of a caretaker is called a self-selfobject relationship. A selfobject is an other experienced as a provider of functions for the self. The degree to which the selfobject provides necessary functions abets the development of the nuclear program via a process of "transmuting internalization," a microscopic "taking in" of the selfobject until the internalizations replace the archaic forms of narcissism characteristic of infancy and early childhood. Disruptions in the self-selfobject relationship cause vulnerabilities in the emerging self and the need to protect this vulnerability by splitting off the original narcissistic state that, being unresolved, continues its influence on the personality. Although self psychologists prefer to regard their theory as wholly unique in psychoanalytic thought, the fact is that their view of self-development as a function of the relationship to early objects and the internalization process fits this school into the object-relations rubric. It is true that self psychology differs from other object-relations theories in its emphasis on the importance of self-esteem in normal development and vulnerabilities to self-esteem in psychopathology. However, this uniqueness exists within the object-relations paradigm that views self-development as a product of the relationship between self and object and the internalization of the latter by the former. Each form of object-relations theory has a unique emphasis; that is why there are different viewpoints within the object-relations model.

Whatever the particular differences in detail and emphasis, each object-relations theorist sees the child's absorption of the early relationships with caretakers to be fundamental to the growing personality of the adult. These internalizations are the legacy of the early object relationship and are often referred to as "internalized object relationships." From an object-relations viewpoint, who we are is fundamentally a product of our internalized object relationships. It is important, however, to emphasize that these internalizations are not regarded as copies, as though the mind is composed of the wholesale absorption of the childhood view of the early figures. What the child takes in from the parental figures is a complex creation based on the child's experience with the figures. If this were not the case, people would be photostatic copies of their caretakers. The child's internalized images of the parents are based on the child's experience with the caretaker, but the child creates meaning from this experience that cannot be reduced to the parental behavior. Again, this view of internalization is substantiated by developmental research. Virginia Demos, who researches affective development, has found that the child does not take in the parents' behavior, but makes meaning out of it, and this meaning is the legacy of the parent–child interaction. The lasting impact of the relationship on the child has been referred to by Christopher Bollas as "the shadow of the object." These "shadows" form the template of the child and growing adult's pattern of interpersonal behavior.

When the early caretakers do not meet the child's needs well, the child will experience the caretaking figure as traumatizing. To master the trauma while maintaining attachment to the traumatizing figure, the child will internalize the figure as a "bad object." These internalized bad objects become the source of psychic distress, self-abuse, and many forms of psychopathology. For example, the child may internalize the caretaker's attacks. Treating himself as he was treated, the child has an internalized bad object that may be relentless in flagellation of the self for every mistake or peccadillo. Such a patient will complain of being "hard on myself," or being a "perfectionist." Or, to take another example, the bad object may be projected onto others resulting in a paranoid stance to the world. These are just two of many possible outcomes. Whatever the result of the bad object experience, it will result in some form of pathological expression. All of this has far-reaching clinical implications.

IV. THE OBJECT-RELATIONS MODEL OF PSYCHOTHERAPY

This object-relations theory of development and pathology has direct implications for the conduct of psychoanalytic therapy. Due to its emphasis on the importance of attachments and the legacy of the child's interactions with caretakers, the focus of an object-relations clinical approach is the object-relations structure that gives rise to the symptoms or inhibitions. Consequently, the goal of any object-relations approach is to uncover the object relations internalized in childhood and early life and help the patient relinquish them and create a new object-relations structure that fosters self-development. Thus, in the object-relations model the traditional emphasis on discrete affects is replaced by a focus on the structure of the self.

Object-relations therapy looks at each symptom as an outgrowth of an anxiety-driven object relationship. For example, in the case discussed earlier of the patient who had to disavow any aggressive expression to secure the tie to the early caretaker, the emphasis in object-relations therapy would not be as much on "repressed aggression" as on the object relationships that required the disavowal of aggressive experience. In this case, the caretaker was threatened by aggressive expression, a threat that led to an internalized object relationship in which aggression threatens relationships. The developmental origins of the child's relationship with the caretaker who could not permit aggression would be a first critical step in the understanding of the patient's fear of her aggressive feelings. The internalized object relationship in which aggression is a threat to the object would then be the source of the aggressive inhibition. The consequence of this inhibition is an arrest of the patient's self-development that interferes with all aspects of life that require aggression, such as self-assertion, ambition, and competitiveness.

A. Resistance

One of the most vexing problems in any form of psychotherapy is the strength and resilience with which patients tend to cling to their painful and dysfunctional patterns. From the object-relations viewpoint, the patient's relational patterns reflect an underlying object-relational structure. Therefore, to relinquish the current patterns, no matter how painful or dysfunctional they may be, is tantamount to separating from the objects of the past. If the patient gives up the internalized bad mother, she has yielded the only tie to the mother of her childhood. This is an intense, painful loss for the patient. One might wonder why the loss is so painful and so strenuously avoided given that the object is "bad," painful. This is one of the great ironies of object relationships and the human condition: As mentioned in the first section of this article, the more painful the early relationships, the stronger is the clinging to the object. As Fairbairn pointed out a long time ago, the painful early relationships create anxiety and the need to attach ever stronger to the abusive object. The abused child is more attached to the abusive parent that is the healthy child to his parent. Similarly, the adult subjected to abuse and pain by an early caretaker holds on tenaciously to the internalized bad parent, whereas the child raised in a healthy environment tends to more easily separate from the internalized parental figures. Patients who suffered from abusive, painful parental relationships are filled with anxiety that leads them to cling desperately to bad internalized objects. This is why such patients are so difficult to treat.

Furthermore, this object-relations structure forms the fabric of the self. To give up the object is in a very real sense to give up the self. As Fairbairn pointed out many years ago, every internalized object is a piece of self-structure, so that to yield the object is to relinquish a part of the self, a loss that evokes annihilation anxiety, the dread of nonexistence. In this way, the object-relations approach makes a unique contribution to understanding the patient's attachment to painful and dysfunctional patterns.

It follows that a critical step in the resolution of pathological patterns lies in the understanding of the origin of the patient's unconscious object-relationship structure. The therapeutic task in each case is to identify and help the patient relinquish the object-relations structure that underlies the symptom or inhibition. For example, many depressed and masochistic patients will berate themselves mercilessly for seemingly trivial mistakes, and some will unconsciously seek out punishment for peccadilloes. They know that their behavior toward themselves creates pain, but they are unable to break free from their patterns. Even after the patient is well aware of the origins and meaning of her self-abuse, she is unable to control it. The object-relations model understands the patient's self-flagellation as an internalized bad object; the unconscious need to be punished is a product of a feeling of badness that originates in such an object. To change her self-abusive behavior is to separate from the abusive figure of the past. This example is prototypical of the object-relations interpretive emphasis on anxiety-driven early attachments and the resulting object-relations

structure that strangulates self-development, in contrast to the classical emphasis on defenses against endogenous drives or discrete affects.

However, awareness of the object-relational structure in itself tends to have limited mutative effect. Here the object-relations model makes a contribution to the time-honored problem of "resistance." Clinicians from Freud to the present day have found that even after patients seem to have a good understanding of the underlying motivations and developmental origins of their problems, they tend to remain frozen in their patterns. They know what they are doing, but continue to do it anyway, and seem unable to control their repetitive patterns. Freud and generations of subsequent analysts have identified the problem of the persistence of pathological patterns despite insight, a problem classical analysts call "resistance." From this perspective, resistance is motivated by the patient's fear of knowing specific information regarding his wishes or past experiences. Here again the object-relations viewpoint has a unique contribution to make. The object-relations perspective sees the patient's attachment to these patterns as a reflection of an underlying object-relations structure woven into the fabric of the self. As we have seen, the patient is clinging to old objects and the sense of self. Awareness, no matter how meaningful, can have little mutative impact on the structure of the self. Therefore, from an object-relations viewpoint, the recalcitrance of patterns even after awareness is a product of a clinical strategy that: (a) focuses on understanding affects and "impulses" without appreciating the underlying self structure and (b) relies exclusively on interpretation. Because interpretation cannot alter the object-relations structure, pathological patterns will remain stubborn until the therapeutic relationship provides an alternative to the old, familiar patterns. The therapist is often opposed, or even disliked or hated, because she represents the effort to loosen the patient's bond to the object and thereby threaten the self. The patient's adherence to the bad object is not treated as resistance, but an anxiety-driven attachment that the therapist will understand and interpret. So, "resistance" from this viewpoint is not resistance at all, but clinging to a desperately needed object.

B. The Patient–Therapist Relationship

Although interpretation is important for making the patient aware of her object-relations structure, awareness by itself does not create new structure. Consequently, in most object-relations approaches to psychotherapy, making conscious the patient's early experience is considered necessary but not sufficient to effect lasting therapeutic change. It is here that the relationship between patient and therapist becomes crucial. The therapeutic relationship must create the conditions in which the patient can create new, more adaptive, authentic, and meaningful object relationships to form the basis for new psychic structure. Object-relations theorists vary in the emphasis they put on the therapeutic value of the patient–therapist relationship, but all, including Kleinians who have traditionally emphasized interpretation, see a critical role for the therapeutic relationship in the patient's ability to create a new object and healthier psychological structure.

Winnicott viewed the psychotherapeutic relationship as a "transitional space" akin to the child's use of a transitional object, such as a blanket or teddy bear. Winnicott pointed out these attachments are transitional between the world of omnipotent fantasy life of early infancy in which the child has the delusion that she meets her needs by their very existence and the later appreciation for the world of objective reality in which the child recognizes that people and material objects exist apart from her, outside of her control. There is a third world, according to Winnicott, between fantasy and objective reality, that must be traversed before the child can accept objective reality. In this transitional world, the child knows objects exist outside of her control but treats them as though they are part of her. Transitional experience is the basis for play, creativity, and aesthetic experience. To play one must know what objects are but treat them according to illusions of one's own creation. The clay is molded into a shape the child calls a "fish." The child knows the clay is not a fish but puts it in the water to swim. It is equally important that the child adapt to the materials at hand. The child must mold the clay for the play to work. The limitations of the materials differentiate play as a transitional experience from fantasy. If she tries to mold wood, or water, she will not see a "fish."

Winnicott viewed the psychotherapeutic relationship as a transitional space in which the therapist provides the conditions the patient can use to create new ways of being and relating. The patient has to operate within the objective constraints of the setting, analogous to play materials, but within that boundary creates the relationship she needs. What is created between therapist and patient is unique to the pair. The success of the therapeutic enterprise is a function of the degree to which the created relationship facilitates the development of the true self. Thus, it is not interpretation that is ultimately mutative for Winnicott, but what

the patient creates in the transitional space of the therapeutic relationship. In object-relations therapy, the patient's use of the therapist is decisive for therapeutic outcome rather than the therapist's understanding. The therapist's role is not so much to offer information about the patient as to create the kind of relationship the patient can use to create something the patient has never had before. The therapist's role, then, is to adapt to the patient's needs, rather than find the correct understanding of the patient's unconscious. This adaptation is different for each patient, but it always includes the provision of a space that the patient can use to create something new. This conception of the therapeutic process is decisively different from the classical model in which the assumption is made that understanding is sufficient to produce the desired changes.

The therapeutic action, then, is the patient's use of the analytic space to create a new object relationship with the therapist that facilitates the articulation of arrested aspects of the self. Endemic to the therapeutic process is the creation of new ways of being and relating. This point requires emphasis because it is regarded by object-relations theorists as a major advantage over the classical psychoanalytic model in which the analyst is limited to interpreting the unconscious, and the patient's role is confined to receiving the analyst's understanding or "taking in" the analyst in the form of internalization. What the patient passively receives from the therapist may or may not be meaningful or authentic, but what the patient creates is the articulation of buried aspects of the self that are deeply authentic and meaningful because the patient created them.

In this model the concept of transference is broadened beyond the patient's projection of a past image onto the therapist. Just as in any other relationship, the patient forms the relationship she needs based on a variety of factors, one of which is past object relationships. Because this relationship is based on the patient's hopes and desires, adaptation to the current situation, defenses against the anxiety it causes, as well as the patient's history, this creation is rarely a simple copy of early relationships. This relationship will be a complex amalgam that shifts as the relationship evolves. Most object-relations theorists have a concept of transference broader than the traditional notion that includes the patient's creation of something new with the therapist, so that the transference is regarded as a complex blend of past images and present adaptations. That is to say, transference is not reduced to the repetition of past patterns; it includes the patient's contributions, often developed for the first time in the therapeutic process. For example, an inhibited patient may eventually explode with rage at the therapist, not because she is repeating an early relationship, but because she feels safe enough with the therapist to risk including an aggressive component in the relationship, an element that may be wholly new in the patient's experience. Or, sometimes the patient who feels cheated by having a weak father will idealize the therapist to create a relationship that he desires but never had. This type of object relationship has its own problems, but its very existence indicates that the transference is not the clear repetition depicted by classical psychoanalysis.

C. The Creation of a New Object Relationship

Like the classical psychoanalytic therapist, the object-relations therapist interprets the transference, but she is not prone to reduce every aspect of the therapeutic relationship to the patient's past experience. The object-relations therapist tends to search not only for the roots of the relationship in the patient's past, but also the adaptive function of the relationship in the present. Perhaps the patient idealizes the analyst because such an idealizing object relationship provides the protection lacking in the early caretaker relationship. The therapist interprets not only the lack of protection in the past, but also the safety afforded by the creation of an idealized therapeutic relationship. However, the object-relations therapist is never satisfied with interpretation alone. The therapist interprets the idealizing transference as a means toward helping the patient relinquish it so that a new type of object relationship may be formed. She then provides the opportunity for the patient to form a relationship that does not repeat the patterns of the past. In our example of the idealizing transference, the therapist attempts to facilitate the formation of a safe, protective relationship so that the patient may be able eventually to have this relationship without the unrealistic idealizing perception of the therapist. To use another example: The therapist helps the inhibited patient include aggression in his therapeutic relationship without feeling threatened that the aggressive expression will damage the relationship.

The therapist will include with interpretation the facilitation of a new relationship with the patient to replace the internalized bad object. Fairbairn referred to this new therapeutic relationship as the "beneficent parental figure." Some Winnicottians refer to the "good enough mother/therapist," and self-psychologists emphasize the provision of "selfobject functions."

Whichever nomenclature is used, all these terms signify the therapist as offering a new, different kind of relationship. The purpose of this relationship is to adapt to the patient so that the patient has the opportunity to create a more positive, benevolent object than the bad object it replaces. This active provision of a new, different relationship is one of the decisive differences between the object-relations model of psychotherapy and the classical psychoanalytic viewpoint. From the latter perspective, the therapist should never become a different object but rather interpret the patient's desire for her to become such an object. From this viewpoint, the object-relations strategy is a gratification of the patient's wishes and, therefore, is a technical error. By contrast, the object-relations model sees the fabric of the personality as consisting of internalized objects and the health or pathology of the individual as a direct product of the nature of these objects. Therefore, from this viewpoint, anything the therapist can do to facilitate the relinquishing of old, negative objects and their replacement with new, good objects is beneficial to the therapeutic process and the goals of the therapy. Having said that, it needs to be emphasized that the object-relations model does not believe that simply "being different" will effect the desired therapeutic effect. The old object-relations structure forms the very fabric of the self and will not be easily given up. This is why a new relationship in the patient's life will rarely affect lasting psychological change. In fact, often patients enter psychotherapy because they are in danger of damaging a potentially positive relationship by operating in accordance with their long-standing patterns. If psychotherapy is necessary, that is because a new relationship is insufficient to produce change and may even be threatened by the patient's old pathological patterns. As mentioned earlier, the object-relations structure formed in early childhood tends to be resilient because the patient is attached to not only her internalized objects but also her sense of self derived from them. The patient's object-relations patterns must be interpreted so that she can see their origins and damaging consequences before the therapist's influence as a new object can be experienced. The former allies the object-relations model with the classical psychoanalytic perspective, and the latter decisively separates it from the traditional viewpoint.

D. The Widening Scope of Psychoanalytic Therapy

A major advantage of this model is that is applies to a wide variety of patients, including many who were believed to be inaccessible to in-depth psychotherapy from the classical perspective. According to the latter viewpoint, the crux of psychoanalytic therapy is the resolution of intrapsychic conflicts caused by the repression of forbidden wishes. Consequently, patients for whom the very structure of the psyche is malformed were considered unsuitable for in-depth psychotherapy. The object-relations model blurs this either/or distinction between intrapsychic conflict and character pathology. If a conflict requires treatment, then the conflict has not been mastered by the structure, resulting in a symptomatic outbreak. Even the mildest case of neurosis must have some defect in the structure of the personality for the conflict to have erupted in a symptom. The distinction between intrapsychic conflict and character disorder is a matter of degree, as every patient has each to some extent. Consequently, the psychic structure must be addressed in every case. In terms of clinical strategy the implication is that both types of problem are resolved with a combination of interpretation and the provision of a new relationship. By including the importance of the therapeutic relationship in the therapeutic action, the object-relations model has found a way to address character issues, even primitive characterological expressions, with a psychoanalytic framework.

This widening scope of psychoanalytic therapy is one of the most profound implications of the object-relations approach to treatment. By addressing the object-relations structure of the personality via interpretation and the inclusion of the provision of a new relationship, psychoanalytic therapy becomes accessible to severe psychopathology. In the case of the most severe form of non-psychotic character pathology, the borderline syndrome, object-relations therapists have devised strategies designed to address the primitive needs and demands of those patients. Again, Winnicott was a primary leader in this movement. Following an object-relations model that sees the borderline patient as an arrest in the early development of the self, Winnicott responded to the expressed desires of such patients, rather than "setting limits" on them. His reasoning was that the patients' needs were not responded to in childhood, leading to a defensive protective response on the patient's part. This defensive shell buries the early needs and leads to the demandingness so typical of borderline patients. The hostility and oppositionalism of the borderline patient is seen as part of the protective posture. In fact, the patient defends against all needs and desires for others because the intensity of those needs is painful, frightening, and shameful. However, precisely because the needs are so intense, the patient is hungry and demanding. What makes these patients so difficult and perplexing to the clinician is the combination of the intensity of their longing and avoidance of all contact.

Winnicott's clinical strategy was to take seriously the patient's longings and respond to them any way he could. He regarded the therapist's responsiveness to the patient's needs to be far more important than interpretation in the treatment of such patients. He let the patient take the lead in where the treatment would go. If the patient needed to rage at him, he would allow that and "hold" the rage. If the patient needed to regress to infantile needs, he would allow the patient to curl up, hold a blanket, wander around the room, sleep, or do whatever the patient felt she needed. Any such patient behavior, if spontaneous and authentic, he regarded as an expression of a developmentally arrested state that must be met by the therapist's active responsiveness. He allowed the patient to determine what happened because in this way the development of the patient's arrested true self was facilitated. He conceptualized the therapist's role as the facilitation of the resumption of arrested growth. As can be seen, this is not a conflict model, but a model based on developmental arrest. Winnicott believed that such arrests required the meeting of the early needs in some way to stimulate arrested growth. Interpretation alone could never accomplish this type of renewal.

From this example of Winnicott's treatment of the borderline patient, one can see that the object-relations model is based on responsiveness to needs, rather than always interpreting them, a limitation of the classical viewpoint. According to object-relations theory, such gratification of the patient is not only called for but is a necessary ingredient of the treatment. Whereas for a neurotic patient, this meeting of "regressed needs" may be unnecessary or at most play only a small role in the process, with the borderline patient it is the essence of therapeutic action. Although this meeting of early needs can never replace what is missing from the past, it gains a responsiveness in the patient that allows for a new beginning, a beginning in which the patient can begin to live in accordance with her authentically experienced self. This meeting of regressive needs and the willingness of the therapist to allow the patient to stay in the regressed state as long as necessary is the crux of therapeutic action with severely disturbed patients, according to Winnicott. Harry Guntrip, a foremost object-relations therapist, called this process "meeting the needs of the regressed ego." Even contemporary Kleinians, such as Herbert Rosenfeld, see the relationship and the needs it meets for the patient as the most crucial factor in the therapeutic action with patients who are severely disturbed. The key for Winnicott as for most object-relations therapists is that the patient determines the depth and length of regression, and therapist's role is to be responsive to the patient. The elucidation of this treatment approach to character pathology, including substance abusers, food disorders, narcissistic personalities, and depression, among others is one of the seminal contributions of object-relations psychotherapy to psychoanalytic therapy and psychotherapy in general. There are many cases reported in the literature of successful psychotherapy conducted by object-relations therapists with borderline and other patients with character disorders.

SUMMARY

Object relations psychotherapy is built on the principle that the child's relationships with early figures are autonomously motivated. The child meets the parental ministrations with innate affective dispositions to form a unique personal idiom. This parental relationship is internalized by the child as internalized object relationships that form the character structure. The degree to which the child's innate direction is facilitated by the environment is the extent to which the personality becomes healthy. Impingements that interfere with the maturational process force the child's maturational process away from this inborn direction to a self protective stance that arrests the articulation of the personal idiom. If significant aspects of the self are blocked, this buried self will seek veiled expression as a symptom. Consequently, object relations therapy is directed both to understanding the defensive constellation and facilitating the articulation of buried affective dispositions that lie beneath it. Emphasis is placed on insight into the transference and the patient's creation of a new object relationship with the therapist. Thus, both interpretation and the therapeutic relationship are mutative factors in this type of psychotherapy. Insight helps to understand the patient's defenses and current character patterns, and the therapeutic relationship fosters the development of alternatives based on authentic affective experience. Consequently, the therapeutic relationship is given considerable weight in the therapeutic action of object relations psychotherapy. This model widens the scope of psychoanalytic treatment beyond neurotic conditions to characterological disturbances.

See Also the Following Articles

Character Pathology ■ Couples Therapy: Insight Oriented ■ Humanistic Psychotherapy ■ Oedipus Complex ■ Projective Testing in Psychotherapeutics ■ Rational Emotive Behavior Therapy ■ Sullivan's Interpersonal Psychotherapy ■ Working Alliance

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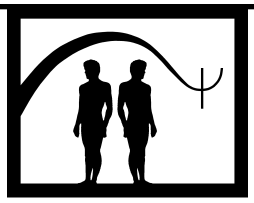

Objective Assessment

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GLOSSARY

Butcher Treatment Planning Inventory (BTPI) An objectively derived, self-report, structured personality inventory that endeavors to obtain and organize relevant personality and symptomatic information into a cohesive picture to be used for treatment.

Minnesota Multiphasic Personality Inventory-2 (MMPI-2) A comprehensive, objective, self-report, personality inventory that provides the tester or practitioner with a general picture of the client's symptoms, beliefs, and attitudes.

multimodal therapy An approach to planning and delivering psychotherapy that takes into consideration a variety of different domains of functioning, including behavior, affective processes, sensation, images, cognitions, interpersonal relationships, and biological issues. These functions also relate to therapeutic techniques.

I. INTRODUCTION

Mental health professionals conducting psychotherapy are initially faced with the question of how to design a treatment regimen that suits the unique needs of the client. Clinicians must identify the patient's problem areas that need to be addressed and evaluate the client's personal qualities and strengths needed to solve the present problems. Regardless of the mode of psychological intervention, whether it is psychodynamically oriented psychotherapy or behavior therapy, the mental health practitioner must appraise the client's problems, motivations, strengths, and limitations if the intervention is to proceed toward a successful outcome. In an effort to understand these pertinent "patient variables" many therapists rely on personality and symptom information from psychological evaluations to accomplish this important task.

The assessment process typically involves using objective psychological tests that provide the practitioner with clues to the psychological and environmental characteristics involved in the problems and identify factors that might contribute to a positive outcome. Effective psychological assessment in pretreatment planning can add considerably to the likely success of psychotherapy by providing the therapist with an objective appraisal of the client's problems, psychological resources, and potential treatment failures due to resistance. Moreover, psychological test results can also be effectively incorporated into the treatment process as a medium for facilitating change in therapy.

There are several reasons why psychological assessment should be incorporated into the early stages of psychological treatment planning:

1. It is important in the early stages of therapy to assess the severity of the patient's mental disorder to ensure that the treatment focus is appropriate and effective for the client;
2. Obtaining an objective personality evaluation can also help the therapist uncover personality factors that could lead to treatment resistance. For example, some clients rely on psychological defense mechanisms such as projection and avoidance of blame to deal with conflict;
3. In the early stages of therapy it is also important to appraise the client's strengths that can be drawn on in crisis situations or circumstances that require change; and information on the client's personality characteristics in the early stages of therapy can be employed to facilitate the treatment process through providing personality feedback to the client.

II. TREATMENT PLANNING

Three assessment strategies used in pretreatment assessment are described briefly to illustrate the information that can be obtained in the assessment process. The assessment strategies described in this article are not tied to a particular treatment orientation or limited to a specific psychotherapeutic approach but address the important task of assessing the client's symptoms, motivations for treatment, and likely patterns of treatment resistance.

A. Multimodal Therapy

Although its initial focus and orientation was strictly behavioral in nature multimodal therapy has developed into a model in which all treatment orientations can be included. Lazarus noted in 1981 that its goal is not to fit clients to the "treatment," but rather to illustrate precisely how to fit the therapy to the requirements of the client. This approach by Lazarus employs a model of human personality that is composed of the following component behaviors, affective processes, sensations, images, cognitions, interpersonal relationships, and drugs (more accurately termed "biological functions"). Each of these areas of functioning must be understood before effective treatment can be initiated. The practitioner pays clear attention to excesses and deficits in each assessment area. The practitioner uses several approaches to assess these attributes, for example, interviews, observations, and questionnaires. Multimodal therapy begins with assessment, which traditionally has been considered to be the most important step in the process.

In terms of assessing behaviors in pretreatment planning, the therapist and client must consider what the client is doing or not doing that is interfering with his or her life. The therapist and client need to come to terms with what behaviors should be increased and decreased in frequency for therapy to be successful. For the assessment of the second area for multimodal therapy, affect, the therapist needs to determine what situations or events elicit different emotional responses in the client. What negative feelings, such as depression or anxiety, is the client experiencing. The third area to assess, sensation-related concerns, involve the clients' preferences for what they hear, see, smell, taste, and touch. Are they experiencing any particularly negative sensations, such as tension, dizziness, pain, or tremors? Next comes the assessment of images that require an evaluation of the effects particular images have on the clients' behaviors, affect, and sensations. The focus of the next assessment domain, cognitions, include opinions, values, beliefs, and attitudes. Do the patients hold any irrational beliefs or ideas that interfere with their functioning? An extremely important area to assess in pretreatment planning is the quality of the patient's interpersonal relationships. The final step in the assessment involves an assessment of the client's physical health including substance use or abuse. This task involves appraisal of the client's current use of alcohol, illicit drugs, and prescription medications.

Once the therapist has acquired the necessary relevant information, the next step in the process is to develop a modality profile, which provides a "blueprint" for establishing the goals of treatment and allowing both the patient and therapist input into what treatment will entail. In addition to being used to formulate treatment goals, the profile may also enable the client to aid the therapist in selecting the most appropriate psychotherapy strategies. Lazarus advocates the use of a wide variety of principal techniques representing a broad range of theoretical orientations, with particular emphasis given to behavioral therapy, rational-emotive therapy, and cognitive therapy.

B. Minnesota Multiphasic Personality Inventory (MMPI–2)

The most widely used personality measure used in pretreatment evaluation is the Minnesota Multiphasic Personality Inventory (MMPI). This inventory was developed in the 1940s as a means of evaluating mental

health problems in psychiatric and medical settings. The original test developers considered it crucial in evaluating patients' problems to ask them about what they felt and thought. The MMPI is a self-report personality scale that includes a very broad range of problems and was developed according to rigorous empirical research methods. The MMPI was revised and updated in 1989 and provides a broader range of clinical information than the original test.

The MMPI–2 is a comprehensive objective self-report personality inventory that provides the practitioner with a general picture of the client's symptoms, beliefs, and attitudes. The MMPI–2 contains 567 true-false questions addressing mental health symptoms, beliefs, and attitudes that are grouped into scales (clusters of items) that address specific clinical problems such as depression or anxiety. An MMPI scale allows the clinician to compare the responses of the client with those of thousands of other people. To gain a perspective on what the patient's test results mean, the MMPI–2 scores are compared to the normative sample, a large representative sample of people from across the United States. This comparison allows the interpreter to determine if the person's responses are different from people who do not have mental health problems. If the patient obtains scores in the extreme ranges, for example on the Depression scale (compared with the normative sample) then they are likely to be experiencing problems comparable to the clinical samples of depressed clients that have been studied. The MMPI–2 results provide the practitioner with a clearer understanding of the patient's symptoms and personality features and help to identify possible areas to explore in therapy.

C. Butcher Treatment Planning Inventory (BTPI)

The BTPI was created for the purpose of incorporating objectively derived, self-report information into the treatment process when a tactical therapeutic approach is being formulated and time is crucial. The BTPI assists the therapist by obtaining and organizing relevant personality and symptomatic information into a cohesive picture early in the treatment process.

The BTPI is a structured personality inventory that takes about 30 min. to administer. It contains several empirically validated scales that were developed to provide treatment-relevant information about clients. Three types of scales are included: validity or response attitude measures, treatment-related attitudes, and major symptom areas. The first cluster of scales assesses the client's cooperativeness with the personality evaluation. Four scales address different test-taking strategies presenting an overly positive self-view, symptom exaggeration, inconsistent symptom presentation, and noncompliant treatment attitudes. The second BTPI cluster consists of five scales that assess specific treatment-related issues: problems in relationship formation, somatization of conflict, low expectation of benefit, self-oriented narcissism, and lack of perceived environmental support. The third symptom cluster addresses the following symptom areas: anxiety, depression, anger-in, anger-out, and psychotic thinking.

The practitioner obtains a summary of the client's likely cooperativeness in engaging into the therapy process, clues with respect to several areas of treatment resistance, and an indication of the extent to which anxiety, depression, anger, or unusual thought processes are likely to be encountered in the treatment process.

III. PROVIDING TEST FEEDBACK TO CLIENTS IN PSYCHOTHERAPY

Clients who are provided test results in the early stages of psychotherapy tend to improve as a result of the test feedback process. This strategy, referred to as "assessment therapy," is a procedure in which the therapist uses a feedback model to review psychological test information with the client and thereby promote the process of behavioral change. Several studies have shown that providing psychological test results to clients early in therapy can have powerful effects in terms of lowering symptomatic status and increasing self-esteem in patients. Research on assessment therapy has shown that providing psychological test feedback is an effective means of engaging the client in the treatment process early in the therapy and produces positive treatment effects by informing the client of likely problems, personality characteristics, and strengths.

In summary, psychological assessment in the early stages of psychotherapy can provide the clinician with a great deal of valuable, objective information concerning the clients problems and strengths. Moreover, the judicious incorporation of the test results into the therapy by using test feedback can facilitate the treatment by engaging the client in the process early in therapy.

See Also the Following Articles

Behavioral Assessment ■ Behavioral Case Formulation ■ Cultural Issues ■ Functional Analysis of Behavior ■ Individual Psychotherapy ■ Multimodal Behavior Therapy ■ Neuropsychological Assessment ■ Outcome Measures

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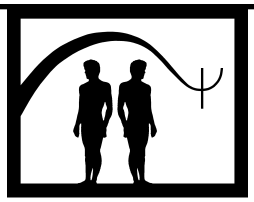

Oedipus Complex

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GLOSSARY

castration complex A universal unconscious fantasy that women are castrated and inferior because they do not possess a penis. Castration refers to real or fantasied loss or injury to the genitals of either gender in general psychoanalytic usage.

compromise formation Any mental phenomenon that is the product of internal conflict and that expresses all components of the conflict.

conflict Opposition between mental forces. These forces can be instinctual or Freud's structures of the mind (id, ego, superego).

defense The methods used by the ego to master and control id impulses or superego injunctions.

ego The hypothetical construct defined in Freud's structural model to enable the mind to organize its various components and to adapt to the external world.

ego ideal A set of functions within the superego. These include ideal representations of the self and idealized representations of the love object.

fixation Persistent, infantile modes of gratification, object relations, and defenses are thought to be fixed in the mind and available to be regressed to at later moments of stress.

identification The process by which a person borrows his or her identity from someone else through internalizing aspects of the other person into the self-representation. Identification is often seen as the most mature level of internalization by modern psychoanalysts.

infantile neurosis A confusing psychoanalytic concept that, at times, is used to refer to the childhood neurosis that is assumed to antedate all adult neuroses and, at other times, to the intrapsychic conflict that occurs during the Oedipus Complex.

libidinal wishes Wishes infused with affectionate or sexual urges thought to be ubiquitous in human functioning.

libido The hypothetical psychic energy attached to the sexual instincts.

narcissistic injury Experiences of having one's self-esteem lowered that are accompanied by painful affects of sadness, embarrassment, or humiliation.

neurosis Refers to psychological symptoms that develop from mental conflict that is primarily unconscious and derived from experiences in childhood.

object relations Refers to relationships to other people. In psychoanalysis, it is the internal representations of self and others that are important in motivating and mediating interpersonal interactions. A developmental distinction is often made between dyadic and triadic object relations. The former refers to relationships modeled on pre-Oedipal experiences where the major goals of the child revolve around need satisfaction by the mother. Triadic relations are seen as more mature, implying Oedipal engagement and the increasing mental complexity implicit in being aware of needs and wishes toward one parent vis-a-vis the other parent.

psychosexual Based on Freud's early finding that all aspects of mental functioning are affected by infantile sexual development and the wishes that derive from these experiences. The term is usually used as an adjective to imply

that some mental or behavioral action is influenced by oral, anal, phallic, or genital urges.

regression A key psychoanalytic concept that thoughts, emotions, or behaviors can involve a return to developmentally immature levels. It also refers to a defense mechanism. Regression can occur along any developmental line.

signal anxiety Freud's second theory of anxiety stated that mental maturity brings with it the ego's ability to anticipate the danger of unconscious mental content becoming conscious so that appropriate defenses can be mobilized. Signal anxiety refers to the affective sense of danger that stimulates defense.

structural model Freud's final model of the mind introduced in 1923 in *The Ego and the Id.* The mind was conceived of having three structures (the id, ego, and superego). Interaction between these three structures is thought to account for all mentally mediated behavior.

sublimation This concept refers to mental contents or processes being separated from the drives that might have influenced their origins. As socially more acceptable motives affect these contents and processes, defenses are no longer needed against them.

superego The mental structure that creates and maintains ideals, values, prohibitions, and commands. It observes and evaluates the self's compliance with these ideals and generates affects to encourage compliance.

transference The process by which the patient displaces onto the therapist or analyst feelings, impulses, attitudes, or defenses derived from important interactions in the past.

"The Oedipus Complex" is a concept in which psychoanalytic history, theory, and clinical work converge. Freud described the Oedipus complex as a universal aspect of human psychological development. He found that in the life of every child, there comes a juncture at which the child strives for sexual union with the parent of the opposite sex, wishes for the death of the same-sex parent, and consequently fears retaliation. In short, Freud believed each of us has once been "a budding Oedipus" with fantasies of incest and murder. Since Freud, the Oedipus complex has been reexamined, reconceptualized, and integrated into different developmental theories of psychoanalysis. Though much of Freud's assertions have been reformulated, especially with respect to the development of the female, many psychoanalysts maintain that the Oedipus complex is a cornerstone in development, the "shibboleth" of psychoanalysis, the watershed of individuation, and one of the most influential and fundamental psychic organizers of mental life.

Currently, the Oedipus complex can be defined as a configuration in which the child's attachments to parents become infused with sexual feelings leading the child to compete with each parent for the attention of the other. With these emerging sexual strivings and their connection to the parents, fantasies form and shift, identifications deepen, interpersonal conflict becomes internalized, intrapsychic conflict results, and internal compromise formations become possible. This psychic organizer occurs between the 3rd and 6th years of life, at the height of "the infantile genital" or "phallic" phase: a phase that follows the oral and anal phases and that overlaps with the pre-Oedipal and Oedipal phases of development. Intense love and hate, envy and rivalry, fears of loss of love and bodily injury, a growing capacity to differentiate between fantasy and reality, and a new awareness of morality characterize a child in the midst of the Oedipus complex. Developmentally, the Oedipus complex is thought to signal a pivotal maturation, not only in the instinctual drives, but also in the ego and object relations. One cannot think about the Oedipus complex today without exploring the concepts of superego formulation, Oedipal and pre-Oedipal object relations, infantile neurosis, and differences in male and female development.

I. HISTORICAL CONTEXT

How Freud came to discover the Oedipus complex requires tracing his thoughts back before his conceptualizations of libido, dual-drives, and structural concepts to his famous 1887 note to Fliess. In that note Freud explained how his self-analysis led him to a radical revision of his seduction-trauma hypothesis. Exploring his own internal world brought the startling realization that the sexual experiences and seductions reported by some of his patients were really fantasies containing wishes, not actual memories. This turning point in his theory resulted from a discovery in himself of the fantasy he saw depicted in Sophocles' *Oedipus Rex.* In the play, the gods place a plague on Thebes for the murder of King Laius. "Oedipus" had been abandoned at birth by Laius and Jocasta for being defective. Oedipus means "clubbed foot." Now married to the widowed queen Jocasta after having solved the riddle of the Sphinx, Oedipus searches for the murderer only to find that he, himself, is not only the murderer but the murderer of his own father and the lover of his mother. In fact, in *The Interpretation of Dreams* (1900), in which Freud first published his formulation of what later he would call the Oedipus complex, he referred to the Greek myth of Oedipus as confirmation of the

profound and universal power of the incest–parricide fantasy. Though it was not until his "Contribution to the Psychology of Love" in 1910 that Freud first used the term, "Oedipus complex," and not until a 1920 footnote added to *Three Essays on the Theory of Sexuality* in 1905 that he gave his first synopsis of the complex, from 1897 onward the discovered fantasy was already destined to be linked to the tragedy bearing the name of "Oedipus."

Though it percolated through his thoughts from 1887 onward, nowhere did Freud give a systematic account of the Oedipus complex. For Freud, the Oedipus complex was inseparable from sexuality, and, in his writings from 1905 to 1940, Freud integrated the Oedipal fantasy with his discovery of infantile sexuality and his understanding of psychosexuality. While Freud continued to develop, reassess, and revise his theories and models, the basis idea of the Oedipal fantasy remained a constant. However, the specifics of the Oedipus complex in relation to intrapsychic development were transformed as Freud's thinking and theories evolved. Prior to the formation of the structural model in 1923, Freud's understanding of development was influenced by his conviction that sexual and aggressive urges, otherwise referred to as "instinctual drives," provided most of the motivation for psychic function. These drives were mental representations or a "psychical representative of an endosomatic continuously flowing source of stimulation" and not simply somatic entities. In *Three Essays on the Theory of Sexuality,* Freud linked instinctual drives to erogenous body zones and proposed that a sequential progression occurred as the child matured. At birth the libidinal drives seek gratification through oral means. Later the anal arena becomes the focus of pleasurable sensations. Finally, in the infantile genital or phallic phase, the source of drives resides in the genitals, and, at this juncture, children show evidence of the Oedipus complex. While introducing a wealth of data on infantile sexuality that related to the Oedipus complex, Freud did not explain the complex as a whole until the addition of the earlier mentioned 1920 footnote that referred to the Oedipus complex as "the nuclear complex of the neurosis" representing "the peak of infantile sexuality" and the "shibboleth that distinguishes the adherents of psycho-analysis from its opponents."

Freud elaborated his understanding of infantile sexuality and development following his analysis of Little Hans in *On the Sexual Theories of Children* and *Analysis of a Phobia in a Five-year-old Boy.* He introduced the role of "castration threat" and "the castration complex" as well as fantasies of fertilization through the mouth, of birth through the anus, and of the woman having a penis in these writings. In *Totem and Taboo,* Freud linked the Oedipus complex to the cultural institution of totemism. He viewed the primitives' ban on killing the totem animal as an external representation of an intrapsychic prohibition against killing the father. In this way Freud elevated the Oedipus complex to a primary role in the origin and evolution of human psychic development. Freud further elaborated on the connection between castration and the Oedipus complex in his *Introductory Lectures*. Unfortunately these ideas were contaminated by his incorrect assumption that there was little difference in the early sexual development between boys and girls.

In *The Ego and the Id,* Freud broadened his theory by putting more emphasis on the environment and external experience as organizers of psychological development. Freud proposed that three hypothetical psychic structures—id, ego and superego—organized experience. The instinctual drives were subsumed into the metapsychological structure of the id. The ego was the psychological structure that synthesized and organized the personality by mediating between internal and external experience. The superego, referred to interchangeably in the 1923 paper as the ego ideal, was the structure that contained internalized real and fantasied approvals, criticism, threats, moral standards, and ideals of parents. Freud now expanded the idea of shifting developmental progression of erogenous zones to include the shifting progression of related wishes and fantasies with the structural model. And, perhaps most important, the structural model brought two new concepts to Freud's understanding of the mind: (a) the idea that these wishes and fantasies were connected not only to drives but also to objects and the child's shifting relationships to those objects, and (b) that these relational configurations were internalized. The Oedipus complex was further refined and highlighted in a new way within the structural model.

In 1923, Freud used the concept of identification in the context of the Oedipus complex to explain how the ego, like the rider on the horse, is able to rein in the drives of the id. First Freud wrote of the side-by-side existence of the "positive Oedipus complex" and the "inverted negative Oedipus complex." The former included the child's libidinal wishes for the opposite sex-parent and rivalrous feelings toward the same-sex parent. The latter referred to libidinal wishes towards the same-sex parent and rivalrous feelings toward the opposite-sex parent. Freud explained that the complete

Oedipus complex was "twofold, positive and negative … due to the bisexuality originally present in children." He described a precipitate forming in the ego resulting in a special modification when mother and father identifications unite. This newly formed identification-based aspect of the ego was called the ego ideal or superego. Because this higher order structure was the means by which the child relinquished infantile sexual wishes, Freud declared the superego to be the "heir" to the Oedipus complex. Infantile sexuality would be left behind, and infantile omnipotence would now be dented by a new sense of reality that included inner reality and Oedipal identifications with the development of the new "heir." The Oedipus complex became a developmental landmark signaling a further and fundamental structuralization of the mind that resulted in the child's initiation into a moral order and an individuation founded on the basis of intrapsychic conflict.

Freud extended his theory on how the child resolved an Oedipal conflict 1 year later in *The Dissolution of the Oedipus Complex*. He emphasized the relinquishment of libidinal attachment to Oedipal objects and their substitution by identifications with parental authority. Freud spoke of the desexualization and sublimation of these Oedipal striving, and he stressed the importance of the ego's defense against castration anxiety. For the first time, Freud delineated different paths for the Oedipus complex in boys and girls. He emphasized that boys were driven to resolve their Oedipal longings after seeing the female genitals. With the sight of the female "castrated" genitals "the loss of his own penis became imaginable and the threat of castration takes its deferred effect." Fear of castration and guilt motivated the boy to identify with and internalize the father's moral rules and standards. In contrast, the girl's dissolution of the Oedipus complex requires the acceptance of her castrated state as an accomplished fact, something that occurred prior to the formation of the Oedipus complex. Freud had already elaborated on the weaker state of the female superego and, in 1924, he asserted that the dissolution of the Oedipus complex in the girl is never fully accomplished.

Freud's struggle to explain female development continued in *Some Psychical Consequences of the Anatomical Distinction Between the Sexes* in 1925 wherein he posited a developmental sequence for female Oedipal development. The core of this scheme centered on the vicissitudes of the questionable "penis-envy" phenomenon that Freud had first mentioned in *The Sexual Theories of Children* in 1908. The sequence was described as follows: (a) the girl discovered her lack of penis; (b) the discovery of her castrated state gave rise to feelings of inferiority, penis envy, and anger at her mother for not providing a penis; (c) consequently there is a loosening of the libidinal ties toward mother and a turning to father; and (d) the father is then looked to as a provider of a penis and a baby to compensate. Freud added a caveat at the end of the paper that his opinions could be wrong because they were based on a handful of cases, and that further observation was needed to validate his findings. Unfortunately, despite his own caveat and others' questions, these ideas became enshrined as the classical position on female sexuality for several decades.

Freud collaborated with Ruth Mack Brunswick prior to his death to write *The Preoedipal Phase of the Libido Development* that was published posthumously in 1940. In his final work, Freud wrestled with the importance and impact of pre-Oedipal attachment to the mother and clarified the fantasy of the "phallic mother." He had considered the girl's pre-Oedipal attachment to her mother earlier in *Female Sexuality* in 1931. In the 1940 paper, Freud rebutted those authors (Klein, Horney) who challenged his view of the female Oedipus complex. After discovering the Oedipus fantasy in himself, after dedicating years to understanding how the complex formed, how it evolved differently in boys and girls, how it may or may not resolve, and how it intensified to yield the superego, in the end Freud turned back developmentally. Although still holding to his shibboleth of psychoanalysis, Freud moved back toward that "dark continent" with which he was far less familiar to seek what nodal fantasies might be hidden beneath the Oedipal wish.

II. CURRENT CLINICAL RELEVANCE

Despite Freud holding his discovery of the Oedipus complex to be the "nucleus of neurosis", contemporary psychoanalysts continue to question its relevance to contemporary theory and practice. For a patient to have a successful analysis must today's analyst continue to whisper the Freudian shibboleth of "Oedipal fantasies" or "Oedipal conflicts?" Research on early childhood development in the decades following Freud has yielded findings that not only have resulted clearly in the redefinition of the Oedipus complex but have also led to a shift in the centrality of the Oedipus complex. Infant and child observational studies have provided new information about gender identity formation, female psychology, and sexuality. Freud's assumptions about the timing of several phenomena crucial to his

theory that the Oedipus complex is the nucleus of psychical development have been challenged. For example, Freud was wrong when he stated that the discovery of the anatomical differences between the sexes occurred during the phallic phase. We now know that this discovery is made between 16 to 24 months, during the 2nd year of life. Freud was also inaccurate when he assumed that boys' and girls' development were the same up until the phallic years. We now know that gender identity (one's sense of whether one is a boy or a girl) is determined by the time the child reaches age 2 to 3. Such research has allowed analysts to rethink the concepts of penis envy, the negative Oedipal complex, and superego formation, and how they apply to both the boy's and the girl's psychological growth.

Penis envy was a concept which originated with Freud and became pivotal in his understanding of female psychology. This clinical concept of penis envy is manifested in an unpleasant feeling of inadequacy associated with and triggered by a covetous wish for the phallus. Freud asserted several ideas about penis envy: (a) the child discovered that the boy has a penis and the girl has no penis in the phallic phase; (b) the discovery led to castration anxiety and superego formation in the boy; and (c) in the girl, this discovery led to narcissistic injury with hostility toward the mother and subsequent turning to the father for a baby to replace the missing penis. The idea of penis envy in girls has been reconsidered and questioned as being a masculine or "phallocentric" perspective as psychoanalytic researchers have gained a greater understanding of female development. At the same time, clinicians have become more sophisticated in their attempts to understand clinical material about the penis and a wish for it in female patients. It is common these days for analysts to interpret such material as defensive against more pervasive feelings of inadequacy or as a desire for the penis to fulfill feminine needs (such as the wish to be penetrated). Rarely is penis envy interpreted as a primary issue. The concept of primary femininity was not available to Freud. Primary femininity implies an inborn sense of femaleness which predates penis envy, castration anxiety and the Oedipus complex. That is, femininity is innate and, at least in part, biological rather than simply a reaction to a disappointed inability to be masculine. Nonetheless, femininity is still subject to conscious and unconscious conflict and identifications with father as well as mother. Analytic observation of girls had led certain analysts to ask whether the phallic phase occurs at all in girls. If a phallic phase equivalent exists in girls, it is quite different from that of boys.

Penis envy is now recognized as occurring in both sexes. It means different things in boys and girls depending on a variety of factors including biology, environmental experiences with both parents, and fantasy formation. Boys have been observed to suffer from penis envy when they discover that an older male has a larger organ than they do. Some, but certainly not most, girls develop a fantasy that they have been castrated. Penis envy occurs in some girls but not in others. When it does occur it is dependent on the girls preexisting feminine identity and the experiences that formed it. Restitutive fantasies of a girl's illusory penis can occur in both sexes. Analysts have also wondered whether penis envy can cover a defensive devaluation of an all-powerful mother in both sexes. Penis envy in this context correlates with the feelings of smallness and helplessness with which every child must contend. The universal fantasy of the "phallic mother" can serve to deny castration or helpless vulnerability in a small child. Some analysts have suggested that shifts in fantasy content can be caused by cultural changes so that penis envy will decline and breast and womb envy will increase as gender roles continue to evolve in modern society. In summary, penis envy and narcissistic injury are no longer thought to be necessary factors initiating the girl's entry into the Oedipus complex. Neither is the female superego deemed to be "weak" or deficient. To date, however, penis envy remains part of the clinical vernacular of psychoanalysis though its meaning in girls and boys has been greatly amended and enlarged from Freud's original notions.

Penis envy is not the only aspect of Freud's concept of the Oedipus complex that has been reviewed and revised. New knowledge of gender identity and closer examination of the complexity of both male and female development has raised questions about the concept of the negative Oedipus complex. Freud had posited the negative Oedipus complex originally as a way to reconcile mixed identifications: The child, regardless of gender, identifies with both parents. Unlike penis envy, the negative Oedipus complex is not widely used in clinical contexts. Psychoanalytic writers have speculated that the diminished usage of the concept reflects the fact that it does not easily or even accurately fit observable clinical evidence. Some analysts have studied and questioned the negative Oedipus complex in girls, others in boys. Focusing on the girl, Edgecombe asked whether the negative Oedipus complex was a normal phase of Oedipal development if it existed at all. Others have reassessed negative Oedipal material and found it better explained in terms of a regression from an Oedipal to a pre-Oedipal

level of object relations. What some label negative Oedipal material is seen by others as a wish to be nurtured, fed, and protected by mother: The girl relates on the basis of dyadic pre-Oedipal wishes rather than relating to the mother in an erotic way with rivalrous feelings toward the father. It remains an empirical question whether girls go through a normal negative Oedipal stage of development. Some analysts have reported finding such material only in women with histories of an absent father and a neglectful, depressed mother.

Blos is one of the few analysts who have examined the negative Oedipus complex in boys in his studies of the relationship of boys and their fathers. He prefers to use the terms "isogender dyadic and triadic complex" rather than "negative Oedipus complex." He prefers these terms because he challenges the idea that dyadic relationships are prerequisites for triadic ones. He views early male bonding as more complex than the boy's erotic love for the father as interpreted by concepts such as the Oedipal constellation. Blos emphasized that the boy's early relationship with the father not only consolidates gender identity but also provides a sense of security and safety. Furthermore, the boy's closeness with his father is not necessarily feminine or passive even if it has erotic components. For these reasons he views the term negative Oedipus complex as both misleading and pejorative. Another conceptual problem with the negative Oedipus concept involves whether to consider it as a defense against a positive Oedipus complex, a regression or fixation to a preoedipal level of development, or as pathological in its own right. Complicating the matter is the difficulty of differentiating clinically between oedipal and preoedipal. Furthermore, these two levels of object relatedness can co-exist in a superimposed, simultaneous manner. As a result the concept of the negative Oedipus complex does not appear often in psychoanalytic writings emanating from the United States.

Despite revisions in the way we understand the role of penis envy and negative Oedipus complex, the Oedipus complex remains alive and well in psychoanalytic theory and practice. Many psychoanalysts continue to conceptualize the Oedipus complex and the Oedipal phase as the developmental stage during which the mind either does or does not organize in a new and vital way: namely, a way that is defined as "neurotic." Neurotic mental organization refers to a special and unique structuralization that is thought to occur during the Oedipal phase. Such structuralization is a concept used to describe a reordering of mental functioning. This developmentally advanced mode of organization includes such new capacities as the integration of drives with triadic (rather than dyadic) objection relations, more selective identifications, and a more refined and differentiated sense of morality and authority. It is the most developmentally advanced level of organization available to the human mind. Psychoanalysts believe that the boundary between neurosis and normality is only quantitative, not qualitative. In "good-enough" circumstances, there is a nodal shift from the interpersonal to the intrapsychic that characterizes a neurotic organization. The danger of retaliation for wishes is no longer external but internal. The feared punishment is not in the form of the parent's action or attitude but involves guilt experienced as a failure to adhere to one's internalized ego ideal. This achievement of a capacity for guilt and intrapsychic danger reflects the maturation of the superego as a psychic structure that can regulate the individual's behavior. Most analysts believe that it is through the Oedipus complex, and during the Oedipal phase, that the superego, "heir to the Oedipus complex," is functionally consolidated. Many analysts correlate the formation of the superego with the Oedipus complex and, thus, couple the capacity for neurotic conflict with the Oedipus complex and Oedipal conflict. These analysts tend to view the Oedipus complex as what Spitz called the "fourth psychic organizer."

Spitz described three "critical periods" of psychic organization while applying embryological theory to ego development. These periods were defined by the emergence of new behaviors that Spitz took to indicate that different mental functions were brought into a new relation with one another. The result was new psychological growth manifested not only through a new behavior but also by a new affective expression. The three shifts that Spitz thought signaled a new level in psychic structuralization are: (a) the social smile, (b) stranger anxiety, and (c) the "no" gesture. Those who conceptualize the Oedipus complex as the fourth psychic organizer regard Oedipal conflict as evidence of a new level of organization; the ego now functions "neurotically," making internal compromises and becoming increasingly independent of the external environment. Many psychoanalysts equate Oedipal conflict with neurotic conflict and the infantile neurosis and, consequently, use Oedipal material in the patient's associations to assess whether psychic structure is neurotic or not. Thus, the presence of Oedipal conflicts in the patient's history takes on diagnostic significance. Oedipal content indicates neurotic symptoms or personality traits according to this equation. This diagnosis carries with it the treatment prescription that psychoanalysis is the treatment of choice. Likewise, patients whose conflicts are pre-Oedipal should be treated with psychotherapy according to adherents of this view.

However, child observation suggests that Freud was wrong in the timing of his central Oedipus complex. Not only do the discovery of anatomical differences and gender identity occur long before the emergence of the Oedipus complex, but, so too, does the formation of the superego. Precursors of superego development (along with the capacity for intrapsychic conflict) have been noted in the 2nd year of life, before the phallic and Oedipal phases. Ironically, they can occur during the critical period described by Spitz as the third organizer, "the no gesture." Occurring at the anal-rapprochement phase (a combination of Freud and Mahler's developmental theories), "the no gesture" initiates the child's struggle with compliance to mother's demands. Compliance indicates the beginnings of internal controls and internalized conflict. Margaret Mahler described the rapprochement subphase as the 3rd in the 4 stages of what she called the separation–individuation process. It is marked by notable ambivalence and the attainment of object constancy. Hence, the early superego arises in the context of ambivalence. When the child begins to say "no" to himself or herself the inchoate makings of the superego are unconsciously at work. If intrapsychic conflict and superego formation can begin in pre-Oedipal years, where does this leave the Oedipus complex? How can Oedipal conflict be a litmus test for presence of the capacity for intrapsychic conflict? Psychoanalysts have begun to wrestle with these questions.

If neurosis is thought to be an indication of superego modulation of intrapsychic conflict, our most recent knowledge of development indicates that neurotic internal structure begins before the appearance of the Oedipus complex. Thus, pre-Oedipal conflicts do not necessarily mean the mind is not organized neurotically. Similarly, the assumption that all Oedipal conflict is evidence of neurotic character structure is problematic. Psychoanalysts regularly bear witness to the fact that all that is Oedipal clinically—including manifestations of an Oedipus complex—is not necessarily indicative of neurosis. Symptomatology that could be viewed as a sign of neurosis (such as phobias or obsessional symptoms) may occur in individuals with borderline or narcissistic character structures. Moreover, Oedipal content can be observed regularly in the thoughts of patients organized at a borderline or psychotic level. It seems most reasonable to conclude, then, that psychoanalysis is indicated when the patient's symptoms or character traits are part of a personality structured at a neurotic level. Neurotic personality structure is characterized by internalized conflicts that arouse anxiety to which the ego responds with signal anxiety mobilizing appropriate defenses and/or compromise formations. The content of the wishes, fantasies, or conflicts that would lend themselves best to psychoanalytic treatment may be either Oedipal or pre-Oedipal, about either competing for the opposite-sex parent or seeking the security of mother. Likewise, a transference neurosis, often considered a *sine qua non* of psychoanalysis proper, does not absolutely require that its content be embedded in Oedipal themes. It is the mental structure and not the mental content that is most clinically significant.

In assessing whether to recommend psychoanalysis versus psychotherapy, the psychodynamically trained physician should assess the adaptability of the ego's functioning, not evidence of an Oedipus complex. One can be led to erroneous treatment recommendations if one looks for signs of Oedipal conflict, castration anxiety, penis envy, rivalrous wishes toward the same-sex parent object, and an eroticized transference. Though it provides one of the most complex conflicts to the developing mind, the Oedipus complex is not always proof of neurosis. Oedipal wishes can be organized in psychosis or borderline ways. The clinician should instead assess for autoplastic (rather than alloplastic) modes of conflict resolution. Autoplastic means that the individual's psychic structure allows for psychic shifts to be made so that conflicts are resolved "internally" rather than by attempting to make the world accommodate to the self (alloplastic). Furthermore, the capacity for affect regulation (specifically signal affects), a sense of self-responsibility, and a superego that controls impulses before they are expressed behaviorally should be looked for as core indicators of neurotic structure.

III. CONCLUSION

In conclusion, although the Oedipus complex and the Oedipal phase of development remain indelible in the history of psychoanalysis, vital to contemporary theory and practice of psychoanalysis, and nuclear to the formation and understanding of unconscious mental structure, the Oedipus complex and Oedipal conflict are no longer necessarily central to the diagnosis of neurosis. The clinician who blindly holds the Oedipus complex as the unshakeable shibboleth of psychoanalysis is in as precarious a position as was Oedipus on the road to Thebes.

See Also the Following Articles

Alderian Psychotherapy ■ History of Psychotherapy ■ Intrapsychic Conflict ■ Jungian Psychotherapy ■ Object-Relaitons Psychotherapy ■ Psychoanalysis and Psychoanalytic Psychotherapy: Technique ■ Structural

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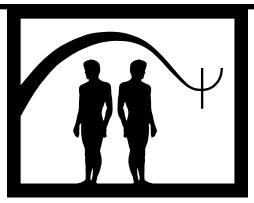

Omission Training

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GLOSSARY

differential reinforcement of incompatible behaviors Reinforcement is provided contingent on an individual's engaging in behaviors that are incompatible with an undersirable target behavior.

differential reinforcement of other behaviors Reinforcement is provided contingent on an individual's engaging in behaviors other than an undesirable target behavior.

extinction Decrease in behavior following the removal of reinforcement.

overcorrection An intervention in which an individual is required to improve the setting beyond the way in which it appeared before a disruptive behavior was emitted, or to repeatedly practice behaviors that are alternative to the disruptive behavior.

punishment A contingent relationship between a behavior and a consequence such that the consequence causes the particular behavior to decrease in frequency.

reinforcement A contingent relationship between a behavior and a consequence such that the consequence causes the particular behavior to increase in frequency.

stimulus generalization The spread of the effects of reinforcement to settings different from that in which the original procedure was conducted.

time out An intervention in which an individual is removed from sources of positive reinforcement for a specified period of time.

I. DESCRIPTION OF TREATMENT

Omission training is a procedure that is used to reduce or eliminate behaviors that are deemed undesirable. Omission training is typically used to reduce behaviors that occur at a moderate-to-high rate. In general, the procedure requires that a time interval be established, and, if at the conclusion of that time interval, the target behavior has been "omitted," a reinforcer is delivered. Reinforcement is thus provided contingent upon the absence of the target behavior. The name omission training is for this reason often used synonymously with the term DRO schedule, or differential reinforcement of zero rates of the target behavior. As an example, consider an elementary school-aged child who gets up out of his or her seat at a high rate during the teacher's lessons. To implement an omission training procedure, the teacher might first determine the longest duration of time that the child can sit without getting up out of the seat during lesson time and establish this as the specified time interval. The teacher may then observe the child during that time interval, and if the child refrains from getting up out of the seat, the teacher may reinforce the child with a gold star, to be later exchanged for additional recess time. After a sufficient number of reinforcers are earned,

the teacher may gradually and successively increase the length of time for which the child is required to refrain from getting up out of the seat to earn a gold star. This omission training procedure is likely to be effective in reducing the rate with which the child gets up out of the seat during lesson time.

There are a number of advantages associated with the use of omission training. First, because all that is required is that an interval of time be recorded, an observation be made as to whether or not the target behavior occurred, and, if it did not occur, a reinforcer is delivered, this procedure is fairly easy to implement. Teachers, parents, or human service agency staff who wish to reduce a behavior need only a rudimentary understanding of behavioral principles. In 1979, for example, Howard Hughes, Anita Hughes, and Hardy Dial reported the successful use of an omission training procedure by parents of a 4-year-old child who engaged in excessive thumb sucking. Likewise, in 1980 Edward Barton and Jennifer Madsen demonstrated that teachers' aides could effectively use omission training to reduce the extreme drooling exhibited by a child with severe mental retardation.

Second, ethical issues that are raised with other behavior reduction procedures are not of the same magnitude of concern here. Providing reinforcement contingent on the absence of a response is considerably less intrusive than other frequently utilized procedures, such as overcorrection and time out. A third and related advantage is that omission training does not produce the undesirable side effects (such as frustration, aggression, or other emotional behaviors) that are often observed with more intrusive behavior reduction procedures. Fourth, several studies have shown that the deceleration in the rate of the target behavior often occurs rapidly following the onset of an omission training procedure. This makes omission training a desirable procedure to use for reducing behaviors that are particularly disruptive. Fifth, the effects of omission training have been shown to be relatively long lasting, and to generalize to settings other than that in which the original treatment was implemented.

II. THEORETICAL BASES

Omission training as a treatment poses some theoretical difficulties. Specifically, the definition of reinforcement is an increase in the rate of a behavior when that behavior reliably produces some consequence; reinforcement hence describes the contingent relationship between a behavior and its consequence. One might ask, how can this same relationship hold with the absence of a particular behavior, as is the case in omission training? One way of reconciling this dilemma is by acknowledging that while the individual is refraining from engaging in the target behavior during the specified time interval, that individual is engaging in other behaviors. It is the other behaviors that are correlated with reinforcement, and hence, the other behaviors that increase in rate. For example, in our previous example, while the child is refraining from getting up from the seat, the child may be playing with a pencil, drawing on the desk, or listening attentively to the teacher. The gold star deliveries might serve to increase the rate of these other behaviors. Omission training, then, might conceivably be regarded as differential reinforcement of other, or alternative, behaviors.

Because behaviors occurring during the specified time interval may increase in rate due to their correlation with reinforcement, it is possible for other undesirable behaviors to increase in rate. For example, it would certainly not be beneficial if the omission procedure was successful in reducing the child's getting up out of the seat, but also in increasing the rate of the child's talking to a neighbor. For this reason, it is important to specify socially appropriate behaviors in which it is believed to be beneficial for the individual to engage. If behaviors that were deemed desirable for the individual to engage in during the specified time interval were determined and reinforcement was provided contingent on their emission, an increase in desirable behaviors would occur concomitant with the decrease in the undesirable behavior. This procedure could be conceptualized as a differential reinforcement of incompatible behavior, or a DRI, schedule. For example, if the child was provided with gold stars for listening attentively during specified time intervals, this behavior is incompatible with getting up out of the seat and would be expected to increase in rate. So, it may be useful to gradually fade a DRO schedule into a DRI schedule, so that desirable behaviors are specified and increased. It is also important that the individual's opportunities for reinforcement be maximized. The omission training procedure must begin with a specified time interval during which baseline levels of behavior suggest that the target behavior will not occur. When a certain number of reinforcers have been acquired, the time period can be gradually increased.

III. EMPIRICAL STUDIES

A. Use of DRO to Reduce Self-Injurious Behavior

In 1990, a dramatic demonstration of omission training was reported by Glynnis Cowdery, Brian Iwata, and

Gary Pace. The procedure was used to reduce the frequency of severe self-excoriation (scratching or rubbing) that was displayed by a boy who was not developmentally disabled. Functional analysis results revealed that the boy's self-injurious behavior was maintained by automatic reinforcement. A treatment plan was established in which pennies, tokens, or social praise were delivered following periods of time during which the boy refrained from scratching. Initially, the interval was set at 2 min, which was the longest amount of time the boy had been observed to refrain from scratching. As the boy met the criterion for reinforcement, the time interval was gradually increased to 18 min, and eventually expanded to where the boy was able to leave the facility in which he lived to visit his parents. Four months of treatment were required to reduce the boy's self-injurious behavior to less harmful levels; it was never completely eliminated.

B. Effects of Omission Training as Compared to Extinction

In some situations, caregivers may wish to determine what function a maladaptive behavior is serving, or what specific reinforcer is maintaining the behavior. When that has been identified, it seems reasonable to expect that withdrawing that reinforcer should extinguish the behavior, or cause it to decrease. For this reason, some investigators have compared the effectiveness of omission training to extinction. For example, in 1975, F. Dudley McGlynn, William B. Miller, and John Fancher established a key-pressing response by individuals with chronic schizophrenia. For one half of the participants, key pressing was then put on extinction, while the other one half of the participants received reinforcement contingent on not pressing during specified periods of time. Response rate was shown to decrease more rapidly for participants in the extinction condition; extinction was also shown to result in overall more response suppression than omission training. In 1976, Jeff Topping, Helen Thompson, and Billy Barrios reported slightly different results using a similar procedure with institutionalized individuals with Down's syndrome. Neither procedure was more effective in reducing response rate initially, but greater overall suppression resulted from omission training. The degree to which these results would also be obtained in clinical settings is not clear from either of these reports.

C. Durability and Generality

The effectiveness of an intervention can be evaluated on the basis of durability and generality. Durability refers to the degree to which the effects of the intervention persist over time after treatment has been terminated. For example, Brian Iwata and Andrew Lorentzson showed in 1976 that the effects of an omission training procedure in controlling seizure-like behavior persisted for 13 weeks following treatment withdrawal. Generality refers to the degree to which the effects of the treatment are shown to generalize to settings different from that in which the original procedure was implemented. In the study described previously by Cowdery, Iwata, and Pace, treatment was conducted in an institutional setting, but the effects were shown to generalize to the child's home when he visited his parents. As with most behavioral interventions, generalization of treatment effects is likely when the settings in which the intervention is performed in are varied, the frequency of reinforcement in the original training situation is reduced sufficiently so that the training situation more closely resembles the natural environment, and when common stimuli are programmed between settings.

D. Side Effects

As mentioned previously, omission training does not produce the worrisome side effects that other procedures might. However, emotional responses may still occur. Cowdery and his colleagues noted that emotional behavior (e.g., crying) did occur when the boy did not earn his scheduled reinforcers. Thus, an individual may experience frustration if scheduled reinforcers are not earned, but such effects would seem to be a by-product of any reinforcement-based intervention. Such effects are presumably of a lesser magnitude than those resulting from more intrusive procedures. It must be noted, however, that there may be clinical situations in which the target behavior poses such concern, either because it is harmful to others or harmful to oneself, such that caregivers do not have time to wait for omission training to take its effect. In fact, more harm may be caused if the behavior is allowed to continue to occur. In such situations, a more intrusive procedure may be warranted.

IV. SUMMARY

Omission training has been shown to be an effective procedure for reducing or eliminating undesirable behavior. It is not as intrusive as other behavior reduction procedures and produces few side effects. Its effects may be seen relatively soon after its onset and may be relatively durable over time. The reduction in the rate of the undesirable behavior can be expected to occur in settings different from that in which the original train-

ing was conducted. Omission training is an easy procedure to implement and will be most successful if opportunities for reinforcement are maximized, and if a DRI schedule is gradually implemented.

See Also the Following Articles

Chaining ■ Extinction ■ Differential Reinforcement of Other Behavior

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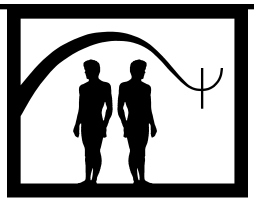

Online or E-Therapy

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GLOSSARY

e-therapy Doing therapy by electronic communication.
online Generally is used to denote the subset of e-therapy done in real time, aiming for pauses between messages that are as brief as those between two people in the same room.
unmet e-therapy E-therapy where client and therapist have not met.
webcam A camera used in conjunction with a personal computer for video communication via the Internet.

E-therapy is doing therapy by electronic communication. At present this means exchanging text messages. Web sites offering e-therapy sometimes do not distinguish between therapy and counseling. E-therapy has evolved empirically because of the availability of technology, which includes both e-mail for communication, and the Internet, where therapists' web sites attract potential clients. There are no controlled studies of efficacy, although anecdotal testimonials abound. It is derived from older technologies (letters, telephone, facsimiles) that did not achieve the status of distinct therapies. E-therapy has emerged as yet another way the Internet may alter radically the way we do things. Although most professional associations agree e-therapy is not as effective or safe as when the therapist and patient are in the same room, proponents argue it is more convenient and can reach out and involve those who cannot or will not meet a therapist bodily. E-therapy is better than no contact for certain populations and may lend itself to frequent contacts in some forms of therapy. Potential disadvantages abound. Future use is likely as an adjunct to therapy that includes meeting in the same room, but unmet e-therapy depends on the ability to achieve adequate evaluations, and overcoming negative trends in liability, regulations, and reimbursement.

I. DESCRIPTION OF TREATMENT

The Internet, established in 1969 at the University of Southern California for national defense uses, has emerged as a major form of communication, with unanticipated qualities and effects. Electronic mail was used for years among users of terminals of main frame computers. Specialized offers to certain customers date to 1973 with Lexis legal information services available to clients of Mead Data Central. CompuServe began the first online access service for customers in 1979. E-mail has been increasingly accepted

in general medicine, especially for anything a patient might have to write down if told on the telephone, such as test results, written instructions, directions, phone numbers, and so on. E-mail messages can be linked to web sites for patient education. Increasing use has been recommended by the Institute of Medicine's report, "Crossing the Quality Chasm."

E-mail can be contrasted to older technologies, long used in therapy.

A. Letters

An e-mail is basically a letter, the most ancient regular form of communication across distance. Even between people who know and see one another, letters can be used to develop and give a particular form to relationships. Many teenagers have pen pals, often in a distant country, that they do not meet for years. There are published exchanges of letters of people who have and have not met, in which the correspondence was more important than face-to-face encounters. For instance, Tchaikovsky and Najda von Meck corresponded for decades while living in the same city. They chose never to meet by plan, although reacting in their letters to their chance sightings of one another. Numerous examples show the process of therapy in traditional letter writing. Sigmund Freud developed several therapeutic correspondences. There is a rich literature of therapeutic exchanges, which typically took weeks. The big advantages of e-mail over letters are seen at every stage of the process: ease of composition by typing or dictating onto a screen, editing on screen, speed of delivery, ease of retrieval, legibility, ease of response, and storage. Retrieval can be so quick as to allow a conversation in real time, or at one's leisure, which means that the recipient is likely to be in a mindset favorable for communication. Cost per communication is insignificant in that monthly charges through Internet service providers usually provide unlimited e-mail for a monthly fee of $20 or less. These advantages are so self-evident and overwhelming that no studies have had to be done to quantify these advantages.

B. Telephone

Calls have been used to help people feel better since the invention of the telephone in 1885. They are immediate, and convey nonverbal data through pauses, tone of voice, inflections, and so on. Usually costs are charged by the amount of time taken, so telephone calls tend to be brief. However, therapists have routinely scheduled long sessions with patients when one or the other is traveling. Unless recorded, they are not retrievable, which may or may not be an advantage. If recorded, playback speedup is essential to achieve evaluation times that can match the ease with which written exchanges can be scanned. Telephone rings tend to be intrusive, and may not catch the recipient in a receptive mind set. Leaving messages on answering machines frustrates the very urgency that led to the call and is complained about as "telephone tag."

There is extensive experience with telephone therapy in the form of suicide prevention centers and other "hot lines." Answerers are always available. The caller and answerer have not met previously. Suicide prevention centers were once publicized extensively and were busy, answering many calls and serving many people in a crisis mode. Studies showed suicide prevention centers did not reduce suicide rates in the cities they served, a phenomenon attributed to the likelihood that more seriously suicidal patents did not call but killed themselves instead. Generally callers used hot lines once or twice. They got support and were urged to go to services where they could be seen and helped. Some of those served did so immediately, others used crisis hot lines and emergency rooms for months or years before getting involved in more regular treatment, and others did not progress beyond use of crisis hot lines. Crisis hot lines are widely used in emergencies and are accepted as one part of the range of services. Some proponents of e-therapy argue from the hot line experience that some people in need of therapy will get involved via the Internet because of its convenience and anonymity. However, web sites offering unmet e-therapy do not resemble crisis hotlines in avoiding diagnosis, treatment, and ongoing relationships.

C. Facsimile Transmission (Fax)

The fax offers a chance to preserve the handwritten, sometimes illustrated, letter format while using the electronic speed of immediate delivery. The novelist Isabel Allende described writing a letter to her mother daily for 30 years, in recent years by fax. She and her mother tie each year's faxes with a ribbon and store them in a closet. Although the writer knows of patients and therapists who communicate by fax, there are no scientific reports. Fax communication is closest to e-mail in that it can occur in real time, but uses the telephone system rather than the Internet and is stored as an image rather than retrievable text. Use of the computer as a facsimile machine may increase as therapists grapple with the regulatory issues described below.

Although the above forms of communication have been available for years, physicians in almost all training programs in all specialties receive no specific education in how to use them.

E-mail poses the following problems:

1. *Junk:* The problem of junk e-mail (spam) can be worse than junk mail, since there is no cost for paper, postage, or handling. For less than $20, a marketer can purchase a CD with millions of e-mail addresses. In April 2001 more than 10,000 "spam attacks" were launched daily. The estimated annual cost of spam is $8.5 billion, even though it can be sent without postage to a large number of addresses. Responding to spam, however negatively, actually provokes more, since it shows there is a live person behind the address.

2. *Volume:* Many therapists are on professional and other mailing lists, getting some of 6.1 billion e-mail messages sent daily.

3. *Loss of contact:* E-mail addresses and service providers, which may not reflect a person's name or location, are changed easily by people, often to avoid getting so much mail. Addresses may be upper or lower case sensitive, multiple (used for different purposes by one or more people), and can change without notice. That mail went undelivered is not always known by the sender; that mail was delivered to the wrong recipient is known by the sender only when the recipient takes the trouble to write back. Most e-mail users report having received someone else's mail.

These problems can be eased by getting an unpublished address only for e-therapy using a service provider easily accessed from any Internet browser. An ongoing relationship should include ways of contacting the client other than through e-mail.

4. Less easily resolved is *Disinhibition and projection:* The very ease with which e-mail can be sent quickly to anyone results in quick messages and responses before feelings have cooled. The improbability of any local, real-life repercussions in virtual communities on line is disinhibiting. Miscommunication, distortion, emotionality, and projection abound, thought to be a result of the lack of social cues and context. Angry messages constitute a greater percentage of e-mails than of regular letters. "Flaming" and other angry outbursts have led to the development of "netiquette," which may have its own class distinctions in various settings that provide a further complication. Proponents for e-therapy argue that spontaneity in online therapy is helpful. E-therapists practicing asynchronously garner praise for taking time to think about their responses. E-therapists will have to be able to write well, expect to be misunderstood, and deal with unexpected feelings stirred up by messages.

E-mail has evolved beyond simple transmission of text. It is possible to send images (e.g., remote art therapy) as an accompanying file, but this is rarely done. Voice dictation is used increasingly, but longer messages tend to slow interaction, and those using it find themselves employing longer words. Some proponents argue that the problem of the lack of physical cues can be overcome by using webcams, but video phones have been available for years without becoming popular. Use of webcams would change the modality to teleconferencing, which has emerged as a clearly defined therapy with limited reimbursement. At present e-mail belongs to the typists. For data gathering purposes this trades whatever can be gained from scrutinizing handwriting, itself the subject of a formidable literature, for legibility and retrievability.

II. GUIDELINES

E-therapy is a subset of patient–therapist electronic communication, so it must proceed within the general guidelines developed for such communication. These have been developed as follows.

The first comprehensive set of guidelines for physician–patient communication was developed by a committee within American Medical Informatics Association and adopted and published in 1998. The guidelines were passed on to the American Medical Association, which modified them slightly and adopted them in its assembly in June 2000. The American Psychiatric Association (APA) assembly adopted the guidelines in November 2000 and requested the APA Board of Trustees to accept the guidelines pending the adoption of APA guidelines. The APA Trustees did so in March 2001. Guidelines have been developed by the Psychiatric Society for Informatics (also highly derivative of the AMIA guidelines) and submitted to the APA. The guidelines adopted thus far are given here in their entirety.

The AMA Board of Trustees recommends:

1. That for those physicians who choose to utilize e-mail for selected patient and medical practice communications, the following guidelines be adopted.

Communications guidelines

A. Establish turnaround time for messages. Exercise caution when using e-mail for urgent matters.

B. Inform patients about privacy issues. Patients should know:
   Who besides addressee processes messages during addressee's usual business hours and during addressee's vacation or illness; and
   That the message may be included as part of the medical record, at the discretion of the physician. [The AMA subsequently stated this decision should be joint between patient and physician, while the Clinton administration privacy guidelines, barely modified (so far) by the Bush administration, offer no choice, stating such messages are to be part of the patient's record.]
C. Establish types of transactions (prescription refill, appointment scheduling, etc.) and sensitivity of subject matter (HIV, mental health, etc.) permitted over e-mail.
D. Instruct patients to put the category of transaction in the subject line of the message for filtering prescription: prescription, appointment, medical advice, billing question.
E. Request that patients put their name and patient identification number in the body of the message.
F. Configure automatic reply to acknowledge receipt of messages.
G. Send a new message to inform patient of completion of request.
H. Request that patients use autoreply feature to acknowledge reading clinician's message.
I. Develop archival and retrieval mechanisms.
J. Maintain a mailing list of patients, but do not send group mailings where recipients are visible to each other. Use blind copy feature in software.
K. Avoid anger, sarcasm, harsh criticism, and libelous references to third parties in messages.

Medicolegal and administrative guidelines

A. Develop a patient–clinician agreement for the informed consent for the use of e-mail. This should be discussed with the patient and documented in the medical record. Agreement should contain the following:

   Terms in communication guidelines (stated above).
   Provide instructions for when and how to covert to phone calls and office visits.
   Describe security mechanisms in place.
   Hold harmless the health care institution for information loss due to technical failures.
   Waive encryption requirement, if any, at patient's insistence.

B. Describe security in place, including:

   Using a password-protected screen saver for all desktop workstations in the office, hospital, and at home.
   Never forwarding patient-identifiable information to a third party without the patient's expressed permission.
   Never using patient's e-mail address in a marketing scheme.
   Not sharing professional e-mail accounts with family members.
   Not using unencrypted wireless communications with patient-identifiable information.
   Double checking all "To" fields prior to sending messages.

C. Perform at least weekly backups of e-mail onto long-term storage. Define long term as the term applicable to paper records.

D. Commit policy decisions to writing and electronic form.

2. That the policies and procedures for e-mail be communicated to patients who desire to communicate electronically.
3. That the policies and procedures for e-mail be applied to facsimile communications, where appropriate.
4. That the Board of Trustees [AMA, APA] revisit "Guidelines for Patient-Physician Electronic Mail" when the proposed HIPAA guidelines, encryption, and pertinent federal laws or regulations have been proposed or implemented.

The American Psychiatric Association has issued no statements on e-therapy, but has on telepsychiatry. These guidelines do not deal per se with special demands of the therapeutic process, but do show some of the regulatory burden involved in e-therapy. Subsequently the Health Insurance Portability and Accountability Act (HIPAA) regulations of 2000, themselves the subject of so much controversy as to have generated more comment than any other proposed regulation, have been adopted. They specifically provide for the protection of "notes recorded (in any medium) by a healthcare provider who is a mental health professional documenting or analyzing the contents of a conversation during a private counseling session or a group, joint, or family counseling session" as well as defining "covered professionals" as those who

engage in electronic transactions. As of this writing, the requirement is that all e-mails must be included in the patient's record. The AMA and APA have asked that the physician and patient have the option of including e-mail or not. While protection for such notes is reckoned in advance, it may be difficult for an e-therapist to comply with all parts of the regulation at once.

Although the HIPAA regulations do not distinguish between counseling and psychotherapy notes and counseling in medicine may not be related to psychotherapy and still need to be confidential (e.g., genetic counseling might be of interest to insurers), the term "psychotherapy" has been avoided in statements issued by professional associations. The Ethics Committee of the American Psychological Association (www.apa.org/ethis/stmnt01.html) issued statements in 1995 and 1997 relating to its existing ethics code. While noting that there are no rules prohibiting electronically provided services as such, the statement refers to existing standards on practicing within one's boundary of competence, assessment, therapy, structuring the relationship, informed consent, doing no harm, and others. Most online therapists are marriage and family counselors and psychologists, with almost half possessing PhDs, so it is not surprising that other guidelines refer to counseling, particularly those adopted by the American Counseling Association in 1999 (www.counseling.org/gc/cybertx.htm) and the National Board of Certified Counselors in 2001 (www.nbcc.org/ethics/webethics.htm). "Suggested Principles for the Online Provision of Mental Health Services" were adopted in 2000 by the International Society for Mental Health Online, a self-constituted group of online therapists (mostly psychologists) founded in 1997 in conjunction with the Psychiatric Society for Informatics (mostly psychiatrists) (www.ismho.org/suggestions.html). Requirements include disclosure of credentials, performing an "adequate" evaluation, informed consent, performing within one's general competence (not dealing with any problem online one would not handle face-to-face), procedures to be followed in an emergency (the therapists should have the name of a local health care provider who can be contacted in an emergency), and so on.

The word "therapy" cannot be found in the suggestions or any other document cited earlier, since their framers see psychotherapy as requiring assessments and protections that are not possible without face-to-face meetings. Teleconferencing does not avoid such concerns, having been granted reimbursement mostly for consultations. A California law requires that whatever services are reimbursed when rendered in person be reimbursed as well when provided electronically, but third-party payers have indicated a willingness to deny claims for e-therapy on the grounds that it is not an equivalent service. Proponents of e-therapy urge reimbursement, but are accused of trying to have things both ways: avoiding liability by describing what they do as counseling, but wanting reimbursement for medically necessary psychotherapy. Persons needing psychotherapy must have some impairment to be reduced by treatment, yet patients with serious problems cannot be evaluated adequately on the basis of remote exchanges of text.

At least one professional organization unequivocally has opposed the practice of unmet e-therapy. The Clinical Social Work Federation voted to do so in its 2001 annual meeting, citing concerns about efficacy, liability, and jurisdiction. Its press release says, in part

> This area is totally unregulated and potentially very dangerous for clients and therapists alike. … This new, very powerful medium blurs all the usual boundaries. Most organizations believe that it cannot or should not be evaluated by well-accepted professional standards. That just is not the case. The standards developed by the U.S. Department of Health and Human Services and Coordinated by the Office for the Advancement of Telehealth, are used by the federal government to assess federal policy on an ongoing basis. … We have yet to see the first law suits in this area, but we know they're coming. Our concern with establishing a position on the delivery of online therapy services is in absolute alignment with the mission of state licensing boards … the protection of the consumer. The standards used to analyze the growing area of text-based counseling include principles related to confidentiality, informed consent, quality of treatment, competence of the therapist, and basic ethical and professional requirements. These standards cannot be ensured when the client and therapist know each other only from a text on a screen. Assessment is the first phase of psychotherapy and frequently significant information about the client is based on nonverbal cues. Psychotherapy has at its heart a profoundly human connection, a connection that is, in itself, the major vehicle for change. Healing and restoration occur when the therapist and the client together find the bridge leading back, and forward at the same time, to the true self. Alienation from others and the self will not be healed through a virtual connection in cyberspace, a connection that is fraught with risks and hazards for both clients and clinicians.

Despite these cautions, it is clear that many online therapy practitioners are social workers not bound by

the strictures above. This writer appeared on local television in tandem with a social worker treating a ballerina online for $80 per hour. They said they did not meet face-to-face because of the inconvenience, although separated only by a few blocks in midtown Manhattan. A marriage and family counselor confidently treated a patient he had never met, as they were separated by 2,100 miles. The press release correctly describes most other professional organizations as neutral about unmet e-therapy, but this does not reflect the intraorganizational debates, which turn on three variables: (1) "adequate evaluation", (2) data reduction, and (3) priorities for the underserved (those who cannot come for meetings in person. There is no controversy about the usefulness of e-therapy where therapist and client meet regularly.

III. DISADVANTAGES OF UNMET E-THERAPY

A. Deception

Michael Lewis has chronicled various deceivers, including teenagers who posed as a stockbroker and a lawyer. The first would pick any obscure stock that struck his fancy, promote it in chat rooms, and sell into the resulting victims's rally. The second passed online as a legal expert until he was exposed, after which demand for his advice continued. Lewis sees these young people as leaders in a populist electronic revolution, but they offer good examples of massive deception and an ongoing demand for advice in a climate that is not likely to be regulated soon. In New York State, as in most, anyone can call themself a psychotherapist, just as anyone can call himself or herself a fortune teller, astrologist, or palm reader. Periodically newspapers report crimes in which the victim was lured into a meeting after meeting the perpetrator on the Internet. Investigations of those offering online services found many did not give their professional credentials or offered incomplete ones (e.g., "M.S." in a context that implies it is in counseling when it may not be). Similarly, potential clients often give themselves fictional names. Not all deception is deliberate. Couples who met on the Internet have appeared to get married only to discover they mistook one another's sex. Tom Hanks, in the film "You've Got Mail," showed how a person's nature as expressed in e-mail can be very different from that expressed in the face-to-face workaday world. This problem is minimized when the patient and therapist have met enough in the same room for adequate evaluation and development of a therapeutic alliance.

B. Data Capture

Text-based messages leave out too much to be the sole basis of an evaluation for therapy. The data captured in e-mail are a complete set of a narrow band of communication. Although controlled studies show patients divulge facts more rapidly and completely to computers, most of the studies were done with substance abusers before the Internet and rise of confidentiality concerns. Computer-based assessments have not replaced live interviews because communication of facts still does not convey how a person thinks or feels about them.

C. Confidentiality

E-mails leave copies of themselves in almost all servers through which they pass. In this respect e-mail is less of a sealed letter than a postcard copied at each post office through which it passes. Although the regulations and guidelines included above require attention to confidentiality, they should be understood as raising the bar of difficulty of access to content. It is reasonable to assume that a highly motivated, intelligent person with enough time and other resources can eventually access all files. Thus confidentiality is likely to be sacrificed to the determined hacker.

D. Safety

Although the Internet seems well-enough dispersed to survive most catastrophes, both the Baltimore Tunnel fire and World Trade Center disaster either demolished cables or switching stations that help the Internet and e-mail to flow well. On the other hand, the World Trade Center disaster included such destruction that regular phone lines were out or overcrowded and cell phones highly variable, especially as cell towers atop the buildings were lost. E-mail was extremely effective in reassuring the worried, offering chances to send the same message to many people in one's address book. But systems crash, computers fail, and service can be interrupted by failure of any link in the chain. Other safety issues in e-therapy are, in some cases, a derivative of the deception issue in that text carries so little affect compared to a person's actual presence that most thoughtful therapists fear missing depression, especially suicidal intent. Safety concerns highlight the undesirability of doing e-therapy with a patient not evaluated face-to-face.

E. Liability

As of August 2001 only one lawsuit has been brought, but 31% of state regulatory agencies have had complaints about e-therapists. Not following the guidelines stated earlier would weaken a therapist's defense. Practicing across state lines to patients located where the therapist is not licensed is an added risk, especially as the local means for handling a crisis will also be remote. California legislation, likely to be replicated in other states, requires that anyone providing mental health services to its citizens be licensed in California. Liability is judged in art on the expectations created in plaintiffs, and web sites are careful to avoid statements that diagnosis and therapy are being offered, instead offering help with "problems, stress," and so on. More court tests are likely.

F. Lack of Definition, Standards, and Controlled Studies

This emerging field is not defined. Perhaps it is only a technology, perhaps a new technique, or some blend. It does not have standards per se; professional association standards are cautionary. The International Society for Mental Health Online maintains a web site of reported studies (94 as of September 17, 2001). Most reports are how-to-do-it anecdotes and testimonials to the promise of e-therapy. There are no controlled studies. Although some web sites have been set up by disappointed patients to describe negative experiences with e-therapy, such opinion tends to be reflected more in newspaper articles. In contrast, telemedicine, videoconferencing, telepsychiatry—anything in which video and spoken words are used—is being subjected to controlled studies with random assignment of subjects.

IV. ADVANTAGES OF E-THERAPY

E-therapy is best practiced when the patient and therapist feel comfortable in a progressing relationship that has clearly defined shared goals and objectives. Within this context, the disadvantages cited earlier can be minimized and the following advantages realized.

A. Distance

The Internet and e-mail know no distance, since they are available at any computer, any time, usually for the cost of a local telephone call.

B. Time

E-therapy can be done in real time or through a more leisurely back-and-forth exchange of messages. In real time there is an intensity and density of exchange very much like (although less expensive and slower than) a telephone call. One misses the affect a voice can convey. On the other hand, a record is produced (that must be encrypted for any hope of confidentiality) that can be useful for both patient and therapist later. A more leisurely exchange is more like an exchange of letters and can include elements of a journal kept by the patient with comments by the therapist. Cognitive therapy often proceeds well this way. Supportive therapy is enhanced by the therapist providing another means of access than the telephone, which is more intrusive than e-mail.

C. Convenience

E-therapy can be done without the trouble of travel, dealing with one's appearance, or taking other trouble.

D. Written Record

E-therapy can be used to generate a written record of exactly what texts were exchanged. Present regulations require this or inclusion of e-therapy exchanges in an electronic medical record or computerized patient record.

E. Stigma

There is a general impression that e-therapy carries less stigma because visits to a therapist's office are reduced, and one need not be identified. Because e-mail is fashionable, some of its cachet may spill over to e-therapy.

V. INDICATIONS FOR E-THERAPY

Proponents argue that e-therapy is particularly well-suited for the following:

1. Those who would not otherwise get involved. The Internet indeed attracts many people who are looking online for relationships. One indication is the number of people looking for mates, as evidenced by the membership numbers of the major services: Match.com (1 million), AmericanSingles.com (1.3

million), Matchmaker.com (40,000 new members each week), Jdate (150,000), Blacksingles.com (20,000). The impression that "the Net is packed with depressed people" is supported by at least one study showing an association with heavy Internet use and depression. There are many anecdotes of patients becoming involved in therapy as they developed relationships over the Internet, and outreach programs on the Internet may be useful.

2. Anyone who would benefit from having a written record of patient-therapist exchanges. This writer has routinely given copies of whatever he writes about patients to them. Patients report that it helps them remember what has happened and to see the process of treatment.

3. Those who live in remote places, are physically handicapped, suffer from severe agoraphobia, or communicate already by keyboard, the hearing impaired already communicating by text.

4. Cognitive-behavioral therapy. This form of therapy, which tends to emphasize intellect over affect, with its use of daily journals, labeling and categorizing thoughts, correcting cognitive distortions, and so on, is well-suited for a written record that can be parsed for insight and reinforcement.

5. Supportive therapy. The immediate availability and ease of communication via e-therapy allows ongoing contact as often as indicated and is reassuring.

VI. CONTRAINDICATIONS OF E-THERAPY

Contraindications of e-therapy include:

1. Patients who prefer to have no written record of treatment. Although such patients are rare and always pay themselves without making insurance claims, they have a variety of reasons for wanting no record. A therapist may merely make a note that it was agreed that no record would be kept. Because current regulations stipulate that electronic communication become part of a patient's record, maintaining no record would be a violation.

The following contraindications are "relative" in that they depend on the amount of electronic communication versus the amount of time meeting face-to-face. The crucial variable is maintenance of the therapeutic relationship.

2. Patients for whom nonverbal communication is important. This problem is related not only to patient expressive difficulties but also to what data a therapist would need to understand what a patient might be feeling. Here the problem is that "high tech" does not substitute for "high touch." Meeting face-to-face involves many nuances of body language, facial expression, eye movement, and so on. Therapists who can get a good idea of how patients are feeling when meeting with them in the same room often find that patients may not come across as clearly via e-mail, a communication problem resulting from insufficient data.

3. Patients requiring more than text can provide. Anecdotal evidence from therapists who have attempted to provide a presence through electronic communication indicates that it is insufficient for some patients who need to be in the same room as the therapist. This is a therapist problem of matching a high return for patients who need it.

4. Combined psychotherapy and psychopharmacology. Pharmacotherapy requires routine physical assessment of signs, which by definition may be different from the symptoms patients report. It is unethical to prescribe medication without baseline observations and periodic examinations.

5. Psychodynamic therapy. Psychodynamic therapy typically involves mobilization and communication of affect, which is difficult for most people when exchanging texts.

There are many forms of psychotherapy. Those previously mentioned because the special requirements of an approved residency in psychiatry that took effect January 1, 2001 stipulate that a graduate be assessed as competent in each before graduating. It will be interesting to see if the teaching of these forms evolves to include the use of electronic text communication. This may parallel development of the interpersonal and communication skills that are one of the six competencies required of all physicians.

Other forms of therapy available on the Internet include chat rooms, self help groups, and support groups moderated by mental health professionals. Family and group therapy have been reported.

VII. FUTURE OF E-THERAPY

In the late 1990s there were many rosy predictions for what seemed to be an unstoppable Internet revolution that would reach into all aspects of our lives. An example of hype: "the hottest and certainly the most controversial new trend in therapy" with only five therapists practicing on-line in 1996 (a 1997 study found

275) and more than 500 in 2001 (the American Psychological Association panel in August noted many had left the field). Advantages cited include: "It's tailor made for business travelers and employed parents who find it hard to carve out daytime hours or keep appointments in one city. It costs less. E-mails average $25 to $50 each. … Even rates of $90 an hour fall below typical therapy charges of $125 to $165. It can work faster. There is evidence that people self-disclose more quickly to a computer than face-to-face. … It may attract those too embarrassed to face a therapist: childhood sexual-abuse victims, the obese, those with physical deformities or painful secrets." But many changes predicted as a result of the Internet have not come to pass. Here are some that affect e-therapy.

A. Political Upheaval

Politics seemed changed in 1994 when Thomas Foley, Speaker of the United States House of Representatives with many years of incumbency, was upset by an unknown candidate waging his campaign through e-mail and the Internet. The Internet was touted as democratizing the political process, by offering direct democracy, more information available free to anyone interested, and a venue in which groups unable to afford conventional communication could be heard. However, politics has been documented as relatively unchanged after all, as established political forces have adapted to the new medium and incumbents have continued to be re-elected, often having more resources to devote to the Internet as well as other media. Therapy has its own political upheavals, and an e-therapy revolution connotes a therapeutic revolution, with all sorts of new types of therapy and therapists, a la the heady days of the community mental health center era. This seems no more likely than overall political change.

B. Dot Com Failures

It seemed that e-therapy might be part of the on-line shopping revolution, which fell short as the buying public has continued to want to experience potential purchases up close and making money on the Internet has proved to be difficult. In 1999 there were hundreds of sites offering e-therapy services to anyone who wanted to get involved. Many of these sites are no longer active, including here2listen, which had attracted large amounts of venture capital. Commercial failures in e-therapy have been attributed to unrealistic business plans, difficulty in sustaining growth, massive infrastructure costs, and difficulty in communicating benefits. However, although businesses have trouble making money on it, the Internet continues to grow and is expected to be a $20 trillion industry by the year 2020.

C. Paperless Offices and E-Books

Although the rise of the Internet, local area networks, and e-mail were expected to lead to a paperless office, use of paper has been expanding rapidly in the Internet's go-go years. Studies show e-mail, in particular messages over half a page in length, tends to be printed and that people retain roughly 30% more of what they read on paper than on computer screens. Paper documents are easier to annotate and compare. Ink on paper, for example from a laser jet printer at 600 dots per inch, has six times the resolution of computer screens. Hewlett Packard estimates laser jet printers spewed out 1.2 trillion sheets of paper in 2001, a 50% increase in 5 years. Canadian exports of printing and writing paper to the United States grew 14% in 2000.

Although e-books were expected to replace paper, and it was predicted that books published only on the Internet would account for 10% of all book sales by 2005, only one book has been commercially successful when published on the web, and sales of handheld devices for reading such books have been very disappointing. People prefer to be reading something they have in their hands. At least it is unlikely that e-therapy manuals and other materials will exist solely in electronic form and there may be resistance to much use of e-therapy. E-therapy notes will almost certainly be printed and stored as paper, especially with the current interpretation of the need to maintain documentation under HIPAA.

On the other hand, telemedical consultations have mushroomed in specialized sectors and now account for 30% of all consultations done in prisons, where security and incarceration make direct access laborious. Telemedicine is beyond the scope of this article, except to say that (1) the remoteness of the patient from the therapist often leads to e-mail contacts as additional input, and (2) telemedicine and telepsychiatry have gained some reimbursement through being evaluated in controlled studies that find it worthwhile, despite loss of some of the input gained in face-to-face meetings.

The future of e-therapy depends on regulation (too much regulation will put it beyond the reach of all but highly committed therapists willing to invest the resources required to meet the regulatory requirements), clarification (Is it a conversation continuing by other means or separable from other therapies?), and its

eventual reimbursement (present pressures for nondiscrimination [parity] in health insurance may create an atmosphere of cost containment that would preclude reimbursement for e-therapy). Technical advances are likely to take it beyond its present definition.

See Also the Following Articles

Alternatives to Psychotherapy ■ Confidentiality ■ Engagement ■ Outcome Measures ■ Tele-Psychotherapy ■ Virtual Reality Therapy

Further Reading

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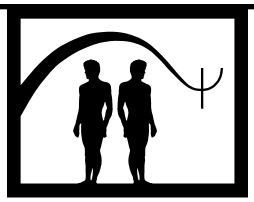

Operant Conditioning

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GLOSSARY

antecedent An event that precedes a behavior.

behavior Any action of a living creature. Behavior can be overt or covert.

consequence An event that follows and is produced by a behavior.

differential reinforcement A procedure used to establish stimulus control in which a particular behavior is reinforced in the presence, but not the absence, of a particular stimulus.

discriminative stimulus An antecedent stimulus that *(a)* given the momentary effectiveness of some form of reinforcement, *(b)* increases the frequency of occurrence of a particular behavior because, *(c)* historically, that kind of behavior was more successful in producing reinforcement in the presence of that stimulus than in its absence.

environment The natural world in its entirety, including all events that occur inside and outside living creatures.

establishing operation An event that alters the reinforcing or punishing value of a consequence.

extinction A procedure (or process) that reduces behavior by failing to reinforce a previously reinforced response.

fading An intervention that is used to transfer stimulus control from one discriminative stimulus to another.

functional assessment Procedures that are used to identify the reinforcer for a problem behavior.

negative punishment A procedure (or process) in which the removal of a stimulus after a behavior weakens (e.g., reduces the likelihood of) that behavior in the future.

negative reinforcement A procedure (or process) in which the removal or postponement of a stimulus after a behavior strengthens (e.g., increases the likelihood of) that behavior in the future.

operant A class of responses that "operate" on the environment to produce particular consequences. These consequences affect the future likelihood of occurrence of members of that response class.

positive punishment A procedure (or process) in which the presentation of a stimulus after a behavior weakens (e.g., decreases the likelihood of) that behavior in the future.

positive reinforcement A procedure (or process) in which the presentation of a stimulus after a behavior strengthens (e.g., increases the likelihood of) that behavior in the future.

response A defined unit of behavior.

rules Overt or covert verbal descriptions of relations among stimuli and responses.

stimulus A physical event.

stimulus control Control of behavior by an antecedent stimulus that is evident when some characteristic of a response (e.g., its rate, magnitude, or probability of occurrence) differs in the presence and absence of a particular stimulus.

stimulus equivalence A phenomenon in which stimuli that share no physical resemblance come to evoke the same behavior. If verbal humans are taught that A = B and B = C, the relationship A = C emerges without formal training.

stimulus generalization The spread of the effects of reinforcement (and other behavior-change operations) in the

presence of one stimulus to other stimuli that differ from the original stimulus along one or more dimensions.

token economy A therapeutic consequence system, based on conditioned reinforcement, that is frequently used in hospitals.

verbal behavior A behavioral term for language and related phenomena. The defining feature of verbal behavior is that other people mediate its effects on the environment.

The term operant conditioning does not refer to a specific technique for dealing with behavioral problems. Instead, the term, which was coined and popularized by the late B. F. Skinner, refers to a form of learning, or conditioning, in which behavior is controlled primarily by its consequences. Skinner called the new learned responses *operants* to emphasize that they operate on the environment to change it in some way: that is, to produce consequences.

I. INTRODUCTION

Edward Thorndike's work with cats in puzzle boxes, performed in the closing years of the 19th century, is a good example of operant conditioning. In those experiments, Thorndike placed individual cats in large crates from which they could escape by either pulling a string that was tied to a latch on the crate's door, or by pushing down on a pedal that would likewise open the door. If either response was made, the cats, which were mildly deprived of food, could get out of the box and get food. Thorndike found that all cats eventually made the response that opened the door, and on successive trials, it took progressively less time for the response to occur. Eventually, escape from the box occurred very quickly.

After many experiments with different animals in puzzle boxes yielded similar findings, Thorndike formulated one of the first psychological laws, the law of effect. It stated: Of the many responses made to a situation, the ones that are closely followed by satisfaction will be strongly connected to the situation and will be more likely to recur in that situation, while those that are followed by discomfort will be less likely to recur. The law of effect emphasizes that the historical consequences of a particular behavior in a given context are the primary determinant of current behavior in that context. Cats that previously escaped from a puzzle box and secured food by pulling a string do so rapidly and reliably when placed in such an apparatus. In contrast, cats without that history do not reliably pull the string.

B. F. Skinner did not use puzzle boxes. Instead, he developed a device known as an operant conditioning chamber, or Skinner box. The first such device, used with food-deprived rats, was a small box that contained a metal lever and a small cup into which food pellets could be delivered. Depressions of the lever were counted as responses, and food was delivered as a consequence for such responses. In Skinner's experiments, a rat could press the lever at any time and at any rate, and Skinner manipulated observable variables (e.g., degree of food deprivation, frequency of food delivery) to determine how they affected the rate and pattern of responding. For example, he compared responding when food followed every response and every 20th response, and he observed what happened when food was no longer delivered.

By observing the effect of changes in events before and after specified responses on the rate and pattern of recurrence of such responses, Skinner demonstrated the fundamental orderliness of operant behavior and determined how many different variables affected such behavior. In *The Behavior of Organisms,* published in 1938, Skinner reported the results of his early experiments and described several behavioral processes including reinforcement, extinction, discrimination learning, and punishment. In that book, he also drew a clear distinction between operant and respondent (or classical) conditioning. The fundamental distinction is this: operant behaviors are controlled by their consequences whereas respondent behaviors are controlled by stimulus–stimulus pairings. This distinction may be clarified by contrasting the arrangements used by Skinner to study learning in rats with that used early in the 20th century by the famous Russian physiologist, Ivan Pavlov, to study learning in dogs.

Pavlov observed that food placed in the mouth of a food-deprived dog reflexively elicited salivation. When he arranged conditions so that the sound of a metronome immediately preceded food delivery, after several pairings the sound also elicited salivation, although it did not initially do so. Here, the capacity of the sound to control salivation depended on the pairing of two events, or stimuli: the sound of the metronome and the presentation of food.

Although he did not overlook the importance of respondent conditioning in his well-known book titled *Science and Human Behavior,* Skinner emphasized the importance of operant conditioning in the genesis and maintenance of inappropriate as well as appropriate human behaviors. He also argued that an understanding of operant conditioning provides an excellent basis for

developing rational and effective treatments for a wide variety of behavioral problems. His argument has proven to be valid. From the 1950s to the present time, interventions based on principles of operant conditioning have been demonstrated in controlled studies to benefit people with many different clinical problems. For example, a task force commissioned by Division 12 (Clinical Psychology) of the American Psychological Association reviewed the entire psychological treatment outcome literature. Their findings, which were reported in 1995, indicated that the vast majority of successful interventions were either behavioral or cognitive-behavioral in orientation. Such interventions rely heavily on the principles of operant conditioning.

The fundamentals of operant conditioning are presented in the following sections. The key to understanding operant conditioning is the premise that operant behavior is determined in large part by its historical consequences under particular conditions. Therefore, the probability that such behavior will occur under current circumstances depends on *(a)* the nature of the historical consequences of the behavior, *(b)* the extent to which current conditions resemble the historical conditions under which particular consequences occurred, and *(c)* the current importance to the individual of the events that historically were consequences.

II. THEORETICAL BASES

B. F. Skinner repeatedly pointed out the similarity between operant conditioning and natural selection. In both cases, processes of variation, selection, and retention are apparent. Neither Darwin nor Skinner was able to specify the mechanisms underlying these processes. Skinner believed, however, that changes in physiology were responsible for the control of behavior by its consequences. In recent years, some progress has been made in understanding the physiological processes responsible for positive reinforcement and other principles of operant conditioning. For example, there is evidence that synaptic change is involved in learning via operant conditioning. Future work by neuroscientists may provide a detailed account of the proximal mechanisms that underlie operant conditioning, and in that sense, explain why environmental events affect behavior in particular ways. Some scholars hold the view that there can be no adequate "theory" of operant conditioning until this occurs.

Others, however, hold the view that operant conditioning is itself an adequate theory, insofar as the work of Skinner and others has led to a system of principles and assumptions that are useful for explaining and predicting behavioral observations. We hold this view. There are a great number of specific interventions based on operant conditioning, and those interventions usually are closely tied to its basic principles. For this reason, in this section procedures are introduced at the time that the behavioral principles that form their basis are explained.

A. Consequences of Behavior

Operant behavior is primarily controlled by its consequences, which are events (stimuli) that are produced by (and follow) such behavior. A behavior's consequence(s) can either increase or decrease the future likelihood of the behavior occurring under similar circumstances. The term reinforcement is used to refer to the former relation (i.e., increased likelihood), whereas punishment is used to describe the latter (i.e., decreased likelihood).

1. Reinforcement

Reinforcement is evident when a response is followed by a change in the environment (reinforcer) and is thereby strengthened. The response-strengthening effects of reinforcement typically involve an increase in the future rate of the response, although other changes in behavior (e.g., an increase in response intensity) may also be indicative of a reinforcement effect. It is important to recognize that, by definition, reinforcement always strengthens targeted behaviors. If a behavior is reliably followed by a consequence and its future likelihood is not increased, then the consequence was not a reinforcer.

Psychologists have traditionally classified reinforcers according to whether they are added to (e.g., presenting food) or subtracted from (e.g., turning off a loud noise) the environment. When a stimulus strengthens behavior by virtue of being presented as a consequence, the stimulus is termed a positive reinforcer, and the outcome is termed positive reinforcement. A spouse who responds with sympathetic statements to a mate's complaints about feeling "down and worthless" is positively reinforcing the occurrence of such statements, if such consequences increase the likelihood of such statements occurring in the future. In this case, the effects of the spouse's attention would be both unintentional and undesirable. Unintentional positive reinforcement frequently plays a role in the development and maintenance of psychopathological behaviors.

Clearly, the "positive" in "positive reinforcement" does not mean "good"; instead, it refers to a stimulus being "added" to the environment. For example, abused drugs (e.g., alcohol, heroin, the nicotine in tobacco) are positive reinforcers for the behavior of people who abuse them, but they cause untold suffering for those individuals and others.

Of course, in many cases, positive reinforcement is used intentionally and to good effect. Praising a young girl when she says "Da Da" when her father picks her up is an example of such positive reinforcement. Here, praise occurs dependent on the child's vocalization, and the relationship between the response and the outcome constitutes positive reinforcement if the behavior is strengthened as a result of that relationship. A response-strengthening effect probably would not be evident after praise followed "Da Da" on a single occasion, however. The effects of reinforcement are cumulative, and a reinforcer often must be delivered on multiple occasions before behavior changes noticeably. Moreover, once an operant behavior is well established, the effects of reinforcement are primarily to maintain, not to increase, responding. There are obvious limits on how reliably and how rapidly a child can say "Da Da" when picked up by dad and, for most children, those limits are reached fairly quickly.

Like positive reinforcement, negative reinforcement also strengthens behavior, but it does so because behavior *(a)* postpones or prevents the delivery of an otherwise forthcoming stimulus, or *(b)* terminates or reduces the intensity of a stimulus that is currently present. The former relation (a) is termed avoidance conditioning and the latter relation (b) is termed escape conditioning. A spouse who calls home to say "I'm sorry, but I'll be working late tonight" before going to a motel with a lover is emitting an avoidance response, if so doing prevents unpleasant interactions on returning home and is for that reason strengthened. A person who terminates aversive questions regarding fidelity by saying "Don't be silly, you're the only one I want and love; a bunch of us just stopped for beers after work" is emitting an escape response if the questions stop and such responding is therefore strengthened. Although both responses are incompatible with having an honest and healthy marriage, and may well be maladaptive in the end, their historical short-term consequences are sufficient to maintain them. This is often the case with respect to troublesome operant behaviors, regardless of whether they are maintained by positive or negative reinforcement. Neither positive nor negative reinforcement is intrinsically good or bad. Both processes can foster and maintain pathological as well as adaptive actions. Moreover, both processes can be used clinically to alter troublesome behaviors that do emerge.

An important early step in the treatment of many troublesome operant behaviors is isolating the reinforcers that maintain those behaviors, as well as any events that reliably precede them. This process, termed functional assessment, can be performed in a number of different ways and provides a basis for developing rational interventions. Consider a child diagnosed with mental retardation who sometimes loudly taps a pencil on a classroom desk. Observation suggests that teachers attend to the child each time this occurs. This relation suggests, but does not prove, that attention from teachers is a positive reinforcer that maintains the troublesome behavior. If this is the case, teaching staff not to attend to the child's pencil tapping, and to attend to some incompatible and appropriate activity, such as working on assigned materials, might well be an effective intervention.

Although the distinction between positive and negative reinforcement is simple logically (see Figure 1), in practice it can be hard to tell the two apart. For example, does a person adjust the tuning on a blurry television because doing so in the past has produced a clear image (positive reinforcement), or because doing so historically has removed a blurry image (negative reinforcement)? Because of such difficulties, and the possibility of confusing negative reinforcement with punishment, there is good justification for not differentiating positive and negative reinforcement, although the practice remains common.

A variety of environmental changes (i.e., stimuli) can serve as reinforcers. Unconditioned (or primary) reinforcers strengthen behavior in people without any particular history. Many primary reinforcers are of direct biological significance. Air, food, and water are examples of positive reinforcers that fit into this category. Primary negative reinforcers, which organisms will escape (respond to terminate) or avoid (respond to postpone), include high-intensity stimulation in most modalities (e.g., loud noises, extreme temperatures).

In contrast to primary reinforcers, conditioned (or secondary) reinforcers gain their ability to strengthen behavior through learning. Conditioned reinforcers can be established through respondent conditioning, that is, by being paired with (i.e., immediately preceding the delivery of) primary reinforcers or other established conditioned reinforcers. They also can be established through verbal mediation. Money is the prototypical example of a conditioned reinforcer.

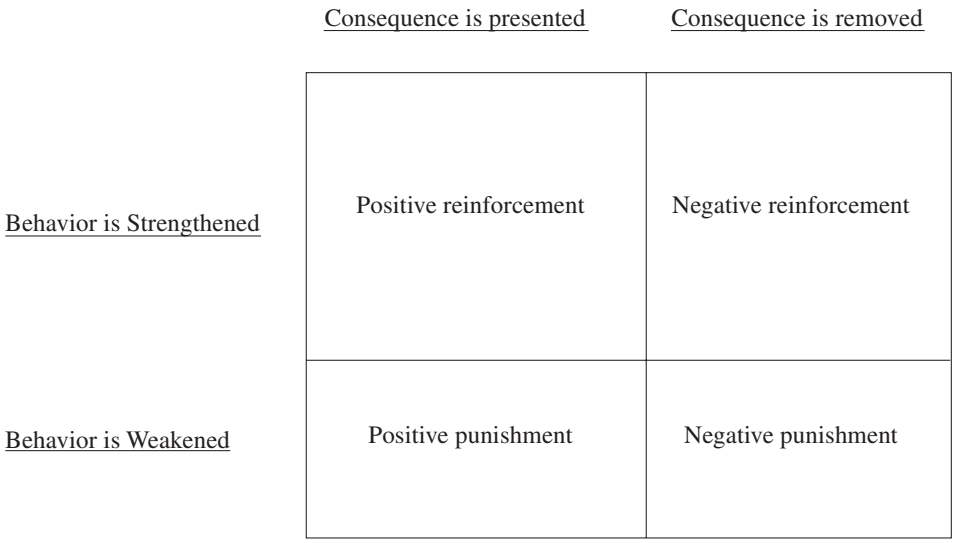

FIGURE 1 Operant Conditioning.

The stimuli that serve as conditioned reinforcers vary substantially across people because of differences in their conditioning histories. For instance, certain kinds of painful stimulation (e.g., being struck with a leather belt) are in some situations positively reinforcing for people labeled as masochists, but not for other individuals. This is probably because such stimulation historically preceded a powerful positive reinforcer, most likely sexual stimulation, for some people, but not for others. Being struck with a belt initially was not positively reinforcing, but it eventually came to be so by virtue of reliably preceding sexual stimulation. Like other conditioned reinforcers, it will maintain its reinforcing ability only if it continues to be paired (actually or verbally), at least occasionally, with some other reinforcer. Once a conditioned reinforcer is no longer paired with another reinforcer, it loses the ability to strengthen behavior.

Although reinforcers typically are construed as stimuli, in some cases it is the opportunity to behave in certain ways that a stimulus affords, not the stimulus per se, that is important. For instance, access to food allows eating and access to a beverage allows drinking. During the 1950s, David Premack developed a response-based model of reinforcement that emphasizes that the opportunity to engage in a more preferred behavior will reinforce a less preferred behavior, a relationship known as the Premack principle. In this context, preference refers to the relative amount of time that an individual will engage in the behaviors if unconstrained. If, for example, an eighth-grade student is given a choice between playing basketball and doing math problems and spends more time playing basketball, then that behavior is the more preferred one. It this is so, then according to the Premack principle the opportunity to play basketball (the more preferred behavior) will be an effective reinforcer for solving math problems. Parents could use this relation to increase the time that their child spent working on math. That is, in order to play basketball for a given period, the child first must solve a specified number of math problems.

Environmental events may reinforce responses that precede them even if the response does not actually produce the reinforcer. For instance, a pool player shooting the nine ball may say "roll fast, sweetheart" as the nine ball slowly approaches a pocket. The player is apt to repeat the phrase under similar conditions in the future if the ball drops, winning the game, even though there is no plausible mechanism whereby the verbal response could influence the ball or table. This type of reinforcement, termed superstitious or adventitious, may control behaviors that appear counterintuitive. It should be noted, however, that explaining a behavior as being superstitiously reinforced begs the question of how the behavior is actually controlled, unless the nature of the superstitious reinforcement is apparent.

a. Variables That Influence the Effectiveness of Reinforcers Several factors affect the degree to which reinforcing consequences strengthen behavior. Four factors are especially important.

1. The quality and magnitude of the consequence. Stimuli differ in their effectiveness as reinforcers across people and within people across circumstances. Isolating effective reinforcers for clients often is an important part of therapy, and specific procedures have been developed for identifying reinforcing objects and activities. For example, objects that will positively reinforce behavior in a person with mental retardation can be isolated by presenting putative reinforcers (e.g., a car, a whistle, and a toy dog) and determining which, if any, object the person contacts. If, for instance, a child regularly selects and plays with the stuffed dog, it is reasonable to assume that the toy will serve as a positive reinforcer for that person's behavior. The car and whistle might do likewise, but they probably will be less effective as reinforcers. In general, reinforcer effectiveness tends to increase with the magnitude or intensity of a given stimulus. For example, $20 is a more effective reinforcer than $2 for most people's behavior. Ultimately, however, reinforcer effectiveness must be directly assessed, not simply inferred.

2. The level of motivation relevant to the consequence. The importance of this variable, which is discussed in detail later, is evident if one considers the reinforcing effectiveness of a given kind of food (e.g., a hamburger) as a function of how recently and how much one has eaten.

3. The delay between the response and its consequence. In the absence of verbal mediation, delaying consequences substantially reduces their effectiveness as reinforcers.

4. The schedule of delivery of the consequence. Many different relations, termed *schedules* (or, if behavior is strengthened, schedules of reinforcement), can be arranged between consequences and the events that produce them. For example, under a continuous reinforcement schedule every response produces the reinforcer. Behavioral interventions are typically implemented initially on continuous schedules and eventually the schedule is changed to some type of intermittent reinforcement schedule. The term intermittent reinforcement indicates that some instances of the behavior result in reinforcement whereas others do not. Most human interactions occur under intermittent schedules. For example, the gambling of individuals who play slot machines is maintained under an intermittent reinforcement schedule. Not every coin dropped into the slot results in a payoff. In fact, most do not; but eventually one of the coins is followed by a reinforcing payoff. Casino operators program this arrangement, which would be technically described as a variable-ratio schedule, because it generates a high rate of responding that persists for a relatively long time, even if no reinforcers are forthcoming.

The schedule of reinforcement that is arranged is one variable that determines response effort, which is the amount of force, exertion, or time required to execute a response, or to earn a reinforcer. Research has shown that *(a)* response rates generally decrease as response effort increases, *(b)* behavior weakens more rapidly during extinction as effort increases, *(c)* individuals will escape from situations that require particularly effortful responding, and *(d)* individuals prefer lower-effort responding to higher-effort responding. Knowing these effects of response effort can be of benefit in dealing with clients' troublesome behaviors.

As a case in point, broken health care appointments are a major problem in medicine. Something in the neighborhood of 10 to 30% of appointments are broken, and in such cases patients fail to receive needed services, and the schedules of service providers are disrupted. One strategy for reducing the number of appointments that patients miss is to reduce the effort required to keep an appointment. This tack was taken in the 1980s by Pat Friman and his associates, who mailed a parking pass and a reminder to patients who had scheduled appointments at pediatric clinic. Their notion was that the reminder made it easier to remember the appointment and the parking pass made it easier to park, therefore, the effort required to keep the appointment was reduced. This cheap and simple intervention was effective, insofar as it reduced missed appointments by approximately 20%.

As the preceding example illustrates, understanding of schedules can be used to good advantage in dealing with some clinical problems. Consider as a second example, a child diagnosed with autism who often flaps his hands in front of his face during school sessions. The behavior is considered undesirable because it interferes with educational activities. A possible strategy for reducing hand flapping to acceptable levels is to arrange conditions such that access to some reinforcing activity or object depends on the passage of a specified interval during which hand flapping does not occur. If the response occurs, the interval is reset. Initially, only a short time without hand flapping is sufficient to earn reinforcement. Over time, and only when hand flapping is adequately controlled, the interval without responding required for reinforcement is increased. Such procedures, which often are termed differential-reinforcement-of-other-behavior (DRO) schedules, have been used to good advantage in reducing various problem behaviors.

But how is it that behavior can be reduced by reinforcement, which by definition always strengthens behavior? The answer is that the unit of behavior that is

reinforced under DRO schedules is an interval of not responding. For instance, if the child in our example were exposed to a DRO 5-min. schedule, 5 min. must elapse without hand flapping for the reinforcer (e.g., teacher attention) to be delivered. If the child is sensitive to this arrangement, 5-min. (or longer) intervals without hand flapping will increase in frequency. When this occurs, incidents of hand flapping will decrease. People can learn through reinforcement to omit as well as to emit particular responses.

2. Punishment

When laypeople think of learning-based procedures for reducing responding, they often think of punishment. Punishment occurs when behavior is weakened by its consequences, which are termed punishers. Many psychologists differentiate between positive and negative punishment, and the basis for the distinction is the same as that for distinguishing between positive and negative reinforcement (see Figure 1). If behavior is weakened because such responding adds something to an individual's environment, positive punishment is involved. If, however, behavior is weakened because such responding removes (or decreases the intensity of) some stimulus, the procedure is termed negative punishment.

Like reinforcers, punishers can be conditioned or unconditioned. The same processes that establish stimuli as conditioned reinforcers are also effective in establishing neutral stimuli as conditioned punishers. A common example of a conditioned punisher is the word "no." Without any prior training, a toddler will not have any specific reaction to "no." However, early in the life of most English-speaking people, the word is paired with unconditioned punishers and is thereby established as a conditioned punisher. For example, a young child may touch an electrical outlet in the presence of his parents. A quick, forceful grab of the child's arm (an unconditioned punisher), accompanied by a stern "no," will likely decrease the probability of the child touching outlets in the future. It will also be an initial step toward establishing "no" as an effective punisher. Of course, several pairings with another punisher may have to occur before the word alone has a response-reducing function. Once it does, the word can be used as a positive punisher to reduce various undesirable behaviors emitted by the child.

Relatively few people object to parents saying "no" to prevent their child from electrocution. But there has been considerable controversy about the use of punishment in therapeutic settings. Many therapists advocate the use of reinforcement-based procedures and consider punishment-based procedures unnecessarily intrusive. Others maintain that clients have a right to effective interventions and, if reinforcement-based procedures have failed, then other interventions that have been proven efficacious in similar cases, including punishment, should be used. A substantial literature documents the efficacy of punishment-based procedures when other interventions have failed, although applications have been largely limited to dangerous behaviors, such as self-injury, exhibited by people with developmental disabilities in controlled settings. When punishment is used, it typically is incorporated into an intervention package that also includes reinforcement procedures.

In general, negative punishment is better accepted than is positive punishment. When negative punishment is arranged, the consequence of an undesired behavior is that a person loses access to something of value. For example, exceeding the speed limit may result in a financial loss when the cost of a speeding ticket is paid. If the person is less likely to speed in the future as a result of receiving a ticket, negative punishment has occurred.

Two common procedures based on negative punishment are timeout and response cost. Timeout refers to the removal of access to positively reinforcing objects and activities for a preset time when a specified behavior occurs. For instance, when a child has broken a family rule (e.g., hit a sibling), the parents may arrange timeout by placing the child in a corner of the room with no access to interaction or toys for 3 min. If the behavior is weakened, negative punishment has occurred. Response cost typically involves removal of a specified amount of a reinforcer when an unwanted behavior occurs. Being fined for a traffic violation as described earlier is an example of response cost.

Overcorrection is another procedure based on punishment principles. It is based on the notion, originally advanced by David Premack and sometimes included as part of the Premack principle, that forcing an individual to engage in a less preferred behavior as a consequence of a more preferred behavior will punish the more preferred behavior. As an example of overcorrection, a child who has had a tantrum and thrown food on the dining room floor (a more preferred behavior) might be required to pick up the food and scrub the floor (a less preferred behavior). This procedure is apt to reduce the future likelihood of food being thrown and is appealing to many people because it is restitutional in nature—the child repairs the damages caused by inappropriate behavior. The primary problem with overcorrection is that it can be difficult to force people to engage in nonpreferred activities.

Critics sometimes argue that the effects of punishment are short lived. This may or may not be true and depends on specifically how punishment is arranged. Moreover, the effects of reinforcement also are short lived, in the sense that the changes in behavior produced by reinforcement eventually disappear when reinforcement no longer occurs. In general, operant conditioning procedures affect behavior only so long as they are in place, regardless of the specific nature of the procedures.

Other criticisms are that punishment produces undesirable emotional behavior, as well as escape from and avoidance of the individual who delivers the punisher. In addition, punishment may produce a generally passive and unresponsive individual. Although all of these adverse effects may occur, they are most probable with severe positive punishment. Mild punishment, both positive and negative, is a common and accepted part of human interactions that also occurs in many therapeutic contexts. For instance, a therapist treating a depressed client may say, "no, that's no really true – you're not that way at all" when the client describes him- or herself as helpless and unwanted. The intent is to reduce the future likelihood of the client making such statements. If the intent is realized, punishment has occurred, and the client has probably benefited.

In general, the same kinds of variables that influence the effectiveness of reinforcement also determine the effectiveness of punishment. Therefore, maximal response reduction is apt to occur when strong punishers are delivered after each occurrence of an undesired response. Making available an alternative and appropriate response that produces the same reinforcer that maintains the undesired response also increases the effectiveness of punishment. In practice, it often is difficult to arrange effective punishment for troublesome behaviors. For example, many people drive over the speed limit, although doing so may result in expensive tickets. They do so because the likelihood of receiving a ticket for a given instance of speeding is low, and the cost of the ticket is not great relative to most people's income. If every motorist received a ticket costing one month's pay each time they drove over the speed limit, and if this relation were assured, there would be few speeders.

3. Extinction

As long as a behavior produces an effective reinforcer, that behavior will recur. However, when responding no longer produces the reinforcer that once maintained it, the behavior eventually ceases. This process, and the procedure used to arrange it, is called extinction. The example described previously in which a child's striking of a desk with a pencil was eliminated by having teachers stop attending to the behavior is an example of extinction. Reducing abusers' intake of heroin by treating them with the drug naltrexone is another example of extinction. Here, naltrexone blocks the subjective and physiological effects of heroin, so that when a person takes the drug, there are no reinforcing consequences. Under these conditions, heroin self-administration eventually ceases. A serious problem, of course, is that individuals can stop taking naltrexone, ending the pharmacologically induced extinction.

Responses that have an extended history of reinforcement are likely to persist for a substantial period despite failing to produce a reinforcer. In fact, when extinction is first implemented, an individual may respond at higher rates or intensities than usual. This is known as extinction-induced bursting. Emotional responding and increases in the variability of behavior also commonly occur during extinction. As examples of these phenomena, consider what happens when a person puts a dollar in a vending machine, pushes a button in a manner that historically has produced a favored soda, and gets nothing. She or he is likely to curse, pound the machine, and push other buttons. The individual may even put more money in the machine. Eventually, however, machine-related behavior ceases.

The overall persistence of responding when reinforcement is no longer available is called resistance to extinction and is one measure of response strength. Even when responding falls to near-zero levels during extinction, the behavior remains in the organism's repertoire and may return quickly to previous levels if reinforcement once again becomes available. More interesting, when motivation relevant to a particular kind of reinforcer is high and responses that recently have produced that reinforcer are unavailable or ineffective, previously extinguished responses often occur. This phenomenon is termed resurgence.

Avoidance responses often persist for long periods, even indefinitely, in the face of extinction. In large part, this is because it is difficult for an individual to ascertain that conditions have changed. Successful avoidance responses prevent an event from occurring, and that event does not occur during extinction, unless extinction is arranged so that the event that served as a negative reinforcer is now presented repeatedly regardless of whether the historical avoidance response occurs or not. Under the latter condition, responding weakens relatively quickly.

4. Complex Consequence Systems: Token Economies

Both in everyday and therapeutic settings, consequences typically do not occur as single events in isolation. Instead, complex consequence systems may be implemented for several different behaviors simultaneously. One of the most common and effective therapeutic consequence systems is the token economy. Ted Ayllon and Nathan Azrin developed token economies in the mid-1960s as an intervention for chronic psychiatric patients. Since then, token economies have become widely accepted and are included as a standard part of many inpatient hospital treatment programs. A token economy typically allows a person to earn rewards and privileges (positive reinforcers) for emitting appropriate behaviors, such as attending therapy sessions and attending to personal hygiene. Typically, privileges are lost (i.e., negative punishment is arranged) when inappropriate behaviors, such as hoarding items or stealing, occur.

A token economy has three vital components: *(a)* tokens, *(b)* backup reinforcers that can be obtained with a certain number of tokens, and *(c)* schedules for reinforcement, punishment, and token exchange. The tokens function as conditioned reinforcers. Conditioned reinforcers have no intrinsic value, but they acquire the capacity to function as positive reinforcers because they can be exchanged for highly preferred items or for access to preferred activities. Generally, a person may earn tokens throughout a day or week and then trade them in for backup reinforcers at a preset exchange time and rate. Once appropriate behavior is established under stringent conditions, schedules can be altered to better approximate those that clients will encounter outside the inpatient setting.

B. Antecedent Influences on Behavior

The previous sections have considered how events that occur after operant behaviors (i.e., consequences) affect such responding. The following two sections discuss how operant behaviors are affected by prior, or antecedent, events.

1. Stimulus Control

As Thorndike suggested with the law of effect, the effects of reinforcers and punishers are relatively situation specific. That is, the behavioral effects of reinforcement (or punishment) that occurs in one context may not be evident in another context. Because of this, an individual's behavior often differs substantially across settings. Consider our previous example of a girl who has learned to say "Da Da" when picked up by her father. Initially, the same response might occur when another person, perhaps her mother, picked her up. However, before long mom would not evoke "Da Da," although dad would continue to do so. Another verbalization, probably "Ma Ma," might well occur when the mother picked up the daughter. In this situation, the person who holds her determines what the baby says and the child's verbal behavior is controlled by an antecedent stimulus, that is, by an event (i.e., the presence of the father or mother) that occurs before the behavior.

In general, stimulus control is evident when some characteristic of a response (e.g., its rate, magnitude, or probability of occurrence) differs in the presence and absence of a particular stimulus. Stimulus control can be excitatory or inhibitory. In the former case, the likelihood of the response occurring is higher in the presence of the stimulus than in its absence. In the latter, the likelihood of the response occurring is lower in the presence of the stimulus than in its absence.

Stimulus control is ever present in everyday life. It can be established through respondent conditioning, but most of the stimulus control that is evident in human behavior occurs as a result of operant conditioning, in which the consequences of behavior differ in the presence and absence of a stimulus. For example, in the example of the girl responding differently to her two parents, saying "Da Da" was reinforced (probably by attention, praise, and cuddles) in the presence of the father, but not the mother. Saying "Ma Ma," in contrast, was reinforced when mom, but not dad, picked up the child. As a result, the two people evoked different responses in their daughter.

In the context of operant conditioning, excitatory stimulus control typically occurs with discriminative stimuli. The term discriminative stimulus (S^D) is used to refer to a stimulus that *(a)* given the momentary effectiveness of some form or reinforcement, *(b)* increases the frequency of occurrence of a particular behavior because, *(c)* historically, that kind of behavior was more successful in producing reinforcement in the presence of that stimulus than in its absence. The mother and father are S^Ds in our example of the child learning to talk. Other examples of S^Ds controlling behavior include saying "4" when presented with "2 + 2 = __," beginning to play a musical instrument when a conductor's baton is raised, and taking food from an oven when the timer rings. In each case, doing so has "paid off" (i.e., been reinforced) in the past. A history of success in the presence

of an S^D gives that stimulus the capacity to control behavior. Behaviors controlled by S^Ds continue to be so controlled only if reinforcement is at least occasionally arranged for those behaviors. If not, stimulus control eventually disappears.

If the historical consequences of behavior are punishing in the presence of a particular stimulus, then that stimulus is likely to acquire inhibitory control over such responding. Consider, for instance, two college students at a party who are talking about their favorite TV show. An influential professor, who in the past has criticized (punished) their comments about TV, approaches them, and they stop talking about TV. This is inhibitory stimulus control—if the professor were not around, comments about TV would occur more frequently. Stimuli present during extinction, as well as during punishment, also may acquire inhibitory control over behavior.

In clinical situations, it is often important to identify the S^Ds that operate in a client's environment and, if possible, to manipulate those stimuli to evoke appropriate behavior. Assume, for instance, that a functional assessment revealed that a child made rude noises in class primarily because the student sitting in the next seat laughed appreciatively when such sounds occurred. Given this, it is reasonable to assume that the laughter reinforces the noisemaking, and that the child who laughs is an S^D for the other child's disruptive behavior. If so, moving the noisemaker to a seat where the other child could not be readily seen would be a simple, and probably effective, intervention. It would be made even stronger if the noisemaker was seated beside another classmate who was an S^D for working quietly on tasks.

In some cases, establishing appropriate stimulus control is an important therapeutic goal. Consider, for example, the treatment of a convicted date rapist. It may be the case that such an individual has not learned to respond appropriately to social stimuli, such as a potential partner moving away, or saying "that's enough." Persisting in the face of such stimuli may have resulted in sexual gratification in the past. Establishing appropriate stimulus control of sexual behavior would be a necessary part of the treatment of the rapist. Practical and ethical considerations, however, probably would make this task relatively difficult to accomplish, and verbal mediation or contrived feedback in controlled settings, not direct exposure to consequences in a dating setting, would have to be used to establish stimulus control. A potential problem with such procedures is that the stimulus control established in the therapeutic setting might not generalize to actual dating situations.

In some cases, simply presenting a stimulus under conditions where responding is reinforced may be insufficient to establish stimulus control. Suppose you were trying to teach a child how to learn math facts with flashcards. Your instruction might include presenting a flashcard (e.g., 10 ÷ 2 = ___), requesting the answer, and providing error correction or praise, depending on the response. You would probably consider the child successful if the answer were correct following three consecutive presentations of the card. In addition, you would probably assume that the child "knew" the answer to "10 ÷ 2." Suppose, however, that the child merely guessed at the correct answer initially and subsequently provided it not in response to the actual numbers printed on the card, but instead in response to the size and color of the numerals. Therefore, the answer "5" would be given to any set of two black numbers printed in 12-point font, not just to "10 ÷ 2 = ___." This example illustrates the problem of "attention" in stimulus control. Individuals occasionally respond to unintended features of an antecedent stimulus, such that effective stimulus control is not developed. To counteract this effect, it is crucial to correlate differential consequences with the presence of the specific antecedent stimulus features that should control the behavior. In our example, the child would need to be exposed to other flashcards bearing problems different from "10 ÷ 2 = ___," but of the same size and color. The response "5" would be reinforced only when it was appropriate to the numbers presented, and in this way attention could be focused on that dimension of the flashcard, which is the sole relevant dimension in this example.

As this example illustrates, discrimination training can be used to establish behavior so that it only occurs in the presence of a specific S^D. In discrimination training, only instances of the target behavior that occur in the presence of the target S^D are reinforced. All other behaviors are placed on extinction in the presence of the S^D. In addition, the target behavior is placed on extinction in the presence of all antecedent stimuli except the S^D. The degree to which you reinforce only the target behavior determines how "tight" the stimulus control becomes (i.e., the degree of stimulus discrimination). For example, a classroom in which student questions are answered following both hand raising and calling out would most likely appear somewhat chaotic. If, however, the instructor only answered the questions of students whose hands were raised, and the answers were reinforcing, then the class would appear more orderly. In other words, tight stimulus control over the students' behavior would be achieved.

In some cases, consequences occur only when two or more stimuli, or stimulus dimensions, are present, and as a result a conditional discrimination is formed. For example, a child asking (behavior) his parents (antecedent) for money (consequence) only on or after payday (conditional antecedent) constitutes a conditional discrimination. The behavior occurs only when both antecedents (i.e., parents and payday) are present because, historically, that was the only time that the behavior was reinforced.

2. Antecedent Stimulus Classes

The stimulus control of human behavior is subtle and complex. In many cases, a number of different stimuli control equivalent behaviors in the same person. That is, they are members of the same stimulus class and are functionally equivalent.

One way in which different stimuli can acquire the same function is through stimulus generalization, which can be conceptualized as the counterpart to stimulus discrimination. Generalization occurs when antecedent stimuli that share a physical resemblance with an established S^D control the behavior evoked by that S^D. For example, suppose a child learns to say "dog" in the presence of a dog. The child might later say "dog" in the presence of a cat, not because this behavior was previously reinforced, but instead because dogs and cats share certain physical similarities (e.g., four legs, fur, tails).

A second way in which stimuli can come to control the same behavior is by being correlated with the same consequences for that behavior. For example, a stop sign, a red traffic light, and a traffic control officer with an outstretched palm may constitute a functionally equivalent class of S^Ds for stopping a car. These physically different antecedents acquired the same stimulus control properties because of a shared history of reinforcement for stopping.

A third way in which functionally equivalent stimuli can be established is through a phenomenon known as stimulus equivalence. Stimulus equivalence is thought to be a product of learning certain conditional discriminations. Specifically, individuals learn that A = B and B = C. As a result of such learning, the transitive relation "A = C" automatically emerges, although it is not specifically trained. After the relation emerges, the stimuli A and C are functionally equivalent. For example, a person may learn that Jessie is a Harvard graduate, which can be construed as learning A = B (Jessie = Harvard graduate). That same person may also learn that Harvard graduates are exceptionally intelligent people, which can be construed as B = C (Harvard graduate = very intelligent person). As a result of learning these two relationships, the person would "automatically" know that Jessie was a very intelligent person and would respond to her by emitting whatever behaviors that person historically had learned to emit in the presence of "very intelligent people." Similar behaviors would be occasioned by anyone described as a Harvard graduate and, depending on the history of the person responding to them, a wide range of behaviors may occur in their presence. Some people, for instance, learn to avoid highly intelligent people. Others ridicule them, whereas some seek them out as companions. Stimulus equivalence plays an extremely important role in determining how humans behave, and researchers have demonstrated the relevance of the concept to areas as broad as language development and adult psychopathology.

3. Fading

A common intervention that achieves its effects due to stimulus control is fading. The purpose of fading is to transfer stimulus control from an S^D that currently evokes the desired behavior to a new S^D that should evoke the behavior. In a fading procedure, the S^D for a particular behavior is gradually removed while the new S^D is gradually introduced. Thus, the target behavior occurs throughout the procedure, only the S^Ds are altered. This can be beneficial in that the individual frequently contacts reinforcement for the behavior. There are two general categories of fading.

Prompt fading occurs when a response prompt is physically removed from an individual's environment. For example, an individual in rehabilitation for a traumatic brain injury might initially require physical assistance to walk. In this case, the individual is walking, although dependently, at the onset of rehabilitation. As therapy progresses, the physical assistance is gradually removed so that the patient walks independently. In this example, stimulus control was transferred from the S^D of physical guidance to the S^D of physical independence through prompt fading.

Stimulus fading occurs when a stimulus prompt is physically removed from an individual's environment. For example, a teacher might use ruled (lined) paper when teaching a child how to write. The lines could eventually be lightened and/or spaced closer together such that the child learns to write smaller and straighter text. In this case, the child's writing is reinforced throughout the fading procedure. Stimulus control was transferred from the S^D of dark/wide lines to lighter/narrower lines through stimulus fading.

4. Motivational Control

One factor mentioned, but not discussed, in the section dealing with variables that influence the effectiveness of reinforcers, is the level of motivation relevant to the consequence. In operant conditioning, "motivation" is often explained in terms of a behavior's reinforcer. That is, if an individual is "motivated" to perform a behavior, then there is most likely a reinforcer available for that behavior. Although this approach has been useful, an adequate account of motivation must include antecedent influences on behavior. The previous section described how events that occur immediately before behavior can influence responding. However, some events that occur immediately or long before a response can also affect its occurrence, as well as the value of its consequences (i.e., motivation). Such events are the focus of the next section.

5. Establishing Operations

In general, an establishing operation (EO) is an antecedent event that produces two effects. One is a function-altering effect, which momentarily changes the value of a reinforcer or punisher. The other is an evocative effect, which momentarily alters the likelihood of occurrence of behaviors that have been previously reinforced or punished. As an example of a function-altering effect, a period without any interpersonal interactions might make a conversation more reinforcing. In other words, we might say that deprivation (i.e., lack) of social interaction establishes a conversation as a reinforcer. Social deprivation probably also would have an evocative effect: in addition to establishing conversation as a reinforcer, it also increases the probability of behaviors that have been previously reinforced with attention (e.g., making a telephone call to a friend). Thus, EOs alter the effectiveness of reinforcers (or punishers) and alter the likelihood of occurrence of behaviors that have produced those reinforcers in the past.

It is important to note that an EO can make an event either more or less reinforcing (or punishing). For example, food deprivation increases the reinforcing effectiveness of food, but free access to food reduces its reinforcing effectiveness. It is also important to note that an EO's effects usually are not permanent. EOs characteristically produce relatively short-lived effects; such is the nature of "motivation."

EOs can be either conditioned or unconditioned effects. Unconditioned establishing operations (UEOs) produce their effects in the absence of any particular learning history. A clinically relevant example of a UEO is the duress that a person who is physically dependent on heroin experiences during withdrawal from the drug. During the highly unpleasant withdrawal syndrome, the effectiveness of heroin as a positive reinforcer increases, as does the likelihood of occurrence of behaviors that have produced heroin in the past.

In contrast to UEOs, conditioned establishing operations (CEOs) are developed through several different associative processes. That is, they are learned. An example of a CEO is the host of a TV game show saying to the audience, "I'll give $1,000 for every broken pencil you can show me." Following that statement, but not prior to it, broken pencils would have substantial reinforcing value. Behaviors likely to produce broken pencils (e.g., rummaging through purses), therefore, would be far more likely to occur.

One example of a clinical intervention that most likely achieves its effects via EOs is noncontingent reinforcement (NCR). NCR has recently been used to treat the undesired behavior (e.g., self-injury) of individuals with developmental disabilities. Before NCR is implemented, the reinforcer responsible for maintaining the behavior is identified through functional assessment. This reinforcer is subsequently delivered to the individual on a time-based schedule regardless of whether or not the undesired behavior occurs. In other words, the individual receives "free" access to the reinforcer. Hence, the "motivation" to engage in the behavior is reduced. In this case, the free delivery of the reinforcer is an EO that results in a reduced probability of undesired behavior.

Methadone maintenance treatment of heroin abusers is another example of a treatment with an EO component. Methadone "substitutes" for heroin, reduces the likelihood of withdrawal occurring, and decreases the reinforcing value of heroin and the likelihood of occurrence of behaviors that in the past produced heroin. Because many of those behaviors are harmful to the heroin abuser, as well as to other members of society, this is a desirable effect. So, too, is reduced contact with heroin.

C. Verbal Behavior

Humans are like other animals in many regards, but verbal behavior makes humans unique. Verbal behavior is the term that B. F. Skinner used to refer to what many people call language. In his 1957 book, *Verbal Behavior,* and in other writings, Skinner emphasized that talking, writing, and signing is operant behavior that affects the world indirectly, through the mediation of someone else's behavior. In contrast, nonverbal operant behavior affects the world directly. For example, consider a thirsty 3-year-old girl who is sitting in the living

room playing with her father. She can gain access to water by walking to the kitchen, getting a glass, and filling it with water from the tap. She can achieve the same outcome by saying, "Dad, please get me a glass of water." In the first case, the girl's actions directly produce water. Therefore, her behavior is nonverbal. In the second case, the girl's actions cause her father to behave in a way that produces water. Because of this mediation by another person, her behavior is verbal.

Verbal behavior is like nonverbal operant behavior in that it is acquired and maintained as a result of its effects on the environment. The specific environment that is affected by verbal behavior is a social one comprising other people. Verbal behavior is developed and maintained because it is reinforced by the actions of a social community that is taught, although not formally, to reinforce such behavior. Because different people reinforce different patterns of verbal responding, relatively strong audience control of verbal responding is common. As an example, consider how differently most people talk to friends, parents, lovers, employers, clergy, and police officers.

In general, verbal behavior allows speakers to ask for things (e.g., "Please get me a glass of water") and to describe the environment for others (e.g., "The tap in the kitchen isn't working"). Asking for things benefits the speaker, who often gets them, and may benefit the listener, insofar as they provide an indication of how the speaker is likely to behave. A speaker's description of relations observed in the environment, however, is apt to be especially useful for listeners. These descriptions may involve only stimuli ("When the stove is red, it's very hot"), antecedent stimuli and responses ("When the phone rings, answer it"), or antecedent stimuli, responses, and consequences ("When you hear a Beatles' song, be the first person to call in, and win $5,000"). Skinner called descriptions of relations among stimuli and responses rules.

Rules specify relations among stimuli and responses and usually change the behavioral function of those stimuli. For instance, after hearing a disc jockey say, "When you hear a Beatles' song, be the first person to call in, and win $5,000," a person who hears a Beatles' tune may well call the radio station. Absent the announcement, however, calling the station is highly unlikely. In this example, the announcement gives the Beatles song a capacity to control behavior similar to that of an S^D. The song is not an S^D, however, because the person has no previous history of calling in and winning. What she or he has, instead, is a history wherein following rules is generally productive. Whether or not a particular rule is followed by a given individual depends in large part on her or his prior experience with respect to the rule giver (and similar people) and the accuracy of similar rules provided in the past. We learn through operant conditioning to follow rules or to refrain from following them. For instance, a parent says to a child, "Don't touch the stove; it's hot and you'll get burned." Despite the rule, the child touches the stove and gets burned. As a result of the correspondence between real and described consequences, the future likelihood of rule following increases. If, however, the child touches the stove but is not burned, the future likelihood of rule following decreases.

The most important characteristic of rules is that listeners can learn from them. For example, a person can acquire new behavior, with very little effort, through rules such as "To get to the barbeque at my house, turn left on Main, turn left at the second light, and it's the fourth house on the right, 3117 Market Street." Without the rule, the listener would have to learn appropriate behavior through direct exposure to the environment. Imagine how difficult it would be to find 3117 Market Street in a large city with no map or directions. A rule makes doing so much easier. In fact, rules mimic the effects of classical and operant conditioning by allowing people to be affected by environmental relations that they have never directly experienced. Rule-governed behavior is of crucial importance to humans because it *(a)* provides for very rapid behavior change and *(b)* enables people to behave effectively without requiring direct exposure to environmental events that might prove harmful or ineffectual. Rules also can increase the effectiveness of delayed consequences. These are important, and often beneficial, effects.

Rules can interact with the consequences of behavior in three major ways. First, as noted earlier, rules can alter the behavioral function of consequences. A person who is exercising to improve health in the presence of a personal trainer may be told, "No gain without pain, make it hurt" while doing bench presses. This rule might alter the function of mild pain in the pectorals from punishing to positively reinforcing. In many cases, people who behave in the face of what appear to be unpleasant consequences are following rules that modify the behavioral function of those consequences.

Second, rules can alter the range of behaviors that are available to contact naturally occurring consequences. A depressed person who is repeatedly told to "Call your sister; she'll be glad to hear from you" probably is more likely to make the call, during which any of a variety of desirable verbal responses might be reinforced.

Third, rules can alter a person's sensitivity to consequences that are contacted. In general, if a rule accurately specifies the consequences of a particular kind of behavior, then sensitivity to those consequences increases. If, however, the rule is inaccurate with respect to actual consequences, then sensitivity to those consequences decreases. Rules can foster a kind of behavioral rigidity, wherein a person responds in a manner consistent with the rule, almost regardless of the consequences of so doing. Because of this, it is crucial that accurate descriptions of operant interventions be provided before those interventions are put in place. A token economy, for example, is apt to produce faster and greater improvements if the schedules it comprises are clearly stated to participants than if they are not.

Rules can be covert as well as overt; "talking to one's self' is behavior that is not fundamentally different from talking aloud. Rules also can be self-generated as well as provided by others. In either case, they sometimes provide inaccurate descriptions of relations among events in a person's environment. For instance, a person with anorexia may say, "When I weigh over 100 pounds, people think I'm fat and ugly." In fact, this is untrue. People think (i.e., say) that the client is seriously underweight at 100 pounds and that 130 would be a far better, and more attractive, weight. Were the higher weight to be attained, the actual consequences are very different from those described by the client. By following an erroneous rule, however, the client will never encounter those consequences. Moreover, even if they are encountered, other "bad" rules might change their function. If, for instance, the client got up to 125 pounds and several friends offered compliments, the client might well say "Everyone humors a fat person," or "That's what they say to my face; behind my back they're laughing." Either rule would prevent the compliments from functioning as a reward.

Most humans are verbal organisms, and most outpatient therapies are based heavily on verbal interactions between patients and therapists. In many cases, the aim of those interactions is to alter the client's rule-governed behavior, although they are not always conceptualized in this manner. In recent years, Steven Hayes and his colleagues have developed a comprehensive analysis of the role of verbal behavior, and of rules specifically, in human psychopathology. For example, Hayes and Ju offer the following explanation of suicide:

> The purposeful act of taking one's own life is an instance of rule-governed behavior based on derived relations involving time and the verbal construction of expected consequences of action … For example, "death" can participate in if … then verbal relations with many other events that have acquired desirable functions both directly and through the transformation of stimulus functions tied to direct events, such as, "If I am dead, I will no longer suffer, everyone will be happier, they will all be sorry for what they've done to me, I will finally be at peace," and so on … [Death therefore] becomes a verbal consequence of importance … Once death becomes a verbal consequence of importance, rules can be followed that give rise to it … However, the impact of such rules as "If I die, then I will be at peace" depends upon the degree to which they conflict with other functional rules, such as "Suicide is an offense against God." If is for this reason that the psychotherapies and religious institutions around the world strive to create meaning, values, and purpose in the lives of individuals.

Hayes and his colleagues have developed a therapeutic technique, "acceptance and commitment therapy" (ACT), that is intended to overcome unhealthy forms of verbal control and to foster healthy forms. Although relatively new, ACT appears to hold promise for treating a variety of serious behavioral problems in clients for whom direct control of the environment is impossible.

Although altering the rules that an individual generates and follows can be a valuable therapeutic technique, it is important to realize that these activities are themselves influenced by their consequences. If there is nothing in a client's everyday social or nonsocial environment to support (i.e., reinforce) appropriate rule-governed behavior, then such behavior usually will not endure over long periods. In some cases, naturally occurring consequences in the client's everyday environment are sufficient to support appropriate behaviors that emerge. In other cases, however, contrived consequences may be needed. A significant problem in providing treatment for outpatients is arranging such consequences.

III. APPLICATIONS AND EXTENSIONS

The behavior of essentially all people is sensitive to operant conditioning, and procedures based on operant conditioning have proven useful in dealing with an enormous range of problems in clients with a wide variety of diagnostic labels. Many of the early therapeutic applications of conditioning principles involved children or people with developmental disabilities, and a few skeptics have argued that consequences do not

affect the behavior of verbal adults. This contention is patently untrue. What is true, however, is that it often is difficult or impossible to arrange effective consequences for the behavior of adult humans unless they are in tightly controlled settings (e.g., inpatient treatment wards), which rarely occurs. Procedures based on operant conditioning obviously can be effective only when they can be consistently implemented, and they cannot be effectively implemented for some clients in some settings. When this occurs, therapists must attempt to alter rule-governed behavior and hope that naturally occurring consequences are sufficient to maintain any appropriate behaviors that are generated.

Moreover, in verbal individuals rules can diminish sensitivity to consequences. This may make it appear that these individuals are not affected by the consequence of their actions but, in fact, they are—the primary reason that they follow rules today is that behaving in similar fashion paid off in the past. Rule-governed behavior, which is indirectly controlled by consequences, is just as important as is behavior directly controlled by its consequences. Effective therapists work to change the two in parallel.

With certain clients, procedures based on operant conditioning may be more effective as adjuncts than as primary treatments. For example, antipsychotic drugs typically are first-choice treatments for schizophrenia and related conditions, even though operant interventions are useful in dealing with specific behavior problems in individuals with these conditions. Combined pharmacological and conditioning treatments also are useful in treating behavior problems in people with conditions other than schizophrenia, including depression and attention-deficit/hyperactivity disorder (ADHD).

Client diversity is not a consideration with respect to procedures based on operant conditioning in general, although appropriate sensitivity to this issue is required to evaluate the acceptability and probable effectiveness of specific interventions. Some clients object to interventions based on the manipulation of consequences as unnatural, controlling, or contrived, and such objections must be overcome if treatment is to have any hope of success.

IV. EMPIRICAL STUDIES

A great deal has been written about operant conditioning and clinical interventions based on it, and many research articles have been published. For example, a recent search of the psychological literature (using the PsycINFO database) with the keywords "operant conditioning" yielded 7,844 publications. It is very difficult to summarize this vast literature, save to point out that procedures based on operant conditioning are useful in treating a wide range of behavioral problems in many different kinds of clients in a variety of settings. As noted previously, results of a 1995 evaluation of the entire treatment outcome literature in clinical psychology indicated that the vast majority of successful interventions rely heavily on the principles of operant conditioning.

Such interventions have been used to good avail in dealing with behavioral problems in children and adults without diagnostic labels, in people with developmental disabilities, and in individuals with various mental disorders (e.g., ADHD, schizophrenia, depression, anxiety disorders, eating disorders). People with brain injuries and other medical problems (e.g. obesity, hypertension) also have responded favorably to operant interventions. Of course, not all clients respond favorably to a given intervention, and no client is helped by an ill-conceived treatment, regardless of its alleged theoretical basis. Over the years, poorly trained and misguided caregivers have placed children in closets for long periods as a kind of "timeout." Others, equally misguided, have deprived people with mental retardation of clothes and food, which they had to work to earn back, as a kind of "reinforcement." Such treatments cannot be justified and would not be recommended by any legitimate clinician.

V. CASE ILLUSTRATION

Jack is a 15-year-old male diagnosed with ADHD. He currently participates in outpatient therapy with his parents to address a variety of their concerns regarding his behavior. The presenting concerns include inappropriate behaviors at home (e.g., noncompliance, disrespectful language, breaking curfew) and at school (e.g., noncompliance, fighting, failure to complete homework). Most of these inappropriate behaviors have developed and worsened in the 2 years since Jack started high school.

The behavior therapist has decided to use a token economy to both increase appropriate behaviors (e.g., homework completion, compliance) and decrease inappropriate behaviors (e.g. fighting, breaking curfew). The token economy includes the following components: *(a)* tokens, *(b)* backup reinforcers, and *(c)* schedules for token delivery and removal and an exchange

rate. In addition, the token economy provides consequences for clear, observable behaviors and provides unambiguous criteria for delivering those consequences. The token economy was developed through collaboration among the parents, therapist, and Jack. Jack's parents had final approval on the details of the treatment program.

The tokens used for Jack are points recorded in a check register by his parents. Only his parents can deliver or remove points, and they keep track of all delivery and exchange. Jack can earn a preset number of points each time he completes certain behaviors and he can lose a preset number each time he engages in other behaviors (see table 1). Points are exchanged on Saturday morning for a variety of activities and privileges (i.e. backup reinforcers) for Saturday and the next week. The list of these backup reinforcers was generated by having Jack provide a list of items and activities for which he would like to work, which ensured a variety of potentially effective reinforcers. His parents then either eliminated items (e.g. a new stereo) or approved items (e.g., watching movies) from Jack's list and established a point exchange rate for the Saturday exchange (see table 1). Each week in session the therapist reviewed the targeted behaviors and assessed Jack's progress and helped the family make changes in the token economy when necessary. Jack's progress was tracked by counting the number of points earned each week and counting the number of appropriate and inappropriate behaviors occurring each week.

The baseline condition indicates that Jack had high rates of problem behavior before the implementation of the token economy. The first week of the operant treatment resulted in a decrease in problem behavior and an increase in appropriate behaviors. Jack earned several points and was able to trade them in on the first Saturday for a delayed curfew (60 min.) on Saturday night and the opportunity and funds to see a movie. His progress continued in the next 3 weeks of treatment with even greater decreases in problem behaviors. The family continued to use a version of this token economy successfully and eventually Jack's behaviors remained at a satisfactory level as the treatment system was stopped.

Several principles of operant conditioning are evident in this case example. First, there is a schedule of reinforcement included in the token economy. Occurrences of an appropriate target behavior resulted in a positive reinforcer in the form of points delivered under a specified schedule. These points are conditioned reinforcers because they have no inherent reinforcing value but acquire such value because they can be exchanged for the backup reinforcers (i.e., items from the menu). A variety of reinforcers, selected by Jack, is available to ensure high quality reinforcers and to prevent satiation (i.e. maintain motivation). The number of points gained or lost for performing a behavior depends on the importance of that behavior. Because each occurrence of an inappropriate target behavior resulted in the immediate

TABLE 1
Token Economy Targets, Point Schedule, and Reinforcer Menu

Target behaviors

A. Complete homework assignment: An assignment is defined as all task materials due the next day in one particular class (e.g., algebra, biology). The assignment must be completed by 9:30 p.m.

B. Meeting curfew: Jack must be inside the house by 9 p.m. with no arguing, complaining, or prompting from his parents.

C. Following instructions: If Jack is instructed to do something (e.g., set the table, clean up your room, put away your shoes, lower the stereo), he will complete the task (e.g., turn down the stereo) or initiate completion of the task (e.g., cleaning room) within 5 min.

D. Fighting: Fighting is any activity that is called fighting by school personnel.

E. Using respectful and disrespectful language: Respectful language includes "please," "thank you," "yes/no maam/sir," and other phrases in an appropriate tone and volume of voice. Disrespectful language includes name calling and agreed-on statements (e.g., "shut-up," "leave me alone," "no way.")

Point schedule

Appropriate behavior	*Points earned*
Completion of each homework assignment	1
In house by 9 p.m. (curfew)	3
Following instructions within 5 min.	1
Respectful language	1
Inappropriate behavior	*Points lost*
Fighting	15
Disrespectful language	5

Back-up reinforcer menu

Item/activity	*Point cost*
Extended curfew (1 hour/1 day)	40
Movie (paid by parents)	25
Driving range with Dad on Sunday	25
$5 and trip to video arcade	25
Rent 2 movies	15
(This menu will be edited every 2 weeks)	

removal of points, a schedule of negative punishment is in effect. Finally, the relations between behavior and its consequences are explained carefully to Jack in the interest of generating appropriate rule-governed behavior and maximizing the sensitivity of his behavior to its consequences.

VI. SUMMARY

"Operant conditioning" does not refer to a single therapeutic technique. Instead, the term refers to an important form of learning, or conditioning, in which behavior is primarily controlled by its consequences. The consequences of a particular kind of behavior in one setting can either increase or decrease the probability of such behavior occurring in similar settings in the future. Descriptions of the consequences of behavior, called *rules,* can have similar effects. A great deal is known concerning how consequences affect behavior, and this knowledge has been put to good use in designing interventions shown to be effective across a wide range of client populations, behavior problems, and settings.

See Also the Following Articles

Classical Conditioning ■ Conditioned Reinforcement ■ Differential Reinforcement ■ Extinction ■ Fading ■ Functional Analysis of Behavior ■ Negative Punishment ■ Negative Reinforcement ■ Positive Punishment ■ Positive Reinforcement ■ Token Economy

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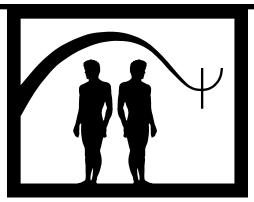

Organic Brain Syndrome: Psychotherapeutic and Rehabilitative Approaches

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GLOSSARY

cognitive therapy/remediation Refers to several forms of rehabilitation/treatment addressing the cognitive and behavioral consequences of brain damage. This treatment involves procedures that address impaired functions by using a variety of computer programs, as well as other exercises. In addition, cognitive therapy involves the teaching of a variety of compensatory strategies to increase functioning despite residual impairments. Cognitive therapy may include supervised practice of real-life situations outside the office. Cognitive therapy refers to treatment of individuals with brain damage and is distinguished from the psychotherapeutic technique by the same name.

organic brain syndromes (OBS) Refer to dysfunctions in the intellectual/cognitive, behavioral, social or emotional spheres, whose primary effective cause is brain pathology. These syndromes are defined in contrast to dysfunctions in the same spheres, whose etiology is believed to be primarily emotional or psychological.

traumatic brain injury (TBI) A category of OBS, used to describe the cognitive, emotional, and behavioral consequences of traumatic injuries to the brain (such as an injury sustained in a motor vehicle accident, or as a result of a gunshot wound). TBI is contrasted with other forms of brain pathologies, such as tumors, strokes, infections, and degenerative conditions, that do not result from a sudden, violent event, although the latter's consequences can be no less traumatic to the individual.

I. OVERVIEW OF ORGANIC BRAIN SYNDROMES

The term organic brain syndrome (OBS) refers in the literature to both organic mental disorder and organic brain disorder. This reflects the dualist mind–body distinction, which gave rise to it. That is, it implies a distinction between "physical" and "mental" causes of behavioral-emotional-cognitive dysfunction. The latter are also known by the general term psychopathology, but can there be an organic mental disorder, or even normal behavioral/cognitive functioning that is not related to brain function (try functioning without it)? And can there be a brain disorder that is not "organic," in the sense that it refers to something other than normal or impaired function of brain tissue? Current knowledge suggests a negative answer to both questions. There is a long tradition of dualism in psychiatry of "functional" and "organic" disorders (expressed in the diagnosis of OBS) that reflects the belief that some behavioral abnormalities originate in brain pathology, whereas others result from "psychological" or "functional" factors, such as

maladjustment in the domains of emotional, social, and familial function.

Today it is recognized that a variety of medical conditions can cause the full range of psychiatric syndromes and symptoms. Therefore, many diagnostic categories of psychiatric symptoms resulting from specific medical conditions are recognized and are typically classified together with other clinical entities with similar clinical manifestations. When applied judiciously, OBS has important diagnostic, prognostic, and therapeutic implications: it implies that the appropriate strategy for dealing with the symptoms is to attend to the underlying brain pathology, whereas the behavioral-affective manifestations may be of secondary concern. To the extent that OBS is secondary to some underlying brain pathology, and to the extent that this pathology is treatable, the treatment of choice is medical intervention. However, for various forms of OBS (for example, degenerative disease), medical intervention may be limited to the pharmacological management of symptoms related to behavioral problems. For other subcategories of OBS, such as mild to moderate TBI or strokes, medicine offers little beyond symptomatic relief, and it is left for other professions to provide rehabilitation of impaired functions. It is therefore important that practicing clinicians consider the various forms of OBS in their differential diagnoses, because brain pathology can give a spectrum of psychiatric symptomatology, and because many of these disorders may be reversible with medical intervention. For similar reasons, the presence of documented brain pathology, in the context of psychiatric symptoms, may preclude common psychotherapeutic approaches. Thus, for example, insight-oriented psychotherapy for a patient whose insight is impaired by frontal lobe damage is quite ineffective.

As brain tissue does not regenerate to an appreciable extent, damage resulting in OBS, is in a sense "irreversible." Thus, many forms of OBS result in permanent dysfunction. In cases of degenerative conditions, the dysfunction gets worse. But in many other forms, such as in cases of TBI, various infections, and strokes, when occurring in the context of otherwise healthy individuals, where some form of new learning can still take place (which may be well into the 7th or 8th decades of life), functional improvement can take place. In such cases, motivation to exert the effort required, therapeutic intervention and environmental support are the main ingredients in turning the consequences of OBS around, and returning the individual back to his or her premorbid level of functioning, as quickly as possible. In this article, the focus is on the consequences and treatment of TBI, but it should be emphasized that these are appropriate for all other forms of OBS where there is a potential for recovery.

II. DESCRIPTION OF TRAUMATIC BRAIN INJURY

Traumatic brain injuries (TBI) do not form a well-defined category of symptoms, as injuries vary in their severity and location within the brain. This category of syndromes is the leading cause of OBS among young people and is the form of OBS most likely to come to the attention of psychotherapists. TBI include a large variety of syndromes, with varying degrees of disabling symptoms and pathologies. There is a considerable body of research on the topic, and space allows for only introductory discussion. TBI can result in a wide range of psychiatric and cognitive symptoms. No two traumatic injuries are alike, and the clinical picture following brain injury, as well as long-term adjustment, are always a combination of premorbid personality, psychological adjustment, intelligence, and the extent and location of the injury, together with the availability and quality of treatment and the patient's social support system. Thus, any prior history of drug or alcohol abuse, in itself a risk factor for TBI, may complicate both diagnosis and return to "normal" functioning. In part due to the age of the population with head injuries, there is typically significant recovery, albeit rarely back to the premorbid level of functioning.

Brain traumata are usually classified into cases of severe, moderate, or mild injuries, according to scores on the Glasgow Coma scale (GCS, a 15-point assessment tool, using measures of verbal, motor, and eye-opening responses), and on the length of time the individual has been unconscious. Roughly speaking, loss of consciousness for less than 20 min and a GCS of 13 to 15 are considered to reflect a "mild" injury. Any history of coma beyond 6 hr with a GCS of 3 to 8 is considered to indicate "severe" injury. However, there are substantial variations in the severity of symptoms and outcomes that do not respect the classification described earlier. Most often the injured person has amnesia for the injury, and depending on the severity of impact to the brain, there is often retrograde amnesia as well (amnesia extending from the onset of injury backward in time). The length of retrograde amnesia varies among injuries but does not correlate well with severity. There is often posttraumatic amnesia as well, referring to the

period following onset of injury, during which the patient is alert but for which the patient later exhibits amnesia. Posttraumatic amnesia provides a measure of the severity of the impact to the brain and gives some indication of the prognosis (although variations are common). In addition, short-term memory deficits and impairment in new learning following brain injury are ubiquitous and are referred to as anterograde amnesia.

Traumatic brain injuries can result from a penetrating foreign body (as from a gunshot wound). They can result from acceleration–deceleration of the head, as in cases of motor vehicle accidents, falls, or from a blunt blow to the head, in which case they are referred to as closed head injuries. The mechanism of injury to brain tissue is different in each type, and from one situation to another. In some cases intracerebral bleeding occurs, and in some cases focal tissue damage can be seen on brain imaging. But almost always there is diffuse injury as well, involving disruption of cell membranes, especially in the brainstem and shearing of neuronal processes (axons). In addition to actual tissue damage, TBI may result in other pathological processes that may affect cognition, such as tissue swelling (edema). TBI can result in clinical pictures ranging from persistent vegetative state to a seeming absence of residual neurological symptoms. When the injury is severe, the individual usually does not return to premorbid functioning and may need lifelong assistance in all aspects of living, even after a long course of rehabilitation. In moderate and mild cases, a fast return to functioning is often possible, although residual deficits may, and often do, remain for the rest of the person's life, as damaged brain tissue does not regenerate.

Occasionally, the brain injury impairs the patient's insight (expressed as the inability to monitor and judge one's own behavior and/or thought process), so that the patient is not aware of the deficits and may even deny them altogether. This impairment makes intervention and rehabilitation much more difficult, as the patient sees no reason for the rehabilitation efforts, and cooperation may be limited. Nevertheless, intervention with the aim of improving overall functioning may still be necessary. Needless to say, when insight is impaired by TBI, or any other brain damage, any attempt to treat the disorder with insight-oriented therapy is doomed to failure (see later for more details on treatment).

Mild TBI can present a challenge to the clinician, because such injuries are often dismissed as representing either exaggeration of symptoms for secondary gains (especially when litigation is involved), or outright malingering. Such cases often received psychiatric diagnoses in the past, because the typical symptoms were headaches, concentration problems, memory loss, depression, mood lability, and even personality changes, among others. Nevertheless, research over the past 30 years indicates that between 5 to 10% of mild TBI, despite only brief loss of consciousness, or merely short alteration in consciousness, and without any symptoms of major impairment in thought processes, intellectual ability, or language skills, do not return to normal functioning. This symptomatology has been supported by techniques of functional imaging of the brain, such as positron emission tomography, and by research in patients who are not involved in litigation, where financial incentive may seem the basis for the complaints. Such disability was found to be due to residual symptoms of poor short-term memory, reduced attention/concentration (especially on tasks of divided attention), impaired organization, and reduced speed of cognitive processing, together interfering with cognitive performance. This clinical presentation is known as the postconcussion syndrome (PCS). This subtype of TBI can be seen in the absence of litigation, and there is evidence that microscopic changes do take place in the brains of these individuals, such as axonal shearing. The microscopic changes, however, are too subtle to be visualized by any imaging technique, and most often a general neurological evaluation produces no focal findings.

Deficits associated with the PCS can only be documented on comprehensive neuropsychological testing. In addition to the cognitive deficits mentioned earlier, patients with the PCS often suffer from headaches for many months, sleep disturbances, fatigue, and depression. Occasionally, a change in personality is noted, and symptoms of anxiety, irritability, dizziness, and apathy are present. Individuals who had been high functioning prior to the injury are particularly disturbed by PCS, even when their test performance is still in the normal range for the general population. That is due to their intact insight, so they are acutely aware of their deficits. Patients with the PCS frequently have the added burden of "convincing" their families that something is wrong with them; it is not obvious, given the relative minor nature of their injury, that they indeed sustained a lasting injury to their brain (see later for further discussion of treatment and diagnosis of PCS).

Recovery from any TBI is most rapid in the first 6 months following the injury, with continuing noticeable recovery up to about 1 year. Over the first year, the rate of recovery decreases gradually. Beyond 1 year, additional recovery may still take place, albeit at a frus-

tratingly slow pace. Depending on the age at the time of the TBI, patients have shown recovery for several years postinjury, especially with regard to increased independent functioning. However, the latter depends to a significant extent on the social support system of the patient, availability of rehabilitation, and motivation.

One of the most significant, and almost universal, consequences of TBI and any other form of brain damage is affective disturbance. Most commonly, depression is seen, but other mood disorders can result as well. Thus mood swings, anxiety, phobias, hypomania and even posttraumatic stress disorder have been reported following TBI. Sometimes mood disorders reflect the effects of brain damage directly; in other cases, affective symptoms (mostly depression) are secondary and reactive to the cognitive deficits. A combination of both etiologies together is also possible. Mood disorders themselves in TBI can impair normal functioning, and therefore they require professional attention.

III. DIAGNOSTIC ISSUES

In cases of severe TBI, there is little question as to the presence of underlying brain damage. However, in cases of mild to moderate head injuries, especially where brain imaging reveals no positive findings of damage, and the neurological evaluation also produces no pathological findings, the diagnosis of TBI requires a different approach. Such diagnosis is crucial when litigation is involved, as motivation becomes part of the clinical question of diagnosing brain damage. It is also essential when the injury is mild, but the individual complains of persisting problems in function.

The most effective approach to identify the presence of cognitive deficits and determine their extent, to date, is the neuropsychological evaluation. The neuropsychological assessment, through the use of standardized tests, provides the most accurate, noninvasive, picture of the functional status of the individual, which in turn allows the inference of brain dysfunction, if present. Neuropsychological testing utilizes a comparison between the estimated premorbid, intact intellectual function of the individual, against his or her present performance on cognitive testing. This comparison is done under the assumption that the overall cognitive performance on different cognitive tasks of a given individual is fairly uniform within a certain range of variations. Therefore, an observed large deviation from the expected performance in a given skill, relative to the estimated intellectual functioning of the individual, raises the suspicion of impairment. If such a deviation is consistent with similar findings in other cognitive skills, the latter known from research to be readily affected even by mild brain damage, a diagnosis of TBI (or PCS) is made. Because TBI involves, by definition, pathology of brain tissue, it is likely that even if the presenting symptoms of TBI seem to be psychiatric (say, depression, mood swings, or poor concentration), some cognitive deficits will be present as well. These are most likely to be short-term memory and attentional deficits. In fact, despite the prevailing notion that depression results in cognitive deficits on testing, recent research on this topic has found little, if any, correlation between scores on neuropsychological tests and depression. Problems with daily and occupational functions, however, can be and often are seen with depression. As neuropsychological assessment identifies the presence or absence of brain pathology, positive findings on neuropsychological testing greatly increase the likelihood that the underlying cause of the patient's complaints is brain pathology. Neuropsychological testing is appropriate in mild to moderate cases of TBI, and where brain damage is known to be present (e.g., in cases of severe TBI with damage seen on brain imaging). The neuropsychological assessment should also be used to determine the extent of dysfunction and to aid in developing an optimal treatment plan.

IV. THEORETICAL BASIS OF TREATMENT

The World Health Organization formulated a part model to conceptualize deficits following TBI: impairment, disability, and handicap. Impairment refers to deficits in the actual underlying cognitive skills (such as memory, attention, fluency, inhibition of action). Impairments are detailed on the neuropsychological evaluation. Disability refers to deficits noted in the injured individual's function in everyday life (for example, memory impairments may cause problems in carrying out the task of shopping for food, keeping appointments, etc.). Handicap refers to difficulties imposed on the injured person by the demands of the outside world (e.g., a return to work may be impossible due to disability in dealing with more than one thing at a time). Within this framework, improvement in disabilities may not necessarily result from improvement in impairments: using a list for shopping can lead to improvement in performance of this task without any change in the underlying memory impairment. Nor is

an improvement in a disability by itself a guarantee for progress of a handicap: the use of a list may not suffice to overcome the memory demand required by taking an oral examination at school. The goals of treatment in TBI are improvements in both disabilities and handicaps, although often impairments are targeted as well, especially within the initial phase of treatment.

Any therapeutic approach must be based on the presumption of a potential for recovery. Indeed, it is a common observation that people after TBI recover to some extent or other, often even spontaneously, in the absence of intervention. What does this recovery represent in terms of brain functions? TBI results in several pathophysiological (i.e., abnormal) processes in brain tissue that have been identified experimentally. Some of them (e.g., swelling, or edema) in and of themselves may cause disruption in normal functions beyond the effect of the brain damage itself. Thus, when swelling resolves, for example, it is accompanied by some recovery of TBI symptoms. As brain tissue does not regenerate, further functional recovery involves, most likely, (1) some measure of reorganization in tissue functions (perhaps the assumption of function by a healthy tissue heretofore not specialized for the impaired function), combined with (2) the residual function of damaged neuronal networks. But beyond the recovery of basic perceptual, conceptual, memory, attention, and motor skills, functional recovery observed can, and often does, reflect (3) the development of compensatory strategies. Various combinations of these three processes most likely form the basis for observed improvement following injury.

What we know from functional brain imaging about the neuroanatomical substrate of recovery is that reorganization takes place shortly after an injury to brain tissue. New neuronal networks seem to take over functions that premorbidly were subserved by the now-damaged tissue. But in addition, new learning can take place in neurologically intact individuals even into the seventh decade of life, albeit at a reduced rate and extent. Thus, there are good reasons to believe that as long as healthy, viable tissue remains after trauma, the individual may still be able to learn new tasks, or be capable of doing old tasks in new ways (i.e., compensation for deficits). Such new learning involves, quite likely, formation of new synapses (contacts among nerve cells), changes in membrane properties and firing characteristics of nerve cells, as is the case with learning in general. It is true, however, that even mild TBI is likely to reduce the overall capacity of the nervous system, so that any new learning requires more time and effort, depending on the extent of injury.

The general principles forming the basis for recovery outlined earlier cannot provide detailed guidelines for addressing a specific impairment or disability in a specific way. As individuals present with different injuries, different premorbid abilities, occupational background and adjustment, as well as varying psychosocial and familial contexts, treatment must be tailored to the individual needs of the patient. Individualizing treatment implies that long-term goals and specific treatment plans are synthesized from all the factors known to affect the outcome of treatment. Treatment approaches may include, in addition to individual therapy, group treatment when appropriate. Group therapy, whether as a form of cognitive treatment or psychotherapy, can have an important role in promoting recovery. Indeed, several rehabilitation programs around the world are based on group treatment approach (see later for details). Another implication of the knowledge we have on reorganization in the brain is that initiation of therapy should be as soon as the injured individual can participate in treatment. When treatment is initiated early, reorganization can incorporate easier new approaches to old tasks, and patients better adapt to new learning. During the first year following a TBI, the majority of recovery takes place. Beyond that, progress is far slower. Individuals with TBI who begin treatment a year following onset or later, may actually have to unlearn ineffective compensatory strategies they have acquired on their own during the initial phase following injury. This is an unnecessary burden.

V. COGNITIVE THERAPY AND PSYCHOTHERAPY IN ORGANIC BRAIN SYNDROMES

A. Cognitive Treatment

Cognitive treatment (CT) must address the complete range of skills involved in normal functioning, in the context of psychosocial, cognitive, occupational, and emotional readjustment. In reality, cognitive, occupational, physical, group, and psycho -therapies are intertwined in the process of assisting an injured individual to negotiate a return to normal functioning. Improvement in functioning can be observed even when test performance of basic skills does not change. This happens when treatment aims to improve the actual functioning in the context of real-life occupational and psychosocial settings.

In general, CT is said to be "restorative" when it addresses cognitive impairments directly by, say, rote

repetitions of tasks involving impaired skills. Therapy is regarded as "compensatory" when new skills are taught to patients, such as procedures designed to reduce disabilities despite persistent cognitive impairments. Cognitive treatment follows the general knowledge acquired through more than half a century of research on principles of cognitive learning. Examples include strategies in improving memory functions (e.g., through the use of mnemonics), attention and visual scanning training, the utility of distributed versus concentrated practice, and so on. These principles are used but extended beyond the clinic in CT, through generalization into real life situations.

Any systematic activity that requires the purposeful use of the brain can be utilized as CT, as long as it is part of an effort to reduce impairment, disability, or handicap. Thus, anticipating and responding to a target on a computer screen, making a supervised trip from the home to the clinic using public transportation, interacting socially in a group moderated by a therapist, are all forms of cognitive treatment. Cognitive treatment might take the form of sensory stimulation for a partially comatose patient and ends with assisting an injured lawyer with strategies for reading and preparing legal briefs. A great deal of material exists commercially which can be used for CT: computer software, videos, tapes, workbooks, reading material, games, puzzles, and so on. Elaborate guidebooks and materials for addressing specific areas of problems can be purchased commercially (such as, for example, the Attention Process Training designed by McKay Moore Sohlberg & Catherine Mateer, 1989, and many other computer-based programs). But the resources are limitless, as many other, even daily encountered objects and situations can serve the same purpose of increasing functioning. Thus the home environment may be modified to provide an injured person with the structure necessary to stimulate recovery and reduce disability. Material from the patient's premorbid occupation may serve as context for developing specific compensatory strategies for skills needed for work; so can environmental objects serve the same therapeutic purpose for better functioning in daily life. For example, the pictures at a museum may serve to exercise both attentional and expressive purposes; searching topics on the Internet can provide exercises of attention, reading, visual-spatial and abstract skills, and so on. In short, the range of tools used in cognitive treatment is only limited by the therapist's imagination. In our center, for example, it is not unusual for patients to go shopping with a therapist, play a musical instrument, practice the use of public transportation, or attempt work at a local store, all as part of an individualized treatment plan. The only requirement is that any therapeutic activity is aimed at specific functional goals, appropriate for the individual's needs, and that it is executed with sights on actively challenging the patient.

Cognitive therapy must be performed at a specific level for the individual TBI patient: it cannot be too easy, as boredom will be quick to set in. Equally problematic is CT that aims too high for the patient: frustration and even a catastrophic reaction may ensue. Treatment must be just challenging enough for the individual, within a rather narrow window of difficulty, so that progress will take place without undue negative reactions. This requires constant, careful monitoring of both the mood and performance of the patient. For this reason, treatment plans for a CT session can never be rigidly adhered to. Fluid movement from one level of difficulty to another, or from one task to another may be required when unanticipated reaction from the patient renders the plan obsolete. It must be emphasized that individuals with brain damage may often exhibit not only shorter attention span than intact people, but also lower tolerance for frustration and a more rigid approach to problem solving. These abnormal reactions in themselves may become the focus of treatment.

Although the therapist–client relationship is somewhat different in the context of CT then it is in regular psychotherapy, rapport and trust are important elements of treatment. Eliciting cooperation requires, at times, a great deal of skill on the part of the therapist. For instance, clients may be profoundly depressed and feel hopeless, anxious, embarrassed or they may believe nothing is wrong with them. All these reactions to brain damage, and many more, may result in minimal motivation to cooperate in treatment. Cajoling a TBI patient to participate in therapy may call for the most elaborate inducements and reinforcements. Often it is necessary to recruit the assistance of family or significant others to promote participation. Group treatment can also be effective, provided the discrepancy in patients' abilities within the group is not too large. Thus, symptoms of impaired social functioning can be addressed in a group setting, where members' interactions provide both stimulus for and context of therapy. Other cognitive symptoms can be addressed well in a group settings, such as expression and comprehension skills, attentional deficits, sequencing, self-monitoring, and turn taking. Needless to say, psychosocial issues, such as acceptance of deficits, can be addressed well in group therapy (see later for more on this issue).

Survivors of brain damage present with an infinite variety of symptoms, and no two patients are quite alike. Premorbid adjustment and psychosocial factors influencing recovery are never at the control of the therapist. Therefore, understanding the totality of both symptomatology and psychosocial background must form part of the treatment plan. Whether a TBI patient lives alone, with parents or with spouse, will have bearing on the goals of treatment. Therefore it is always important to involve the family, or significant others, in the therapeutic process. At times, CT may take the form of educating the injured person's family regarding the altered cognitive status, the abilities and disabilities of their loved one. A family may hinder or facilitate the individual's recovery process, depending on their attitude toward the cognitive/behavioral changes they face.

B. Psychotherapy

Throughout human development, changes from infancy to childhood, into adulthood, and later maturation into old age are gradual. The process is slow, allowing ample opportunity for making such adjustments so as to preserve some sense of the individual's continuous identity. Thus, a person perceives himself or herself as possessing the same identity across significant changes in size and cognitive abilities. Brain damage, in contrast, is abrupt in TBI, and the demand for readjustment is both substantial and immediate, and always in the direction of reduced capacity (that is, it results typically in negative emotional response). Therefore, brain damage is a devastating event in all spheres of human experience, creating bewilderment and often a sense of loss. It may profoundly shake the person's sense of identity. Even in cases of mild impairments, awareness of reduced cognitive proficiency can injure the individual's sense of self. The experience, common after mild brain damage, of forgetful episodes, difficulties with handling more than one thing at a time, or reduced stamina, will require significant adjustment on the part of the patient. Typically, the more severe the damage, the more adjustment will be required; not only in terms of recovering of premorbid functions, but in the demand for emotional adjustment in the face of irreversible changes.

The most common presentation of psychological reaction to brain damage is problems of acceptance. These problems may appear as lack of awareness of deficits (especially with more severe injuries), over which the patient has no volitional control. In cases where awareness is intact, accepting the changes following brain damage presents a serious challenge, as it entails viewing oneself as less competent than before. High- and overachievers have particular difficulties with this kind of readjustment, which requires psychotherapeutic intervention. Reduced self-esteem and depression are very often the consequence of awareness of cognitive deficits. The role of psychotherapy is, then, to facilitate acceptance and the readjustment process, so that recovery and return to functioning are maximized. Without acceptance, people with brain damage can rarely negotiate the compensation needed for good adjustment. The process of acceptance includes grieving, as in a real sense individuals with brain damage must deal with the loss of part of their identity.

Psychotherapy should include educating patients concerning the effects of brain damage, so as to reassure them that their experience of changes is not unique. For example, mood swings, irritability, fatigue, bursts of uncontrolled anger (all common symptoms following TBI) in heretofore friendly and patient individuals can be very alarming, but understanding of such symptoms in and of itself can have a calming effect. Supportive psychotherapeutic techniques should be combined with more directive approaches to assist patients with the use of new strategies to deal with changes. For example, using a behavioral self-monitoring log to comprehend and control undesired anger outbursts can be taught to individuals exhibiting such symptoms. Families, when available, must be part of the adjustment process, as they, too, need education regarding the changes in their loved ones, support, and guidance in assisting the injured family member. Several approaches have been used with reported positive results, such as the cognitive therapy of Aaron Beck in addressing depression, cognitive-behavioral therapy, and even psychodynamically based intervention. Often psychotropic medications, such as antidepressants, are indicated and should be used as an adjunctive to psychotherapy.

In some cases of impaired insight, behavioral management techniques with the injured individual may be the only effective intervention. In such cases, substantially reduced abstract thinking ability and limited awareness render insight-oriented psychotherapy totally ineffective. As in dealing with individuals with dementia, in such cases it is the caregivers who are usually the focus of intervention, through counseling and teaching them behavioral management techniques to facilitate life at home.

Group therapy is quite effective in affecting what Irvin Yalom called "universality": the feeling that one is

not unique in his or her experience of cognitive deficits. Group therapy is also useful in creating a context for social support from others who understand the changes following brain damage. It provides an opportunity to try new compensatory behaviors in a safe environment, with immediate supportive feedback. Patients who require relearning of social skills will do so better in a group setting.

Unlike traditional psychotherapy, the therapist working with individuals with brain damage must take a more directive role in the therapeutic process, as noted earlier. In addition to educating the client, the therapist may provide alternative approaches to a variety of problem-solving demands on the client, who may now be showing deficits of insight, initiative, and abstract abilities. Thus, not only is the patient devastated emotionally in the face of catastrophic changes, the patient now lacks efficient means of dealing with them. Merely supporting and facilitating grieving of loss, although important in the initial stages of recovery, may not be sufficient in the stages of returning to society at large.

Cognitive deficits do not have to prevent a survivor from returning to work. Thus, memory and attentional deficits can be circumvented using a variety of compensatory strategies. But, as noted earlier, to utilize these strategies, it is crucial for the individual to accept this new condition and recognize the necessity for compensation. For example, in our center we commonly recommend the use of organizers (electronic or not), as a compensatory strategy of dealing with memory deficits. But to make it useful, the individual must use the organizer. Again and again we observe patients who superficially accept the strategy but do not implement it in daily life. Using it presupposes accepting the need for it and, therefore, admitting to reduced cognitive ability.

It is very common to encounter individuals with mild brain damage who think "they are going insane" due to the perceived changes in function. This is especially common following TBI where patients are told they will get better in about 6 to 8 weeks, but no relief is experienced. In such cases, psychiatric referral may result, with the unfortunate implication that the patient has "neurotic" problems, or else, when litigation is involved, is greatly exaggerating the symptoms for financial gains. When the latter is not the case, such implications only serve to exacerbate emotional symptoms and hinder recovery.

Although the consequences of brain damage will be expressed in many forms, both cognitive deficits and emotional problems are often seen. Whereas mood disorders can result directly from impairment to the brain processes involved with affective responses, they can also be secondary to awareness of cognitive deficits. In turn, these psychological symptoms will intensify the symptoms of dysfunction that originally resulted from damage to brain tissue. Thus, it is necessary to treat both the cognitive and psychological symptoms observed in individuals with brain damage as they are inextricably entangled following injury. For this reason, overall improved functioning can be seen in survivors of brain damage when either cognitive or psychological symptoms improve.

VI. REVIEW OF TREATMENT EFFICACY

What is the role of cognitive therapy in promoting the rate of recovery and its final steady state? There are inherent methodological difficulties in assessing outcome of cognitive treatment. To mention a few, it was already noted that no two individuals with brain damage are alike, either in their life history, premorbid adjustment, support system, extent, and location of injury. In addition, defining and measuring outcome is very difficult, in a manner similar to that encountered in research on the effectiveness of psychotherapy. Recovery may be measured on a neuropsychological test battery, or in terms of returning to work and/or function in the family or the community. Each aspect of recovery has its place but may not correlate highly with each other, thus making the study of treatment outcome very complex. Despite the difficulties, the research evidence to date provides general support for the efficacy of cognitive treatment (CT). Thus large, multicenter studies indicate that rehabilitation in general will result in better functional recovery, higher rate of return to gainful employment, and better psychosocial adjustment, even when residual symptoms remain. In contrast, studies on the effect of CT that addresses just the basic cognitive processes, outside the context of functional utilization in the real world, are not as encouraging. The inference is that treatment should focus on disabilities in real life, that is, at work and in the psychosocial environment.

The efficacy of psychotherapy in the population with brain damage has not been well studied on a large scale, but many rehabilitation centers report positive effects of therapy in many, although not in all, individuals with brain injuries. This might be expected, given that patients with brain damage do not choose to receive

psychotherapy, as do clients who turn to psychotherapy on their own. Such patients do not always recognize their own needs as a result of the injury, nor do they always have the cognitive wherewithal to form therapeutic alliance and benefit from the psychotherapeutic process. Often the effects of brain damage require pharmacological intervention before any adjuvant psychotherapy can have any effect. At other times, impaired memory, attention, and concentration do not permit good carryover from one session to the next, requiring a repetition of material dealt with before.

For these reasons, and due to the variability of the population with brain damage in general, no definitive information on efficacy is available. Yet any one who works in treatment with persons with brain injuries can attest to the dramatic positive responses, the improvement in psychosocial functions exhibited by some patients, with less remarkable effectiveness in others. Given the effects of brain damage on psychosocial functions, and the negative effects of the emotional consequences of brain damage on functioning, it would be unethical to await results of large-scale efficacy study of psychotherapy, and not provide intervention as needed.

VII. SUMMARY

Brain damage results in a wide variety of cognitive, affective, psychosocial, and occupational symptoms. Depending on the location and extent of damage, as well as on the developmental history, premorbid adjustment, overall intelligence, motivation, and available support system, the consequences can range from mild impairments with a full return to function, to total disability. Therapy for the symptoms must address the needs of the individual in all possible spheres, as they overlap and interact to produce a clinical picture of disability. Therefore, cognitive treatment, psychotherapy, psychosocial and vocational intervention all must form part of a comprehensive treatment plan if positive outcome is to be achieved. A return to normal function does not require a complete remission of deficits, something rarely achieved in this clinical population. Instead, it is contingent on acceptance of irreversible changes, emotional adjustment, and the integration of compensatory strategies that allows functioning despite residual impairments. For this purpose, the totality of the injured person's cognitive, social, physical, and emotional spheres (in short—the identity) must be readjusted in the process of treatment, to accommodate the new changes in the most adaptive fashion within the individual's life.

See Also the Following Articles

Collaborative Care ■ Comorbidity ■ Medically Ill Patient: Psychotherapy ■ Vocational Rehabilitation

Further Reading

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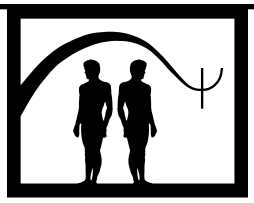

Orgasmic Reconditioning

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GLOSSARY

expectancy effects Responses that follow a treatment but are not specific results of the treatment but are placebo responses due to the participant's expectancy of improvement. They can be difficult to exclude from specific effects in studies of psychological therapies that use placebo procedures as controls, because the treatment may appear to the participants to be more likely to be effective than the placebo.

multiple-baseline design Employed in single-case studies with the aim of demonstrating that the change following a treatment is a specific effect of the treatment. Frequency or intensity of a number of behaviors is assessed at baseline. Treatment aimed at changing only one of the behaviors is the introduced. If that behavior and none of the others change following treatment it is considered that the treatment has specifically produced the change. The procedure can be repeated with a treatment aimed at changing a second behavior and so on. The design will not control for expectancy effects if the treatment appears to the participant to be more likely to affect the behavior targeted than the other behaviors.

I. DESCRIPTION OF TREATMENT

Orgasmic reconditioning, also termed masturbatory reconditioning, was introduced for the treatment of participants seeking modification of their sexual preference. In early studies they were mainly homosexual men but in last two decades they have been mainly male sexual offenders. In their 1991 review, Laws and Marshall described four forms of orgasmic reconditioning that had been reported in the literature. Combinations of the four could be regarded as a fifth form.

A. Thematic Shift

In thematic shift the participant is instructed when he masturbates to use his habitual "inappropriate" or deviant fantasy to produce an erection and to maintain sexual arousal. At the point of ejaculatory inevitability he is instructed to switch his fantasy to one of an "appropriate" nature, thus pairing that fantasy with orgasm. Over time the participant is to introduce the nondeviant fantasy earlier and earlier during masturbation. If following the thematic shift he begins to lose arousal he is to shift back briefly to the deviant fantasy to regain high arousal and then shift again to the nondeviant fantasy. Ultimately he is expected to always masturbate using appropriate fantasies.

B. Fantasy Alternation

It was considered by some workers that as thematic shift was usually carried out by the participant without direct supervision he may not maintain the required temporal relationships between deviant and nondeviant fantasy. They changed the procedure to make it easier for the participant to follow. Rather than shift the thematic content in each session of masturbation, he was instructed to use alternate sessions, in one of which he used deviant fantasies exclusively and in the other, nondeviant fantasies exclusively.

C. Directed Masturbation

With this form of orgasmic reconditioning, the participant was instructed to masturbate exclusively to nondeviant fantasies and to totally avoid masturbating to deviant themes.

D. Satiation

In satiation as described by Marshall and Lippens in 1977 and subsequently termed verbal satiation by some authors, the participant under auditory supervision masturbated continuously beyond ejaculation for a prolonged period, usually about an hour, while fantasizing aloud every variant he could think of on his deviant activities.

Subsequently it was reported the procedure could also be carried out by the participant at home, where he recorded his verbalizations, for the therapist to check he was following the instructions.

E. Combined Directed Masturbation and Satiation

A subsequent development was for the participant to commence with directed masturbation until ejaculation and then employ satiation. This was further modified by the participant repeating directed masturbation until he was completely unresponsive to sexual stimuli and then commencing satiation while masturbating a flaccid penis. Laws and Marshall commented that duration of satiation with this procedure was brief, usually 20 min. Another variant was for the participant to initially masturbate to slides and audiotapes considered appropriate, then following ejaculation, to masturbate a second time while listening to a relaxation tape under instructions to avoid any sexual fantasy, then masturbate a third time when refractory, while exposed to deviant slides and audiotapes for 1 hr.

II. THEORETICAL BASES

Thorpe, Schmidt, and Castell in their 1963 report of the treatment of a homosexual man by showing him the picture of an attractive scantily dressed woman as he reached orgasm, described the procedure as a positive conditioning technique. Presumably it was expected that the sexual arousal associated with orgasm would by conditioning occur to women. Laws and Marshall in their 1991 review considered orgasmic reconditioning was based on the assumption inherent in conditioning accounts of sexual deviation that the content of masturbation fantasies guided the overt expression of sexual behavior. They stated that Marquis in 1970, though not the first to use the technique of thematic shift, provided the first theoretical rationale for its employment. The aim was to maintain the nondeviant fantasy as continuously as possible throughout the masturbatory sequence until ejaculation. The repeated pairing of sexual arousal and orgasm with appropriate fantasies was expected to initiate conditioning processes that would alter sexual desires in an appropriate direction. Thoughts of appropriate sexual acts with appropriate partners would become attractive. In addition, through the discontinuation of pairing deviant thoughts with masturbation, deviant acts would lose their attraction by simple extinction. Laws and Marshall commented of directed masturbation that it was not clear if it was expected to reciprocally reduce deviant arousal. However, as with the procedure, participants avoid masturbating to deviant themes, simple extinction should operate to reduce this arousal as with thematic shift.

Laws and Marshall stated that satiation was based on the concept that continuous unrewarded repetition of an undesired behavior will lead to its extinction. They cited the 1977 report of Marshall and Lippens that many of their clients had told them their masturbatory fantasies often became boring and they changed them to maintain arousal. Marshall and Lippens reasoned that the continued repetition of favored masturbatory themes during a period when the client was in a low state of sexual arousal should lead to a reduction in the arousing properties of those themes.

III. EMPIRICAL STUDIES

A. Penile Circumference Response Assessment of Outcome

Most of the empirical studies of orgasmic reconditioning report its use in one or a few patients with no or

inadequate controls. They usually rely for assessing change in the individual participant's sexual preference by measuring his penile circumference responses (PCRs) to appropriate and deviant stimuli prior to and following the procedure. The validity of these responses as measures of sexual preference has been increasingly questioned. As early as 1971 Bancroft reported that though the mean PCRs of 30 homosexual men as a group were greater to pictures of nude men than nude women, in only 14 of the 30 as individuals were correlations between their "erection" and ratings of arousal statistically significant. In 1975 Mavissakalian, Blanchard, Abel, and Barlow found the mean PCRs to pictures of a nude young woman failed to discriminate as groups, six homosexual from six heterosexual men. In articles published by McConaghy in 1989 and 1991 and reviewed along with further evidence in 1998 the lack of consistent findings in studies attempting to discriminate groups of rapists or pedophiles from controls by their mean PCRs to deviant stimuli was pointed out. Evidence was also advanced of the ability of their penile volume responses unlike their PCRs to discriminate heterosexual and homosexual men as individuals rather than as groups.

To support the validity of PCR assessment Lalumiere and Quinsey in 1994 reported that meta-analysis of the findings of selected studies investigating the PCRs of rapists demonstrated that the assessment did discriminate rapists from nonrapists, as groups. Hence it was necessary to combine the responses of several groups of rapists and nonrapists by meta-analysis to obtain convincing statistical evidence that PCR assessment discriminated the two groups. This indicated it could weakly discriminate as groups men who differed in sexual preferences, but certainly not as of individuals.

Nevertheless the authors considered the result supported the use of the assessment in individual men. In 1996 Marshall commented that

> for a test to have merit, it must be shown that it is in a standardized form that is broadly acceptable, that it is reliable and valid, and that either it is resilient to faking or faking can be reliably discerned. Unfortunately, the available data on phallometric assessments (i.e. PCR assessment of sexual preference) do not meet any of these empirical and technical requirements … the wisest course of action may be to withdraw its clinical use until more adequate data are available.

Subsequently in 1998 Lalumiere and Harris decided it was unclear whether changes in participants' PCRs following treatment should be thought of as changes in sexual preference or changes in men's ability to control arousal, a suggestion made previously by Quinsey and Earls in 1990.

In their 1991 review Laws and Marshall accepted that changes in PCRs of individual men to pictures of nude males and females were valid measures of change in their sexual preference that demonstrated the effectiveness of orgasmic reconditioning. Penile volume assessment though consistently demonstrated to validly assess the sexual preference of individual men has not been used to evaluate orgasmic reconditioning.

B. Thematic Shift

In their 1963 report of thematic shift orgasmic reconditioning of a homosexual man Thorpe and his colleagues stated that following the procedure his masturbatory fantasy remained entirely homosexual. The procedure was then alternated with electrical aversive therapy to pictures of nude males, after which he reported great reluctance to use homosexual fantasy with masturbation. Following treatment he had "occasional homosexual patterns" of behavior but continued the new pattern of masturbating to female pictures and fantasies. In a subsequent study Thorpe and colleagues used directed masturbation, instructing a homosexual man to masturbate as often as possible using heterosexual fantasies only. Initially he took a long time to reach orgasm, but later the time decreased, and he reported satisfying fantasy. He was then treated with aversion relief. The participant was said to have experienced heterosexual interest for the first time in his life during and following treatment.

In their 1991 review Laws and Marshall pointed out that unlike these and other early studies in which orgasmic reconditioning required some form of aversive therapy to dampen the attractiveness of the deviant stimuli, in his 1970 study Marquis reported its effective use alone. In the uncontrolled study 12 of 14 participants treated for a variety of sexual deviations reported that they were much improved or cured. Marshall relied on use of PCR assessment in a 1973 study that included thematic shift in 12 clients of mixed diagnoses but pointed out that as aversive therapy was used also causal inferences could not be made.

Ten years after introduction of orgasmic reconditioning Conrad and Winzce in 1976 pointed out the evidence of its efficacy had not gone beyond the case study level. They investigated use of thematic shift in three homosexual men who received this procedure alone and one in whom its use was followed by aversive therapy.