Treating Childhood Psychopathology and Developmental Disabilities
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Part I

Introduction
INTRODUCTION

The history of modern child psychopathology and developmental disabilities is of fairly recent origins. However, of the two topics, intellectual disability (ID) is the area which has received the most attention as a modern science and profession for the longest period of time.

In December of 1896 in an address to the American Psychological Association, Lightner Witmer outlined what he described as a scheme for practical work in psychology. The plan had four components: 1) the investigation of mental and moral development; 2) a psychological clinic supplemented by a training school/hospital to treat retardation or physical defects interfering with school progress; 3) practical work in the observation and training of normal and retarded children; and 4) training of students for a new profession, the psychological expert, who would examine and treat mentally and morally retarded children, or in connection with the practice of medicine (Witmer, 1907). Witmer discusses pedagogical treatment for stammering and other speech defects, bad spelling, slow mental development, and motor defects. As such, these early efforts were primarily geared toward remediation of what we would now call developmental or learning disabilities.
This topic is followed by autism and more recently the autism spectrum disorders (ASD), followed by child psychopathology such as depression, hyperactivity, and anxiety. The area that has the briefest history is behavioral medicine with children. There are of course various reasons for the time when various areas of study began to emerge with children. The purpose of this chapter is to provide an overview of these areas and major developments that have led to the establishment of each topic as an evidence-based area of research and practice.

**INTELLECTUAL DISABILITY**

Intelligence testing is one of the first and best established areas of study with children. These developments initially grew from pragmatic considerations about how to differentiate slow learners and high achievers in the school system. Alfred Binet of the Sorbonne pioneered a series of tests to identify “at risk” school children. With his assistant Theodore Simon, they published their new IQ test in 1905, the Binet–Simon scale. In 1908, they revised the scale, dropping, modifying, and adding tests by age level for ages 3–13. The test was later renormed in the United States at Stanford University and became the Stanford-Binet Intelligence Test which is in wide use today.

Herbert H. Goddard translated Binet’s writings from French to English. He was an early proponent of IQ testing and served as Director of Research at the Vineland Training School for Feeble-Minded Girls and Boys. Goddard also developed the notion of subcategories of ID and used the terms moron and imbecile for those with lower IQ, and idiot for those with the lowest scores (Goddard, 1920). Although the terminology has changed from these labels to mild, moderate, severe, and profound, the recognition that marked performance differences exist in ID and that subcategories are advisable has persisted.

Lewis H. Terman, a professor at Stanford University, went beyond Goddard in that he actually revised the test itself. Most important in his changes were more standardized responses. He also revised the test so that it could be used to identify gifted children as well as those with ID. Published in 1916, the Stanford Revision of the Binet-Simon Scale of Intelligence became the standard in the United States for assessing IQ.

One of the unforeseen developments from the widespread acceptance of IQ testing was the creation of a multimillion dollar testing industry with hundreds of millions of standardized tests being given to children yearly. A second development was the recognition that objective standardized measures could be developed using the IQ test model for a range of developmental disabilities and forms of child psychopathology. There was a rather long germination period relative to this later trend with most of the innovations coming in the latter half of the 20th century. A third related development involved treatment. Once disorders and disabilities had been defined and identified, there was an obvious need for training and treatment strategies.
CHILD PSYCHOPATHOLOGY

The establishment of the first juvenile court in the United States in 1899 is often considered the beginning of the child mental health movement (Schowalter, 2000). The thrust was the treatment of juvenile delinquency and was spearheaded by women civic leaders who established the Juvenile Psychopathic Institute. A neurologist named William Healy headed the institute. One of his primary accomplishments was the development of a triad of professionals including a psychiatrist, psychologist, and social worker. The psychiatrist typically provided treatment, the psychologist did testing, and the social worker coordinated services and assisted parents. As reported in many books and articles, this approach became the service model for treating children. Typically these services were provided via community mental health clinics.

Great momentum occurred in 1963 when President John F. Kennedy signed the Community Mental Health Centers Act mandating the construction of community outpatient facilities. The dominant treatment paradigm during this time was psychodynamic. In many ways this approach retarded the growth of treatments for child psychopathology and developmental disabilities. For example, children and people with ID were described as lacking sufficient “ego strength” to develop many forms of psychopathology. As recently as 1978, researchers were debating if children could evince depression (Lefkowitz & Burton, 1978). Similarly, major diagnostic systems such as DSM have only recently begun to present and refine various forms of psychopathology in children (Matson, 1989).

MODERN TREATMENT METHODS

The primary means of intervention for children have involved learning-based models. More recently medications for some problems have also begun to be used, typically in combination with learning-based treatments. For example, Tofranil was approved to treat depression in 1951, and Thorazine was used to treat psychotic behaviors in Paris in 1952 and was approved for use in America in 1954.

Although psychodynamic formulations have not been supported by the research, evidence-based practice does go back to the very founding of the area. Witmer (1907) described his work as clinical psychology, a term he says he “borrowed” from medicine. He suggested the term “clinical” implied a method and noted that the clinical psychologist was primarily interested in the individual child. He stressed the relationship between science and practice as well as the notion that the clinical psychologist was a contributor to science who must discover the relationship between cause and effect in his applications of treatment.

There have been a number of general movements from a historical point of view. These include classical conditioning, operant conditioning/
applied behavior analysis, behavior therapy/cognitive behavior therapy, medication, and combined therapies. The evaluation of each of these methods follows.

**Classical Conditioning**

John Broadus Watson is credited with applying the principles of classical conditioning (first demonstrated by Pavlov) to human beings. His research and charismatic personality led to the establishment of behaviorism (Maultsby & Wirga, 1998). Watson championed Pavlovian conditioning as the basis for behavioral psychology, and he maintained an inflexible adherence to its tenets in his work. Behaviorism was a response to structuralism, a movement spearheaded by E. B. Titchenor in America and based on the ideas of Wilhelm Wundt, which focused on the passive introspection of one’s mind.

Watson completely rejected the notion of consciousness and introspection, and publicly attacked them in 1913 at Columbia University with his famous lecture, which was published under the title, “Psychology as the Behaviorist Views It” and later became known as the “behaviorist manifesto”. However, behaviorism as a movement did not become popular in the United States until the 1920s. It was during this time, and as a result of the involvement of American psychologists in World War I and the publishing of Watson’s *Psychology from the Standpoint of a Behaviorist* in 1919, that behaviorism began to spread throughout American psychology. Watson’s text was the first to analyze human psychological functioning in terms of behavior (Wozniak, 1997). In the book, he conceptualized psychopathology as a failure to adjust to change; it develops when a person holds onto old habits and associated emotions that no longer work in the context of new situations. Watson also pointed out that proof for his ideas was evident in the possibility of retraining as a cure.

Watson first applied classical conditioning to a human subject in 1920 with the case study of Little Albert. In this classic study, Watson and one of his students, Rosalie Rayner, conditioned the 11-month-old child to have an irrational fear of a white rat by pairing the presentation of the animal with an unexpected loud noise. Watson and Rayner (1920) also demonstrated the generalization of the conditioned fear response as Albert had spontaneously become afraid of other furry objects. Although they made some suggestions as to how the fear might be unlearned, no attempt was made to then reduce Albert’s fear of the furry objects.

It wasn’t until Mary Cover Jones, another one of Watson’s students, that the elimination of irrational fears by induced extinction was demonstrated. In her research, children who were already overly fearful were treated with a combination of social imitation and counterconditioning. The feared objects were gradually presented while the children enjoyed a preferred food. Her research was notably documented in with the case of Peter (Jones, 1924). In this study, Jones eliminated the boy’s fear of a white rabbit using counterconditioning (i.e., preferred food was presented
simultaneously with the rabbit). During treatment, the rabbit was gradually brought closer to Peter and he became more tolerant of its presence, eventually touching the animal without fear. As a result of her work with conditioning and fears, Jones is often cited as pioneering behavior therapy (Goodwin, 2005).

However, Watson's ideas and the doctrine of behaviorism did not make a large impact in the realm of psychotherapy until after World War II (Pichot, 1989). This was largely due to the dominant forms of therapy at the time, hypnosis and suggestion initially and later psychoanalysis; in addition, the practitioners and proponents of behaviorism were experimental psychologists and outside the field of medicine, which handled the treatment of neuroses at the time.

The basic principles of classical conditioning have had a far-reaching influence on treatment strategies for children. Most of the treatments described below are based on these principles or contain elements of classical conditioning. Classical conditioning has also been used to treat fear and phobias of children with developmental disabilities and other learning disorders but these studies have been sporadic (Labrador, 2004). Usually elements of classical conditioning are paired with other closely related techniques such as exposure. A further discussion of these studies is presented in the section on behavior therapy.

**Operant Conditioning/Applied Behavior Analysis**

B. F. Skinner's research and theories have had a profound effect on the development of behavioral and learning-based therapies. His concept of reinforcement schedules and how controlling the delivery of reinforcement can influence the speed of learning new habits and their resistance to extinction was especially important to the development of behavior therapy (Maultsby & Wirga, 1998). Behavior modification represented an alternative to psychotherapy, which was lengthy, costly, and ultimately ineffective, and it was in *Science and Human Behavior* that Skinner (1953) outlined his alternative to current theories of psychopathology and psychotherapy (Labrador, 2004).

The goal of therapy in Skinner's mind was not to eliminate the impulse that caused the occurrence of a problem behavior but to introduce a replacement behavior that could overcome the circumstances that had produced the problematic behavior. The way to correct these circumstances, then, is to first systematically analyze them (i.e., perform a functional analysis).

Skinner's goal was to use the experimental analysis of behavior to modify and reduce abnormal behavior. He believed that abnormal behavior, as any behavior, has been learned in an attempt to adapt to some environment. However, when a learned behavior is disapproved by society, it becomes abnormal or maladaptive, and the goal of treatment, then, is to modify the behavior by replacing it with a more appropriate one. The effectiveness of treatments for maladaptive behaviors is evaluated by comparing end results to baseline data. These ideas formed the basis for applied behavior analysis (ABA) and behavior therapy.
Skinner’s research and ideas have even become an international movement, spreading to places such as Latin America in the 1960s (McCrea, 1976). Fuller (1949) was the first to demonstrate that operant principles could be applied in a clinical setting. The sole participant in this study was an 18-year-old male described as a “vegetative idiot”. Using sweetened milk as a reinforcer, a significant increase of the target behavior (raising his right arm to a vertical position) was demonstrated in four sessions. Fuller was also able to show that the behavior could be extinguished by removing the reinforcing stimulus.

A few years later in 1953, Skinner and Lindsley began applying the principles of operant conditioning to psychiatric inpatients at a state hospital. They created what was essentially a Skinner box for humans, a room that allowed tangible reinforcers to be dispensed depending on the behavior performed by the inhabitant of the room (Skinner, 1954). The psychiatric patients, who were described as “catatonics, mental defectives with delusions, paranoids, and in one case, a manic,” were left alone in the room for one hour each day. The experimenters studied the effects of different reinforcement schedules and noted that response patterns were similar to those of animals that had been studied previously in a similar setting. Skinner believed that applying operant techniques in such a way would have great motivational value and ultimately lead to positive behavior change.

From this early research with adults, Bjou and colleagues (Bjou, 1959, 1963; Bjou, Birnbrauer, Kidder, & Tague, 1966) and Barrett and Lindsley (1962) applied operant conditioning to children with ID. Ferster and DeMyer (1961) did the same with autistic children by employing a similar apparatus to the one used by Skinner that dispensed tangible objects when a key was pressed.

Children with developmental disabilities (especially severe ID and autism) represent one population that has benefited greatly from the development of operant-based treatment techniques. The efficacy of behavioral treatments has been well documented in the literature with this group, especially with regard to reducing the frequency and severity of symptoms and challenging behaviors and facilitating the acquisition of adaptive skills (Rogers, 1998). Such children are likely to evince challenging behaviors, such as aggression or self-injury, that are severe in intensity and pose a threat to self and others, and it is currently recognized that the most effective method for treating these high-intensity behaviors is based on the principles of operant conditioning: either via reinforcement, punishment, or a combination of the two (Pelios, Morren, Tesch, & Axelrod, 1999).

Challenging behavior is a term that is used interchangeably with maladaptive or problem behavior and was introduced to American psychology in the 1980s to describe problematic behaviors commonly evinced by individuals with ID (Xeniditis, Russell, & Murphy, 2001). Over the years these behaviors have been treated with aversive stimuli such as electric shock (Lovaas & Simmons, 1969), water misting, exposure to aromatic ammonia, or physical restraint. One problem, however, is that the treatment must be able to be applied consistently across settings.
Although these procedures were usually highly successful at eliminating the behaviors, there are obvious ethical implications. However, in some cases the behavior is so severe that there is no other alternative. This is usually the case when no consistent maintaining functions for the behavior can be identified. Azrin and Holz (1966) noted that the reason that punishment-based procedures are so effective at eliminating self-injury, for example, is that the aversive nature of the treatment is able to overcome whatever source of reinforcement is sustaining the behavior. Less aversive punishment techniques are still frequently employed (e.g., extinction, time-out, response cost).

Because behaviors such as self-injury or aggression can have different functions across individuals and settings and may even vary across situations for the same individual, selecting a potentially effective treatment can only be accomplished once the maintaining events or factors for that behavior are understood (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982). Therefore, an important development in the use of operant techniques in modifying maladaptive behavior in children with ID was the increasingly pronounced role of functional assessment.

Functional assessment or analysis involves a thorough assessment of the events preceding (antecedents) and following (consequences) the behavior. Understanding the antecedents and consequences of a behavior provides essential information about the reasons why a problem behavior is occurring or why a desired behavior is not occurring. Therefore, treatments that are constructed on the basis of a careful consideration of a target behavior’s maintaining factors are more likely to be effective in reducing or eliminating the behavior and can be just as effective as punishment (Iwata et al., 1994). A comprehensive approach for conducting a functional analysis was first delineated by Iwata and colleagues in 1982. In this study, the authors described four experimental conditions related to different maintaining factors: social disapproval, academic demand, unstructured play, and alone.

For example, the self-injurious behavior (SIB) of many children is maintained by social reinforcement; children exhibiting this behavior have not learned a socially appropriate way of gaining attention from adults and have discovered that the behavior gets them the attention they desire (e.g., parent telling them to stop). In this case, after the function of the behavior has been identified (i.e., attention), the intervention or treatment will focus on replacing the maladaptive behavior with another, more appropriate behavior that serves the same function (e.g., saying “Come play with me.”; Iwata et al., 1994). This procedure is known as functional communication training (FCT). The desired response is then reinforced by providing social attention whenever the child asks appropriately and ignoring instances where the child is engaging in the problem behavior. In general, this procedure is referred to as differential reinforcement of alternate behavior (DRA). Alternately, the child could be provided with social attention anytime he or she is not engaging in the behavior, which is known as differential reinforcement of other behavior (DRO).

More specifically, functional communication training teaches the child to emit some type of communicative behavior that results in the same
outcome as the challenging behavior and ultimately reduces the frequency of that behavior. This procedure is especially appropriate for children with severe ID and/or ASD, who are often limited in their abilities to communicate. This procedure was first described by Carr and Durand (1985), and in that paper, the authors stated that the goal of FCT is replacing challenging behaviors with socially appropriate behaviors, one of which is functional communication. In order for the communicative replacement behavior to effectively reduce or replace the maladaptive behavior, it needs to be functionally related to the controlling stimuli (Carr & Durand, 1985). This is because the socially inappropriate behavior was previously serving as a form of nonverbal communication for the child. Common replacement behaviors include asking for help or for a break for escape-motivated behaviors or an appropriate way to request attention for socially motivated behaviors. Appropriate responses can be spoken, or in the case of nonverbal individuals, involve gestures as in pointing to a picture board. When FCT does not produce a significant reduction in the problem behavior, adding a punishment component can increase its effectiveness (Fisher et al., 1993).

An early emphasis on functional assessment was evident in the work of Wolpe (1969). However, the technique fell to subsequent neglect in the 1980s as punishment-based procedures began to gain popularity. During this time it was believed that punishment alone was sufficient to control behavior, and the number of these studies increased greatly throughout the 1970s and mid-80s (Matson & Taras, 1989).

It was believed that punishment could not only reduce challenging behavior but oftentimes eliminate the behavior completely (Iwata et al., 1982). However, after reviews by Carr (1977) and Johnson and Baumeister (1978), functional analysis began to regain favor with clinicians. In these reviews, it was suggested that some of the failings in the treatment of SIB reported in the literature were likely due to a lack of information regarding setting and maintaining factors. It was recognized that failing to conduct an adequate functional assessment prior to treatment would mean that the treatment chosen would be implemented without an understanding of the underlying causes of the behavior and would therefore be less effective. And, when a clinician conducts a functional assessment before selecting a treatment, he or she is more likely to choose a reinforcement-based procedure, which is a trend that has become increasingly evident since the late 1980s/early 1990s (Pelios et al., 1999). Such reinforcement-based treatment programs would be tailored toward targeting the motivating factors behind the behavior and should be able to effectively reduce the problem behavior without the use of punishment. However, behaviors that have nonsocial functions can be very difficult to treat with reinforcement-based procedures alone (Iwata et al., 1994). Treatment based on functional analysis, therefore is most effective when the behavior is maintained by positive (e.g., attention or tangible function) or negative reinforcement (e.g., escape function; Fisher et al., 1993).

ABA has been the treatment of choice not only for severe problem behaviors such as aggression and SIB but also in treating sleep problems (Didden, Curfs, Sikkema, & de Moor, 1998), and star charts and rewards have been found to be effective in the treatment of enuresis (Järvelin,
Sleep problems in particular are prevalent and usually persist into later childhood for developmentally disabled children; additionally such difficulties can contribute to the manifestation of other challenging behaviors during the day (Didden et al., 1998). In many cases, sleep problems have been determined by functional assessment to be maintained and shaped by parental attention and have thus been successfully treated with extinction (Didden et al., 1998).

**Behavior Therapy**

From these operant-based techniques, behavior therapy diversified and progressed in a rapid manner. In 1952 with his article, “The Effects of Psychotherapy: An Evaluation,” Hans Eysenck convincingly brought the ineffectiveness of psychoanalysis to light. It was at this time that psychoanalysis began to lose its grip as a dominate therapy in the United States and new treatments based on the principles of classical and operant conditioning began to gain popularity. One of the most influential of the new therapies that emerged was created by Joseph Wolpe and called systematic desensitization or reciprocal inhibition.

**Systematic Desensitization**

In the early 1950s, Wolpe was dissatisfied with the poor outcome he was getting treating patients with psychoanalysis. He combined his medical training with learning theory to create a medically credible, non-Freudian hypothesis with regard to the origin of neurotic fears and how to effectively treat those fears in a behaviorally informed manner (Maultsby & Wirga, 1998). The result was a combination of deep muscle relaxation and emotive imagery that Wolpe termed systematic desensitization. He described his theories in a landmark text published in 1958 entitled *Psychotherapy by Reciprocal Inhibition*. Wolpe (1958) conceptualized fears or phobias as responses that have been learned through classical conditioning and can therefore be eliminated by applying specific counterconditioning.

In a typical session, which usually lasts one hour, the client first self-induces a state of deep muscle relaxation. This is followed by the therapist verbally leading him or her through a predetermined list of feared objects or events that the client imagines starting with the least fear-inducing and gradually moving up to the most feared object or situation. If the client becomes noticeably anxious, he or she is told to stop imagining the object or situation and return to establishing the state of relaxation. Exposure to the actual feared objects is often incorporated as well. The rapid effectiveness of systematic desensitization and the large number of successful cases surprised the field. Some of the earliest studies were conducted by Lang and colleagues and involved using the technique to reduce fear of snakes in college students (Lang & Lazovik, 1963; Lang, Lazovik, & Reynolds, 1965; Lazovik & Lang, 1960).

Although the effectiveness of systematic desensitization for treating phobias and anxiety was well documented throughout the 1960s, interest
began to wane as the number of published studies dropped dramatically starting in the early 1970s (McGlynn, Smitherman, & Gothard, 2004). This decline was evident both in research and clinical practice. The reason for the decline has been attributed to the emergence of other therapies that competed directly (e.g., flooding, participant modeling) and indirectly (cognitive behavior therapy; McGlynn et al., 2004).

There are two main variants of systematic desensitization that have been used to treat fears and anxiety in children: in vivo desensitization (i.e., exposure), which has confrontation with the actual feared stimuli as the principal feature, and in vitro, also known as standard or vicarious, desensitization, which uses symbolic representations (e.g., imagination or modeling) in place of the actual feared stimuli (Ultee, Griffioen, & Schellekens, 1982). Early applications of these techniques with children yielded positive results in reducing fear of animals with the former technique (Kuroda, 1969; Murphy & Bootzin, 1973; Ritter, 1968) but mixed results with the latter (Lazarus & Abramowitz, 1962; Miller, Barrett, Hampe, & Noble, 1972). Ultee et al. (1982) compared the two procedures directly in a sample of children with water phobia; in vivo was found to be more effective than in vitro desensitization, and the response to the latter treatment was not significantly different from a wait-list control condition. It was also determined that the combination of the two was no more effective than in vivo desensitization alone.

Similar results were found in a later study by Menzies and Clarke (1993), who not only demonstrated that in vivo exposure was significantly more effective in reducing fear of water in children, but that those treatment gains generalized to other situations involving water and were maintained after three months. Based on the results of these studies and others, real-life exposure to the feared object appears to be the most important component of systematic desensitization (Ollendick & King, 1998).

Anxiety and phobia frequently co-occur with ASD and are present in higher rates than in normally developing children (Love, Matson, & West, 1990; Luscre & Center, 1996; Reaven & Hepburn, 2006; Woodard, Groden, Goodwin, Shanower & Bianco, 2005), and children with ID have more fears than children of normal intelligence with and without learning disability (Deverensky, 1979). In addition, individuals with Williams syndrome evince higher levels of anxiety and phobias than normally developing children as well as children with ID (Dykens, 2003). Common phobias reported in the literature for children and adolescents with developmental disabilities include animals (particularly dogs; Obler & Terwilliger, 1970), the toilet (Jackson & King, 1982; Luiselli, 1977), medical and dental procedures (Freeman, Roy, & Hemmick, 1976; Kohlenberg, Greenberg, Reymore, & Hass, 1972; Luscre & Center, 1996), riding the bus (Luiselli, 1978; Obler & Terwilliger, 1970), strangers (Matson, 1981), loud noises (e.g., thunder; Guarnaccia & Weiss, 1974), and water (Guarnaccia & Weiss, 1974).

Systematic desensitization can be difficult to apply with children because relaxation training can be fairly demanding and tedious for the average child, as can the controlled recall of feared images (King, Cranston, & Josephs, 1989). Given the difficulty of applying the procedure to normally
developing children, this renders the application of traditional systematic desensitization even more problematic for developmentally disabled children. As a result, treatment of phobias and anxiety in children with ASD and ID has focused on related techniques such as emotive imagery, graduated exposure, counterconditioning, and modeling, and usually includes operant components such as providing tangible rewards for tolerating the feared object. Counterconditioning in such treatment with developmentally disabled children usually includes the presence of a comforting person (e.g., child’s mother) whose involvement is gradually faded as the child becomes more comfortable around the fear-inducing stimulus (Sovner & Hurley, 1982).

Emotive imagery involves the therapist evoking positive emotions in the child, usually by including characters from television or fiction that the child enjoys, and then gradually introducing the feared stimuli in the context of a fun or exciting narrative involving the child and the characters (Lazarus & Abramovitz, 1962). These authors used the technique to successfully treat fear of dogs, darkness, and school. More recently, Cornwall, Spence, and Schotte (1997) demonstrated that the procedure was superior on a variety of outcome measures in treating fear of darkness in 24 children when compared to wait-list control. The active mechanism of the procedure is believed to be reciprocal inhibition, in that instead of the child inducing a state of ease or relaxation himself or herself, this positive state is induced by engaging in an activity the child enjoys (e.g., pretending to be a superhero; King et al., 1989).

In a study by Freeman et al. (1976), a hierarchal series of real-life exposures was created to treat an intellectually disabled boy’s fear of physical examinations with a preferred nurse from the ward being used as the counterconditioning agent. In another similar study, an autistic child’s fear of the sound of toilet flushing was successfully treated using laughter to reduce anxiety (Jackson & King, 1982). Laughter was induced by tickling and this was gradually introduced while the child used and then flushed the toilet. However, these were uncontrolled case studies so the results should be interpreted with some degree of caution.

On this note, Obler and Terwilliger (1970) employed a modified version of systematic desensitization with 15 “neurologically impaired” children who presented with excessive fear of dogs or riding the bus. Significant reduction in phobic symptoms was reported for the treatment group but not for a group of matched controls. The treatment procedure in this study involved first presenting a picture of the feared stimulus and then once this was tolerated, presenting the actual object and rewarding the child for moving closer and closer to it. Rewards were chosen by the participants prior to treatment and included toys, books, and candy.

Modeling involves a peer or adult demonstrating nonfearful behavior in the fear-producing situation and can be either live or filmed. Bandura and colleagues conducted some of the earliest research with this technique and demonstrated that modeling, both live and filmed, was able to effectively reduce fear of dogs (Bandura, Grusec, & Menlove, 1967; Bandura & Menlove, 1968). In addition, Lewis (1974) found a combination of modeling
(video of peers) and participation to be more effective than either modeling or participation alone in reducing water phobia. However, each condition alone also significantly reduced avoidance behavior when compared to a control condition.

Modeling has also been used to treat phobias in developmentally disabled children. This usually consists of the therapist demonstrating an appropriate nonfearful response to the presence of the fear-inducing object or situation (King, Ollendick, Gullone, Cummins, & Josephs, 1990). For example, Matson (1981) used modeling in a multiple baseline study across subjects to treat three children with moderate ID who refused to interact with or be around people other than a few close family members. Modeling was performed by a parent in the clinic and then generalized to home with treatment gains being maintained after six months.

In contrast to emotive imagery and modeling, operant-based treatment of anxiety and phobias does not assume that the anxiety must first be reduced or eliminated before exposure to the feared object or situation will be tolerated (King et al., 1990). Such techniques are typically used in combination with the procedures described above. Luiselli (1977, 1978) demonstrated successful implementation of operant-based treatments with an intellectually disabled adolescent who was afraid of the toilet and an autistic child who was afraid of riding the bus. In the latter study, the autistic boy’s mother initially sat on the bus with him and provided tangible reinforcement. Eventually, she moved farther away from him until he was able to ride the bus to school by himself, which was achieved in seven days. In addition, Kohlenberg et al. (1972) successfully treated fear of dental procedures in a sample of children and adolescents with ID ages 8–20 using shaping with social and tangible reinforcement. The outcome measure for this study was the number of physical restraints required for the procedure, of which, after treatment, the experimental group received significantly less than a control group.

**Cognitive Behavior Therapy**

Around the same time as Wolpe’s formulations regarding his ideas for systematic desensitization and for principally the same reason (i.e., a lack of success treating patients with psychoanalysis), Albert Ellis developed his brand of highly effective, therapist-led psychotherapy that he termed rational emotive therapy (Maultsby & Wirga, 1998). This treatment model later became known as rational emotive behavior therapy or cognitive behavior therapy (CBT). From this viewpoint, maladaptive behavior is the result of maladaptive cognitions, and therefore cognitive changes can produce a change in behavior. The therapy focuses on the ABC model of human emotions: Activating event, Beliefs about the event, and Consequence of or emotional response to the event. Its goal is to get people to recognize and then eliminate their irrational beliefs. CBT encourages therapists to be active, objective, and firmly directive while combining talk therapy with elements of classical conditioning.

Variants of Ellis’s original therapy have been applied to children with fear and anxiety. In an early study of this type, Kanfer, Karoly, and Newman (1975) found that having children repeat verbal self-instructions related to
competence in dealing with their fear of the dark (e.g., “I am a brave boy/girl. I can take care of myself in the dark.”) while in a dark room was more effective than stimulus control (e.g., repeating “The dark is a fun place to be.”) and control (repeating nursery rhymes) conditions. Kane and Kendall (1989) treated four children diagnosed with Overanxious Disorder with a cognitive-behavioral based treatment. The cognitive component included teaching the children to recognize their anxious feelings and bodily reactions to those emotions, clarifying their cognitions in anxiety-provoking situations, developing strategies to cope with those situations, and evaluating the success of those strategies. The behavioral portion of the treatment included elements of modeling, in vivo exposure, relaxation training, role play, and contingent reinforcement. Homework was also included. The treatment was effective at reducing anxiety to within normal limits and was maintained at three- to six-month follow-up.

Meichenbaum and Goodman (1971) were among the first to advocate the application of cognitive-behavioral techniques in the treatment of ADHD. Since that time, a great deal of research has been directed toward this topic (Pelham, Wheeler, & Chronis, 1998). CBT for ADHD typically consists of weekly sessions in which the therapist works with the child on developing cognitive techniques to help control inattention and impulsive behavior that the child will hopefully generalize to other situations (Pelham et al., 1998). However, the results of multiple controlled studies have not supported the effectiveness of this approach (Abikoff & Gittelman, 1985; Bloomquist, August, & Ostrander, 1991; Brown, Borden, Wynne, Spunt, & Clingerman, 1987).

Cognitive-behavioral approaches have also been utilized for children and adolescents with depression and are commonly done in group settings (Kaslow & Thompson, 1998). Because of the initial debate on the existence of childhood depression and the fact that depression is an internalizing disorder and thus may go unnoticed, controlled studies evaluating the effectiveness of CBT and related therapies are scarce. For the most part, interventions for children have been modified from those available for adults and lack a developmental framework (Kaslow & Thompson, 1998). Stark and colleagues (Stark, Reynolds, & Kaslow, 1987; Stark, Rouse, & Livingston, 1991) conducted some of the first controlled studies of psychosocial treatment of childhood depression.

In the first study, Stark et al. (1987) compared 12 sessions of group therapy with a wait-list control condition in a sample of fourth- through sixth-graders. Group therapy consisted of either a self-control intervention that taught self-management skills or a behavior-problem solving intervention that included education and group problem solving. Compared to the control condition, the children in the two experimental conditions reported fewer symptoms of depression with the majority no longer meeting criteria for depression at eight-week follow-up. However, caretaker ratings of depression, anxiety, and self-esteem did not significantly differ among the three conditions.

Stark et al. (1991) then expanded this procedure to 24 to 26 sessions and included monthly family meetings that added a parent training component to help their children generalize the skills to the home. This method
was found to be superior to a traditional counseling approach at reducing depressive symptomatology. The efficacy of manualized approaches to CBT with young persons suffering from depression has also been demonstrated (Lewinsohn, Clarke, Hops, & Andrews, 1990; Lewinsohn, Clarke, Rhode, Hops, & Seeley, 1996).

Dykens (2003) suggests that specific cognitive-behavioral interventions for phobia and anxiety may be applicable for people with Williams syndrome given the circumscribed goals and relatively short duration of such treatments as well as the well-developed expressive language and interpersonal skills in many individuals with the condition. However, the application of cognitive-behavioral interventions for children with developmental disabilities awaits further investigation. Reaven and Hepburn (2006) suggest that cognitive-behavioral treatment strategies for children with high-functioning ASD and anxiety should include a high level of parental involvement.

**Medication**

The prescription of psychotropic medication for adolescents increased by 2.5% from 1994-2001 (Thomas, Conrad, Casler, & Goodman, 2006). In 1997, the Food and Drug Administration passed the Modernization Act, which made it easier for off-label medications to be promoted to physicians (Buck, 2000). This, taken with the increased presence of managed care incentives limiting the number of therapy visits, has contributed significantly to increased reliance on psychotropic medication in treating childhood psychopathology (Thomas et al., 2006). However, there remains a paucity of empirical research concerning the utility of using psychotropic medication to treat developmentally disabled children with comorbid mental health conditions.

This puts the clinician in the position of having to extrapolate from the existing data regarding adults with ID and children of normal development (Aman, Collier-Crespin, & Lindsay, 2000). As mentioned above, because response to psychotropic medication may depend on the child’s developmental level, extrapolating from research on adults can be problematic (Aman, Collier-Crespin, et al., 2000). There is no medication for intellectual disability or ASD and medical professionals should proceed with caution before prescribing psychotropics for children with these conditions. When such a child is being prescribed medication for the suppression of challenging behaviors and not for an underlying comorbid condition, the treatment may serve primarily as chemical restraint. A summary of research on the major classes of psychotropic medication used in the treatment of childhood psychopathology follows.

**Psychostimulants**

For some mental health conditions, pharmacological interventions have been the most widely used and recommended. Since the 1970s this has been the case with stimulant medication and ADHD (Pelham et al.,
However, stimulant medication does not work for everyone with ADHD (70–80% of cases respond) and the long-term efficacy is questionable (Pelham et al., 2000).

From 1980 to 2000, there were at least ten group studies examining the effects of stimulant medication (methylphenidate and dextroamphetamine) in intellectually disabled children and adults with ADHD (Aman, Collier-Crespin, et al., 2000). The cumulative results of this research indicate that psychostimulant medication is effective in treating symptoms of ADHD in individuals with ID. With the exception of one instance, all of the studies yielded statistically significant, positive results with improvements noted in the areas of managing motor overflow, attention span, and impulsiveness along with cognitive performance, social behavior, and independent play (Aman, Collier-Crespin, et al., 2000). However, the overall response rate in children and adolescents with ID at 54% is less than that for those of typical development (Aman, 1996). Later research with methylphenidate in intellectually disabled children has yielded similar results (Pearson, Lane, et al., 2004; Pearson, Santos, et al., 2004).

Although current DSM-IV-TR diagnostic criteria preclude a comorbid diagnosis of ADHD in children with ASD, core symptoms of ADHD such as impulsivity, hyperactivity, and inattention are common in children with ASD (American Psychological Association [APA], 2000; Lecavalier, 2006). The effects of stimulant medication on symptoms of ADHD in ASD children are mixed. For example, Stigler, Desmond, Posey, Wiegand, and McDougle (2004) found a low rate of treatment success with a high rate of side-effects in a retrospective review of 195 ASD children. On the other hand, Posey et al. (2007) demonstrated that methylphenidate was superior to placebo in 66 children with ASD in alleviating primary symptoms of ADHD.

**Antidepressants**

Since the early 1990s, antidepressants, especially the selective serotonin reuptake inhibitors (SSRIs), have increasingly become the treatment of choice in treating childhood depression (Jureidini et al., 2004). Prescription of SSRIs increased dramatically from 1998–2002 among adolescents aged 15–18 (Delate, Gelenberg, Simmons, & Mothermal, 2004). One major concern with this trend is the efficacy and safety of these drugs with children. Of particular concern is the risk of suicide among adolescents taking SSRIs (Jureidini et al., 2004; Whittington et al., 2004). Treatment with tricyclics in children has largely been abandoned due to the high frequency of adverse side-effects and a lack of efficacy (Whittington et al., 2004). In a review of six clinical trials comprising 477 children treated with paroxetine, fluoxetine, sertraline, or venlafaxine, and 464 children treated with placebo, Jureidini and colleagues (2004) found the children treated with antidepressant medication only significantly improved on 14 of 42 reported outcome measures. In addition, a larger number of children treated with antidepressant medication experienced adverse side-effects (paroxetine) and some had to withdraw from one of the studies as a result (sertraline).

Whittington et al. (2004) also reviewed the risk–benefit profiles of these drugs by examining published and unpublished studies. Fluoxetine
was cited as having a favorable risk–benefit profile in children with noted efficacy in reducing depressive symptoms with no increased risk of side-effects. The risk–benefit profiles of sertraline and paroxetine were mixed, whereas both citalopram and venlafaxine were found to have unfavorable risk–benefit profiles. In addition, Emslie and colleagues (1997) conducted a double-blind, randomized, placebo-controlled study of fluoxetine in 96 children and adolescents and reported a 60% response rate.

Pary (2004) notes that, as with children of normal development, the first-line treatment for major depression in Down syndrome is SSRI treatment (with the exception of paroxetine). In one study, however, paroxetine was found to be effective in reducing symptoms of depression in seven mildly intellectually disabled adolescents (Masi, Marcheschi, & Pfanner, 1997). However, SSRIs (i.e., fluoxetine, paroxetine, and sertraline) may be less effective in children with ASD. In an open label study, Awad (1996) treated a small sample of children with ASD with these medications and found a reduction in symptoms of obsessional, repetitive, and anxiety symptoms in half the children but that treatment had to be discontinued for the other half because of side-effects and worsening of symptoms. SSRIs may also have some benefit in reducing self-injury in developmentally disabled children (Aman, Arnold, & Armstrong, 1999). However, at this point, this data are preliminary, based on case reports, and more research is needed.

When medication fails to alleviate symptoms of depression, alternative treatments such as electroconvulsive therapy (ECT) may be effective. One case report documents successful remediation of depressive symptoms in a 15-year-old adolescent with Down syndrome and treatment-refractory major depressive disorder (Gensheimer, Meighen, & McDougle, 2002). For this individual, ECT was found to be safe and effective after four administrations.

**Mood Stabilizers**

Adolescents diagnosed with bipolar disorder are treated with the same medications as adults with the condition; however, mixed or rapid cycling, which adolescents tend to experience more than adults, has been associated with a poor response to lithium (Cogan, 1996). Although the expression of bipolar disorder in preadolescent children is rare and even rarer in children with ID, a few case studies have found positive results for treatment with valproic acid (Kastner, Friedman, & Plummer, 1990; Whittier, West, Galli, & Raute, 1995) and lithium in young people with ID (Dostal & Zvolsky, 1970; Goetzl, Grunberg, & Berkowitz, 1977; Linter, 1987). However, lithium has also been associated with limited clinical efficacy and adverse side-effects in this population (Kastner et al., 1990). In addition, Komoto and Usui (1984) reported a case study in which a 13-year-old autistic female with moderate ID and depression was effectively treated with valproic acid.

**Antipsychotics**

Because the symptoms of schizophrenia do not usually manifest themselves until late adolescence, there is very little research concerning
treatment of young persons with antipsychotic medication specifically for schizophrenia. Based on a review of this small body of literature, Campbell and Gonzalez (1996) summarize research indicating that thiothixene was superior to thioridazine in adolescents with chronic schizophrenia, whereas haloperidol and clozapine may also be effective for young people with schizophrenia. However, much more research is warranted.

An early study by Cunningham, Pillai, and Blanchford-Rogers (1968) found that haloperidol was effective in treating children with aggressive and destructive behaviors. Although, Conduct Disorder can be difficult to diagnose in children with ID because of determining the intent of the behavior, risperidone significantly reduced clinician and parent ratings on conduct problems in 118 intellectually disabled children with comorbid Conduct Disorder or Oppositional Defiant Disorder compared to placebo (Aman, Findling, Derivan, & Merriman, 2000). There has been a notable increase in recent years of using atypical antipsychotic medication to treat self-injurious behavior in developmentally disabled children with risperidone and olanzapine being the most common (Aman, Collier-Crespin, et al., 2000). However, these studies were not controlled and more research is needed.

**Anxiolytics**

Little is known about the effects of treating childhood anxiety with benzodiazepines with only a few controlled studies available (Simeon, 1993). The paucity of such research is likely due to SSRIs being commonly prescribed to treat anxiety conditions among young persons (Reinblatt & Riddle, 2007). Among those with ID, this class of drugs has been commonly used to manage challenging behaviors and treat generalized anxiety disorders (Aman, Collier-Crespin, et al., 2000). A handful of studies has examined the effects of benzodiazepines in treating children with ID to mixed results (LaVeck & Buckley, 1961; Krakowski, 1963; Bond, Mandos, & Kurtz, 1989). The children in these studies were not only small in numbers but were being treated more for behavioral problems than any underlying anxiety disorder.

As mentioned above, anxiety conditions seem to be more prevalent in children with ASD and have been successfully treated with behavioral approaches. One study did find that buspirone was effective at reducing symptoms of anxiety and irritability in children and adolescents with ASD (Buitelaar, van der Gaag, & van der Hoeven, 1998). Side-effects were reported to be minimal except for one child who developed abnormal involuntary movements. Werry (1999) suggests that the anxiety associated with ASD may respond better to antipsychotic drugs than to anxiolytics.

**Other Drugs**

There is currently only one recommended medication for enuresis, which is desmopressin (Jarvelin, 2000). Desmopressin is typically administered as a nasal spray. In the past, imipramine has also been used, but research
indicates that children with ID have responded unfavorably (Aman et al., 2000). Studies of imipramine with children of normal development have also been mixed with response rates of 10–60%; however relapse was high (90%; Schmitt, 1997).

Combined Therapies

ADHD

For ADHD, limitations of both pharmacological and behavioral interventions have led to the development of combination therapies consisting of behavior modification and stimulant medication (Pelham et al., 2000). Such treatment packages are most successful when the behavioral component includes outpatient parent training and school training or occurs in the context of a summer treatment program (Pelham et al., 2000). In the case of parent and school training, this helps to increase the generalizability of the treatment across settings and people.

ASD

Comprehensive early intervention treatment packages with the aims of reducing level of impairment and improving outcome are available for children with ASD (Rogers, 1998). Better outcomes have been reported for children enrolling in such programs before the age of five years (Fenske, Zalenski, Krantz, & McClannahan, 1985). Other than behavioral interventions aimed at remediation of specific deficit areas, this is the only other empirically supported treatment available for children with ASD (Rogers, 1998). However, these comprehensive programs are expensive and time-consuming, involving a team of professionals across different settings (home, classroom, and clinic), and in some cases, thousands of hours of treatment over many years. According to Kabot, Masi, and Segal (2003), for an early intervention program to be appropriate and effective it should: begin at the earliest possible age, be intensive, include parent training, focus on social and communication domains, contain individualized goals and objectives, and emphasize generalization.

One example of this type of approach is the Treatment and Education of Autistic and related Communication handicapped CHildren (TEACCH) program established in 1966 at the University of North Carolina in Chapel Hill. At a time when the prevailing psychodynamic model of the time was spreading the notion that autism was the result of a lack of parental emotional support or “refrigerator mothers”, TEACCH recognized parental involvement as a critical factor and incorporated parent training into the program so that treatment strategies could be implemented in the home. The program was demonstrated to be effective early after its inception (Schopler, Brehm, Kinsbourne, & Reichler, 1971). Ozonoff and Cathcart (1998) demonstrated that a TEACCH-based home program resulted in three to four times greater improvement than a control group on tests of imitation, fine and gross motor, and nonverbal conceptual skills in autistic preschoolers.
Another notable comprehensive treatment package for autism was developed by Lovaas and colleagues (1981). This manualized protocol utilizes reinforcement-based operant techniques along with some punishment-based procedures to increase a variety of social, language, cognitive, and self-care skills while reducing maladaptive behaviors in children with autism. The effectiveness of Lovaas’s program was documented in two published studies (Lovaas, 1987; McEachlin, Smith, & Lovaas, 1993). The research was conducted over a two-year span and involved a group receiving the treatment compared with two control groups: one group who received a few elements of the program delivered by the same staff in the treatment group in limited duration and intensity and a second group matched on chronological and mental age that was obtained through chart review. They found a large and statistically significant difference in IQ scores and educational placement, with the treatment group scoring 25–30 points higher in IQ and a larger percentage of placements in typical classrooms for this group (47% to 2% for the control groups). However, one critique of this research is that group assignment was nonrandom (Rogers, 1998). Regardless of this methodological flaw, the effectiveness of this treatment package has been replicated by two other sets of independent researchers, albeit at a lower rate of success (Birnbrauer & Leach, 1993; Sheinkopf & Siegel, 1998).

CONCLUSIONS

Psychopathology is a common problem for children and adolescents, with one prevalence study finding a rate of 36.7% of 9- to 13-year-olds meeting criteria for at least one psychiatric disorder (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). Because the way child psychopathology is conceptualized and classified has changed from various editions of the DSM and is still changing (Ollendick & Vasey, 1999), it is important that future trends in treatment strive to empirically validate various treatments and not simply assume that therapies for adult disorders will apply to children. Treatments utilizing operant principles and elements of systematic desensitization for reducing phobias are among the best studied and have proven thus far to be the most effective. On the other hand, the efficacy and effectiveness of cognitive behavioral and pharmacological treatments warrants further study. However, the trend toward establishing empirically supported treatments for children is encouraging (Lonigan, Elbert, & Johnson, 1998).

These issues become even more critical with developmentally and intellectually disabled populations. Taken with the finding that children with ID are at a greater risk for developing psychopathology than the general population (Menolascino & Swanson, 1982) and present with higher rates of depression (Matson, Barrett, & Helsel, 1988), it is of great importance that the treatments outlined in this chapter be validated and proven efficacious for this group. Further complicating the issue is that major mental health problems are often undiagnosed and untreated in individuals with developmental disabilities (Deb & Weston, 2000).
Recognizing these disorders in such individuals is difficult because of cognitive and communication difficulties. In addition, the role of early intervention has been increasingly emphasized in treatment programs for ASD children, and this represents the best chance these children have at functioning independently as adults. Along the same lines, because these treatment packages are so intensive and costly, parents of children with ASD have become increasingly susceptible to buying into new treatments or “miracle cures” offering little to no empirical support (e.g., gluten-free diet, chelation therapy). These issues represent some of the major challenges currently facing the treatment of childhood psychopathology and developmental disabilities.

REFERENCES


