Behavior Analysis: Research and Practice

The Importance of a Deeper Knowledge of the History and Theoretical Foundations of Behaviorism and Behavior Therapy: Part 2—1960–1985

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The present article will detail the evolution of behaviorism and behavior therapy as it progressed from first-generation behavior therapy applications such as those espoused by Pavlov, Watson, and Skinner through the second generation of behavior therapies. The article is the second of a 3-part article detailing the first through the third generations of behavior therapy within the field of behaviorism. The present article primarily addresses the transition from the first generation of behavior therapy through the paradigm shift to second-generation approaches. The second generation of behavior therapies involved the incorporation of cognitive behavior therapy and the rise of the so called "cognitive revolution." The importance of grasping the paradigm shift involved in these different generations of the field will assist students and scholars alike in viewing the shaping of the basic scientific tenets of behaviorism. The value is also seen when entertaining the newer ideas that were introduced to the field that brought the science of behaviorism to a wider audience while simultaneously advancing its scope. The rise of the second generation of behavior therapy introduced the concept of mediational variables to the field. The incorporation of a more mediational approach to behavioral processes replaced the earlier views of the environments' influences on behavioral repertoires. Some of the biggest outgrowths of the second generation of behavioral therapies will be detailed and examined.

Keywords: cognitive behavior therapy, generations of behavior therapy, behaviorism, waves of behavior therapy, training programs in applied behavior analysis

The initial article in this series of three articles outlined the need for the study of the history of the science of behavior. This need was highlighted in the context of the ever-expanding number of practitioners that enter the field of applied behavior analysis (ABA) on a yearly basis. The case was made that the proliferation of ABA practitioners in the field should not result in a narrow view of the science of behaviorism (Guercio & Murray, 2014). The history of the discipline is very rich and one that merits

considerable study and reflections on how we are developing better behavioral scientists and practitioners. The initial article in the series examined the first generation or "fathers" of the field such as B. F Skinner, John Watson, and Ivan Pavlov (Guercio, 2018). These intellectual giants paved the way for a series of transformations in the field that led to the reconceptualization of behavior–environment interactions and the etiology of specific behavior as well as patterns of behavior. The second generation of behavior therapy involved the incorporation of cognitive behavior therapy and the rise of the so-called "cognitive revolution."

Inherent in this revolution was a distancing from the laboratory that Pavlov and Skinner used to derive the early precepts of the field. The transition was being made to a more application-based clinical therapy where stimulus–response psychology and Skinner's operant

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methodology were slowly being replaced by the formulations of behavior that included intervening variables (Hayes, 2004). The time period covered in this article will commence during the decades of the 1950s and 1960s with the eventual publication of the *Journal of Applied Behavior Analysis*. The opposing points of view espoused by adherents of the "cognitive revolution" that followed and the behavioral rebuttals to this framework comprise a great deal of the history of behaviorism and behavior therapy.

The models that comprised the second generation of behavior therapy provided for the interpretation of more complex behavioral events by breaking them down into simpler components. Skinnerian models of behavior during the first generation of behavior therapy minimized the role of emotional states as primary targets of intervention (Kanfer & Phillips, 1970). The discovery of the basic principles of behavior and the subsequent science of behaviorism led to practical applications of these principles.

The notion of behaviorism being rooted in the learning history of the individual was crucial to the behavioral account. The utility of the behavioral approach was evident in a number of demonstrative and impressive demonstrations of the behavioral treatment of common psychological problems. The work of John Watson, a crucial pioneer in first-generation conceptualizations, was instrumental in demonstrating experimentally induced fear under laboratory conditions. Watson's description of the case of a young child of 11 months named Albert demonstrated that a fear response could be produced in the laboratory (Watson & Rayner, 1920). The elaboration upon these findings and the subsequent attempts to successfully treat Albert's learned fear were forfeited when he was removed from the hospital that he was in when the fear was conditioned. A number of early clinicians that worked within the Watsonian framework can be labeled as behavior therapists.

The list of individuals based in the Watsonian tradition covers such luminaries as Mary Cover Jones and Edwin R. Guthrie (Krasner, 1998; Morris, Altus, & Smith, 2013). Cover Jones was a classmate and friend of Rosalie Raynor at Vasser where they met. Raynor went on to work at Johns Hopkins, where she served as John Watson's assistant. Cover Jones worked under

the tutelage of Watson for her doctoral dissertation. Being interested in early childhood education, the thrust of her behavioral research was done in the area of fear reactions with children. Additional work that was deeply rooted in the origins of first-generation foundations was based heavily on stimulus behavior relationships.

Edwin R, Guthrie held views that were the closest to Watson's. He posited that behavioral responses that occurred in certain situations would be more likely to be repeated in the same circumstances in the future. He stated that the molar aspects of stimulus response pairings should be the focus of study independent of the presence of reinforcement or punishment for the responses that occurred. The minute muscular responses that occurred in certain situations were part of a larger behavioral act that became conditioned as a whole during identified situations. Behavioral movements produced proprioceptive stimuli that served as conditioned stimuli for future responses. The pairing of the stimuli with the responses were all that was needed in his formulations of behavior (Kazdin, 1978). Guthrie's primary contention was that psychologists should get down to a factual basis with respect to their subject matter. This factual basis should start with descriptions of stimuli and behavioral events that were acceptable to all observing such an event (Guthrie, 1946). The second generation of behavior therapy sought to incorporate more "mediational" accounts as opposed to the stimulus response behaviorism espoused by Watson's first-generation accounts.

In order to better examine the assumptions and philosophical underpinnings of first- and second-generation behavior therapy formulations of behavior, it is necessary to segment the development of the field into "generations" or paradigm shifts within the field (Brown, Gaudiano, & Miller, 2011). Prior to the development of the second generation of behavior therapy, attempts were made to disseminate the behavioral approach to a larger audience.

The process of dissemination of behaviorism involved introducing the simplicity of a behavioral analysis to the complexities of the problems commonly observed in the field of psychology in general. One of the biggest environments where behaviorism made a big impact was working with some of the issues seen in schools or other environments where

similar problems in learning were present. Sidney Bijou was a pioneer in the applications of behavioral principles with children.

Sidney Bijou moved to the University of Washington in 1948 and proceeded to have a significant impact on the use of behavior analysis with children. He discovered that the use of intermittent schedules of reinforcement were more resistant to extinction than continuous reinforcement was, as had been discovered in the basic literature (Bijou, 1957). During the 1950s and 1960s, Bijou recruited new faculty members for his Institute of Child Development in Seattle. Included in this recruitment effort were two young promising behavioral psychologists named Montrose Wolf and Donald Baer. In addition to Wolf and Baer, a bevy of talented graduate students worked at the Institute including Ivar Lovaas, Todd Risley, and James Sherman to name but a few. In a special case of irony, Bijou supervised the PhD dissertation of Kenneth Spence's daughter Shirley Ann Spence Pumroy. The special intellectual environment that Bijou had set up in Seattle produced research that would solidify the contributions of behaviorism. During his graduate training, Bijou became convinced that an objective science of psychology would eventually have to account for events that occurred between the perception of the stimulus and the response output that resulted. He stated at that time that research should be focused on hypothesis testing that helped to reveal some of the properties of these intervening variables and their relationships with response outputs (Bijou, 2001). In the midst of these practical applications of behavioral technology, the move to a mediational model of behavior was starting to become evident.

Precursors to the Second Generation: Keller and Schoenfeld's Principles of Psychology

One of B. F. Skinner's closest contemporaries was Fred S. Keller. The two met at Harvard and had very similar scientific and research interests. Skinner served as an advisor and close friend of his throughout their careers. Keller and Skinner made several excursions together throughout the Boston area while they were both at Harvard, many times biking to Walden Pond, which would serve as the model for Skinner's utopian novel *Walden II* (Keller, 2009). As Keller went on to teach at Columbia University after his graduate school years, he met Nat Schoenfeld (Keller, 2009).

The professional relationship that Keller and Schoenfeld cultivated in their time at Columbia produced a great deal of scholarship. The two collaborated on a number of projects and ultimately developed a series of lectures. In their efforts to produce material for the newly approved Psychology 1 and Psychology 2 course sequences at Columbia, Keller and Schoenfeld (1950) collaborated on a text that was to be used for the course. In 1947 as Skinner was hosting what would become the first conference on the experimental analysis of behavior, the pair would work diligently on what would become the classic text on behaviorism to that time, *The Principles of Psychology*. The conference that Skinner hosted involved around 20 participants from either Columbia or Indiana, where Skinner was employed at the time (Dinsmoor, 1989).

Those that attended the conference described the attendees as an eclectic group with a strong focus on scientific rigor. The philosophical bent of the attendees was more toward Skinnerian views as opposed to Hull or Kantor's at the time (Dinsmoor, 1987). Skinner was by far the most active presenter, but Ralph Hefferline, Bill Estes, Keller, and others were present as well and presented their current research to the group. Basic behavioral principles themselves were the focus. As the history of behaviorism and behavior therapy was presented to a wider audience, applications of these principles were brought into more focus. This conference was the precursor to such organizations as the Society for the Experimental Analysis of Behavior, Division 25 of the American Psychological Association, and the Association for Behavior Analysis. Some of the presentations by Keller were later detailed in *The Principles of Psychology*.

Keller wrote in his autobiography that he and Schoenfeld divided up the material for the book according to separate chapters and that Schoenfeld did much more of the writing by comparison when the text was completed (Keller, 2009). Their intention was to produce an introductory text to the field of psychology, while at the same time orienting students and other readers of the text to the scientific underpinnings of the behavioral viewpoint. The text proceeded from relatively simple psychological tenets that

served as the foundations upon which the later chapters of the book were to build upon to more complex human behavior that could easily be explained via the behavioral model. The text served to introduce many interested readers over the years to the field of behaviorism and the role that the environment played in the behavior of all organisms.

The pioneering undergraduate text was officially published in 1950. Murray Sidman was a student of both authors and stated in his book that they did what had never been done before with the publication of this book. The systematic approach with which the text approached the subject matter of psychology allowed the student to learn the new language of behaviorism and to apply it consistently in the field of psychology (Sidman, 1995). Each chapter covered material that represented subfields of psychology at the time. The progression of the material from simple to complex makes the contents easy to assimilate. The goal of the authors was to show how complex behaviors may be explained in terms of a simple behavioral methodology. One of the most relevant statements made in Keller and Schoenfeld (1950) was that good data stand on their own merits, regardless of theory. Such a focus on the objective interpretation of data helps to make decisions as opposed to theory guiding interpretations regarding the observed behavior and its etiology. The common foundational aspect that all behavior was traced back to environmental determinants was one that was new to many students of psychology. The section of the text on discrimination and generalization led to Sidman's groundbreaking work on equivalence class formulation (Sidman, 1995). Sidman underscored the importance of this book with respect to the introduction of behaviorally based accounts of behavior.

Sidman urges us to not lose sight of the intent of the text, which was to be a novel introduction to psychology. Many students in the field of psychology are ill prepared for the organism–environment etiology of behavior that was to be represented in their book. The lawfulness of behavior as it was presented was a new formulation of human nature.

The field of psychology had initially refused to accept this new conceptualization of behavior. These contingencies should be taken into account if behavior is to be understood and

significant changes are to be made to the destructive practices that plague our society. Skinner and his contemporaries started to expound upon this contingency analysis of overt events to incorporate private events into a scientific analysis. These new findings in the field were advancing scientific inquiry beyond the isolated study of observable behavior to events that took place covertly and set the stage for what has been termed mediational explanations of behavioral responses. Skinner's work sought to identify areas that veered away from an experimental analysis of behavior.

The Evolution of Complex Learning Processes and Mediational Accounts Within the First Generation of Behavior Therapy

Behaviorism experienced stratification in the field between behaviorists and neobehaviorists. With this stratification came the questions of the etiology of behavior, discriminations between stimuli, and the process of response generalization, to name but a few. One of the variants of behaviorism that arose in the field was neobehaviorism. The most notable neobehaviorists were Guthrie, Hull, Spence and Tolman. A foundational tenet of neobehaviorism was a focus on animal learning processes and the data that were collected in classical, instrumental, and discrimination learning experiments (Segal & Lachman, 1972). Neobehaviorism can be defined as those models where meta theoretical explanatory systems based largely upon hypothetico-deductive postulates were used to explain the etiology of behavior (Suppes, 1975). Many of these postulates involved theoretical terms that were believed to be intervening variables between the stimulus and response that was observed. Although a belief that learning processes were central to a scientific analysis of behavior, these beliefs were diametrically opposed to Skinner's system. Early neobehaviorists such as Clark Hull started to fashion mathematical theories based upon generalization gradients and the manner in which the environment impacts behavior. Hull described these relations between stimuli and responses in a very methodical fashion referring to the gradients of stimuli that were based upon a continuum of the properties of the stimuli that were consistently presented to an organism's sensorium over the course of repeated reinforcements

(Hull, 1950). Theoretical physiological mechanisms were hypothesized for the learning processes that he described. Most of Hull's seminal work was performed at Yale. The philosophical premise of neobehaviorism was to shift to theoretical approaches that employed learning processes in their explanations of behavior as opposed to strictly stimulus–response relationships. Hullian models looked at the process of learning from a different perspective than espoused by Watson or other first-generation behaviorists. Theorists such as Edward Tolman focused primarily on cognitive schemas to explain the etiology of behavior. Tolman's brand of behaviorism was dubbed purposive behaviorism (Staddon, 2001). Both Tolman and Hull sought to uncover certain mechanisms that were at the foundation of behavior as opposed to strictly examining the environmental influences of behavior (Staddon, 2001). The focus here was on basic behavioral processes as opposed to the application of these processes. The primary thrust of Tolman's work was to attempt to demonstrate that simple S–R conceptualizations of behavior were inadequate (Tolman, 1948).

Tolman underscored the spatial recognition skills of the rats that traversed his mazes (Tolman, 1938). He had hoped that more formal theories of these spatial skills would develop, but this never came to pass. Neither the simplistic quantitative propositions of Hull or Tolman's pursuit of metaphorical constructs led to a comprehensive grasp of the behavioral mechanisms that they both sought to identify (Staddon, 2001; Tolman, 1938). The manner in which Watson, and later Skinner, approached these issues was quite different. They pursued prediction and control of behavior through the interaction of observable behavior and the environment, unaided by theory. Watson's research program was essentially atheoretical, while Skinner provided what he viewed as an alternative to theory comprised of Baconian fact finding and pragmatic epistemology (Staddon, 2001).

Some of the most significant contributors to the behavioral tradition veered away from a strictly Watsonian-based behaviorism. Skinner's operant approach girded in the environmental determinants of behavior shifted to a focus on mediational accounts and mathematical models of behavior by the neobehaviorists. Kenneth Spence (1907–1967) asserted that a theory of behavior must be expressed mathematically. Spence relied heavily on trial and error based explanations where discriminations are made that help facilitate learning (Spence, 1936). Both Spence and Hull employed much more than the basic behavior environment interactions as espoused in the first generation. Spence's theories were an attempt to move beyond constructs such as insight being proposed as key catalysts for learning and more toward a mathematical account of response probability.

Spence and Hull saw matters in a similar vein. They were both committed objectivists subscribing to the Watsonian definition of methodological behaviorism. Their primary point of departure was developed out of an interest in addressing the perceived inadequacies and limitations of learning theory (Kendler, 1967). The concept of response strength was an idea that fascinated both he and Hull and led to a variety of theoretical formulations designed to define "motivation" as it related to response strength. Such viewpoints were consistent with neobehaviorism and served as foundational tenets of the neobehaviorist viewpoint at the time that was more theoretical in nature (Staddon, 2001). Some of the points of departure from traditional first-generation formulations came in the analysis of complex learning that was asserted to be inadequately addressed by first-generation explanations. Spence looked at the influence of human cognition and drive factors and how they could be conceptualized and applied to human and animal behavior alike (Kendler, 1967). Hull was also interested in what he called habits. He described habits as invisible conditions of the nervous system whereby the habit mediated action of the organism (Hull, 1952). Spence was also noted to have referred to habits as being part of a response model. This reference to invisible conditions was a departure from the purely stimulus response relations described by Watson and earlier behaviorists. There are also a number of similarities in Hull's approach with Watson and Skinner's formulations of behavior. Hull insisted on a consistent and rigorous objectivism. He pointed out the drawbacks of the reification of a behavioral function, or giving the function of a behavior a name and acting as though the name itself explains the behavior.

The Flight From the Laboratory

Skinner bemoaned the tendency of psychologists to stray away from the experimental analysis of behavior and the pursuit of construct-based diagnosis and treatment (Skinner, 1961). He asserted that they should be required to become familiarized with the apparatus and procedures of the laboratory setting as opposed to their strict training in statistics in graduate school. He saw such academic training as a diversion from the observable behavior that should have been included in their training. The use of mentalistic constructs per se and mental surrogates were taking the place of a true science of behavior. They should be given the occasion to behave as scientists rather than what he called the robots described by scientific methodologies. He postulated that these were required in order to restore experimental psychology's vigor. Skinner desperately desired that the young psychologists of his day would see the importance of their contributions through their advancing the understanding that human behavior could lead to cultural changes as well as changes in individual behavior. These changes, he argued, would eventually impact the anxieties and challenges of mankind. All of this could be obtained through a laboratory-based approach to human behavior.

His pleas to rely on an experimental analysis rested on the belief that behavior could be predicted and controlled. His frustration was with the move that psychology was making to the study of the inner man. The study of mediational constructs eventually led to the second generation of behavior therapy, which involved what he called the flight from the laboratory. This flight involved the focus of inquiry changing from scientific examinations to the mathematical models of statistics, the study of "inner" causes of behavior (Skinner, 1961, p. 370). His plea was that one could identify directly manipulable variables as opposed to verbal explanations of behavior. Skinner eloquently outlines how the casual use of layman's terms in the flight into laymanship and the use of personality theories in the flight to the inner man can lead one astray of identifying manipulable variables of behavior. The same was true in how people would retreat to mathematical models of behavior as opposed to studying specific observable environment/behavior interactions of behavior

change. The use of terms such as empathy and intuition cannot replace a scientific analysis of behavior. These references to unobservable phenomena are said by some to take inquiry off of the path to truth and down the rabbit holes of speculation and conjecture from Skinner's perspective.

Skinner did not eschew theory entirely. His aim was to sharpen the focus on the important variables responsible for a better understanding of the environmental etiology of behavior. His formulations were based upon the ability to predict and control responses based upon an operant analysis. His analysis was extended to human behavior as he expounded upon the foundations of his operant analysis. He explained many common terms such as anger and other emotions in terms of conditioning. The effects of positive reinforcement and punishment were used to point out the conditions under which emotional terms such as frustration and embarrassment are said to arise in his analysis (Skinner, 1953). Skinner expounded upon his applications of an operant analysis to human affairs as he pointed out that concepts such as the mind and the manner in which we acquire new information are a byproduct of contingencies of reinforcement as opposed to a mental entity (Skinner, 1977). The changes in the field of behaviorism based on Skinner's observations of the flight from the laboratory led to many different conceptualizations of human behavior and experimental analysis, including an analysis of private events.

Extrapolations to Human Populations

As new formulations were being sought for stimulus response relationships by the neobehaviorists, a number of the early pioneers continued to work within first-generation traditions. Much of the work that occurred in the 60s and 70s would go on to further the field in ways that second-generation mediational accounts could not. The postulates of observable and measurable behavioral goals continued to be the bedrock for behavioral interventions in a number of different populations. One of the primary populations targeted was children.

Sidney Bijou worked under the tutelage of Kenneth Spence at the University of Iowa. He was exposed to many of the writings of Clark Hull via weekly meetings called the Monday

Night Group (Bruce, 1998). These Monday Night Group meetings were devoted exclusively to a chapter-by-chapter review of Hull's article that later became published as *Principles of Behavior* (Bijou, 2001). Bijou later conducted studies at the University of Washington examining the role of extinction on the emotional behavior of children, the laboratory control of thumb sucking by withdrawal and representation of reinforcement, and reinforcing imitative repertoires (Baer, 1962; Bijou & Orlando, 1961). It is beyond the scope of this paper to document all of the incredible work done during this fertile period, but it set the stage for one of the most influential training programs in behaviorism up to that time.

In the early 1960s, the University of Kansas found itself with a number of child care facilities that were surplus from the second world war, and a substantial budget line item for child research. Out of these facts and many other circumstances, the Department of Human Development and Family Life was born. Francis Horowitz moved with her husband to the University of Kansa in 1961 as the result of her husband's taking a position in the English department there. Horowitz then starting working with the Department of Child Research at the university. She was instrumental in evolving what was the Department of Home Economics into the Department of Human Development and Family Life, where the behavioral program was to be housed. She had met Don Baer in 1960 while she was at Southern Oregon College and Baer was at the University of Washington. At this time, Baer was unhappy because of the lack of tolerance of Skinnerian perspectives and a disdain for single subject research at the Psychology Department there (Horowitz, 2002). She was eventually able to get him to come to Lawrence for a visit to the university. The existing chair prior to his arrival was approaching retirement and had been in conversation with Don Baer and asked him if he would be "interested in a challenge." (Baer, 1993). Baer moved to Kansas and was able to shape the department there and create undergraduate and doctoral programs that were steeped in the behavioral tradition. Thus started the illustrious behaviorally oriented research and applied history of the University of Kansas. Given that a momentous psychology civil war had broken out at the University of Washington, a number of its most

talented behavioral researchers and clinicians were left looking for other appointments. Baer wanted to retain the experimental vigor that was emblematic of Sidney Bijou's Developmental Psychology laboratory at the University of Washington. Feeling up to the challenge, Baer arrived at the University of Kansas in the summer of 1965. Montrose Wolf and Todd Risley were among the first hires in the fledgling program. Wolf and Risley immediately began projects in urban ghetto areas in Kansas City. The foundations of the programs were not so much based on the debates of the day such as operant versus Hullian principles, as they were in experimentally driven projects. The success that followed is obvious with a scan of the literature during that time period.

There were also other behavioral theorists who worked diligently during the period to include private events in their analysis, as Skinner had done. Israel Goldiamond sought to provide a comprehensive behavior analysis that would encompass public and private events alike. Goldiamond pursued an analysis of moral behavior as well as looking at a functional analysis of the content of verbal behavior in therapeutic sessions (Goldiamond, 1968; Goldiamond & Dyrud, 1968; Layng, 2009). Goldiamond referenced research on pigeon behavior as demonstrating that the pain associated with different contexts may not be maladaptive, but rather an appropriate response depending upon the context of the behavior. Goldiamond's research in this area was fueled by the findings of other first-generation researchers (Holz & Azrin, 1961). This was a bit of foreshadowing to some of the conceptualizations brought forth in the "third wave" of behavior therapy that Hayes was to champion several decades later (Hayes, 2004).

Another theorist steeped in the early days of the behavioral movement was Arthur Staats. Staats was an early psychology faculty member at Arizona State University. He focused his early work on an operant and classical conditioning analysis of language (Staats, 1996). He had discarded Hullian principles of behavior in search of more conditioning-based explanations of behavior. Much of what Staats was doing at the time was groundbreaking work. He incorporated token-based systems of reinforcement into reading programs for children with developmental disabilities. Staats used the term *psy-*

chological behaviorism to describe what he called a full behavioral theory of personality. His explorations of the way that stimuli can function as reinforcers based upon deprivation or satiation were a precursor to the concept of the motivating operation (Staats, 1996). The incorporation of the states of deprivation and satiation were firmly rooted in first-generation theoretical foundations. The work done at Arizona State University was one of the pioneering training programs for behaviorally based training and was dubbed Fort Skinner in the desert. The program was based as much on psychological behaviorism as it was on the radical behaviorism of Skinner. Additional work by these first-generation pioneers continued in earnest.

Montrose Wolf and Todd Risley were the first researchers to apply the principles of operant conditioning to children with autism (Wolf, 2001). Their initial study addressed several target behaviors of a three-year-old boy identified as Dickie in their paper. The young child displayed significant episodes of self-injurious behavior (SIB), physical aggression toward others, and refusal to engage in many routines throughout the course of his day. The authors were able to decrease the frequency of Dickie's aggression over the course of their treatment of the child. It is interesting to note that they also implemented their operant procedures such as time out and removal of Dickie's plate from the table when he threw food in both the home and clinic settings (Wolf, Risley, & Mees, 1963). This set the stage for parent training programs that are currently in practice today. The verbal behavior of the child was also treated using modeling procedures and differential reinforcement. This initial study set the groundwork for future applications of behavioral technology to children with autism.

Ivar Lovaas, a University of Washington graduate, and his research program at the University of California and Los Angeles (UCLA) expounded upon the initial work of Risley and Wolf (1967). This work in the application of behavioral principles to the behavior of children diagnosed with autism produced an eventual avalanche of research. Lovaas' research produced a clinical program that specified the types of interventions that children should be exposed to. This program incorporated a variety of techniques involving both reinforcement and punishment procedures as well as parental involvement (Lovaas & Bucher, 1974). The intervention produced significant results with respect to SIB, increased production of verbal behavior, and led to social skills improvements. The behavior of children diagnosed with autism were compared to a control group of children that had not received the treatment, and significant differences were observed between the two groups. In an early article, Lovaas, Koegel, Simmons, and Long (1973) examined the maintenance of the gains that were achieved at the end of the program. It was very clear that children placed within institutional settings after such training tended to regress when they were assessed in the future, whereas those that returned to live with parents that had been specifically trained in the procedures tended to retain the behavioral gains (Lovaas et al., 1973). Lovaas was one of many researchers addressing the behavioral needs of children as the focus in the field broadened to more diverse applications of the science to human issues.

Growing Pains and Shifts in Focus

Donald Baer's impact on the burgeoning field of applied behavior analysis (ABA) is hard to measure given its scope. Most introductory behavior analysis students know of Don Baer primarily through the seminal article that he penned with Wolf and Risley in 1968 that outlined the dimensions of applied behavior analysis (Baer, Wolf, & Risley, 1968). Short of cute acronyms that students learn to regurgitate these seven dimensions, few of these students are aware of some of the overall contributions that this man made to the field that go well beyond that article (Dixon, Reed, Smith, Belisle, & Jackson, 2015).

Baer, along with Montrose Wolf and Todd Risley (BWR), penned that seminal paper in the initial issue of the *Journal of Applied Behavior Analysis*. The paper has been called the gold standard with respect to how behavior analytic research should be conducted. The paper also has an additional distinction of being what Critchfield and Reed (2017, p. 131) call a "polemic, a Declaration of Independence from the experimental analysis of behavior." It has been the focal point of training in applied behavior analysis for a number of years, but few students realize its role in this early debate in the field.

The 1968 article served to underscore the utility of behavior change that is of social importance. This was intended to be in sharp contrast with the prevailing tone of the time, where the focus was on the precise methodological manner in which laboratory research was conducted. Although this research was of vital importance to the field, the rigor that was to accompany it was neither clinically appropriate nor possible in settings outside of the carefully arranged environment of the laboratory. Settings outside of the lab did not allow for the degree of control exerted in laboratory settings. The BWR article, as well as others that will be detailed in this article, are foundational pieces of literature in our field and should help to guide the progression of the science and practice of ABA.

We should value the key publications that contribute to how the field of behavior analysis has evolved. The progression from behavioral psychology to applied behavior analysis to cognitive behavior therapy (CBT) and other clinical practices all involve variants of conceptual issues and technological use of key interventions that all students and practitioners of behavior analysis should be well aware. Sidman has aptly pointed out how the research history in a field of study "does not just present what is known but points out what we need to know, and suggests how we might find out" (Sidman, 1995, unpaginated preface). Some of the early pioneers of ABA made strong statements as to what should be expected in academic pursuits and practitioner training.

Don Baer specifically asserted that students should be advised related to the impartation of research skills and the reinforcement of the consequences of increased methodical and clinical rigor. He stated that his purpose was to produce students who would be ardent researchers who would publish consistently throughout their careers (Budd & Stokes, 2003). Another key foundational tenet that Baer espoused was an insistence on sound empirical proof for the assertions and analysis that was based upon observable data. These tenets are firmly grounded in first-generation underpinnings. Recent years have shown increases in the demand for ABA services and the tendency to try and meet these needs through training programs that may not be as comprehensive as they need to be (Guercio & Murray, 2014). In order to provide a well-rounded practitioner, the historical trends

and scientific shifts that have occurred within the field need to be acknowledged and appreciated (Dixon et al., 2015). The vast majority of the training programs in applied behavior analysis are not meeting the standard as Baer defined it. A key reason for Baer's standards was the intense competition within the field that arose in the late 1960s and 1970s primarily due to friction between two primary camps in the behavioral field.

These camps were the experimental control group and what has been called the social validity camp as a result of the impact of the BWR article (Rutherford, 2009). The experimental control group was steeply based in the experimental analysis of behavior (EAB). The tensions that arose were founded in the belief that we needed more information from laboratory studies prior to making the leap from the lab to the field (Rutherford, 2009). The social validity group argued that the primary goal in any intervention was the impact that it made in making the lives of others better. Practical importance reigned in opposition to laboratory rigor. This tension was an important element of the growth of the field of behavior analysis. Similar to Watson's (1913) behavioral manifesto *Psychology as the Behaviorist Views It* being a response to the psychoanalytic and structural-based theories of his day, so was BWR a response to the EAB proponents of their day (Critchfield & Reed, 2017). A new outlet was now being provided for those in the social validity camp.

The *Journal of Applied Behavior Analysis* followed the guidelines established for it by Montrose Wolf that addressed his primary concern that the encouragement of field research and the pursuit of lawfulness in the behavior of everyday people could foster a new behavioral technology. The end result was what some have termed a "crisis," in that the guidelines explicated by BWR lauded social validity over everything else (Critchfield & Reed, 2017). This led to research that seemed to be straying from EAB. The ways that it was departing from EAB was the shift in focus to social validity, in vivo applications, and a departure from the rigor of the lab. This debate continues to the present day, where training programs in behavior analysis and the guidelines for how they are set up seem to be stressing more of the polemic of BWR as opposed to a thorough understanding

of the science of behavior analysis. (Risley, 2001). The profit is there in terms of turning out vast numbers of students, but the in-depth understanding of our evolution as a field has been abandoned to some degree.

Pursuant to the tensions at that time was the growing dissatisfaction and confidence that the field was losing touch with its scholarly foundations (Poling, Picker, Grossett, Hall-Johnson, & Holbrook, 1981). It is close to 50 years removed from this sentiment that we are moving away from our scholarly foundations and it has become a self-fulfilling prophecy of sorts. Our institutions are producing students that are very familiar with BWR and are not able to make the scholarly shift to some of the important experimental and scientific roots that should be revered in the field (Critchfield & Reed, 2017). The focus has shifted to funding mechanisms, narrow therapeutic focus (autism), and our focus on EAB, and its scholarly roots have suffered as a result. This suffering is manifested in a decreased focus on the experimental roots of behaviorism. The concerns are real, as Hayes and colleagues stated when they expressed trepidation with the fact that "we are becoming less concerned with basic principles of behavior and more concerned with techniques," (Hayes, Rincover, & Solnick, 1980, p. 283). We must be able to traverse the intellectual divide to avoid the dilemma that Sidman (2011, p. 973) spoke of when he feared that a lack of grounding in the conceptual foundations of the field would not allow practitioners to be "able to place their particular problem in a more general context and thereby deal with it . . . successfully." This ineffectiveness can now dilute the increased demand for ABA services that currently exists if consumers are not satisfied with the work of ineffectual clinicians. The end result could be a "second crisis" where the technological excesses of the day may lead to poor clinical implementation and dissemination by practitioners who are not able to link practice back to the basic principles upon which it was founded. Graduate training in applied behavior analysis should take all of this into account by providing ample education and training experiences as to how basic, scientific, behavioral principles lead to our understanding of human behavior. The more limited the range of intellectual and literature-based exemplars that students receive, the more narrow their professional repertoire will

become (Critchfield & Reed, 2017). Perhaps BWR was evidence of the shifting sands of a discipline and added to the continuing debate over what the field of ABA should evolve into. This evolution was starting to emerge as different conceptualizations of behavioral problems were espoused.

The March Toward the Second Generation of Behavior Therapy in Behaviorism

The transition to a broader conceptualization of environment–behavior interaction sought to examine behavioral processes that could not be overtly observed. The first generation has been described as the emphasis on the measurable properties of behavior and the subsequent prediction and control that such measurement affords the clinician. The pioneers of behaviorism such as Skinner, Watson, and Pavlov all helped to develop the concepts of the environmental influences upon behavior. Vague descriptions of disorders using clinical concepts that were poorly measurable were replaced by a focus on observable target behaviors that were inherent to the specific disorder being treated. The direct contingencies that were related to the disorder were manipulated using both respondent and operant methodologies. Behavior change methodologies based upon covert processes that were not observable were evident as the CBT movement was established.

Changes to cognitively based constructs such as dysfunctional attitudes and irrational thought patterns were termed content changes and were thought to be causal factors in behavior change during the second generation of behavior therapy. The "first generation" represented a rebellion against the prevailing beliefs in the field. Some of the earliest behavioral pioneers held that theories should be based upon a solid foundation of principles. The clinical traditions that existed at the time were not based upon sound scientific principles and left more to be desired from the perspective of a true science of behavior. Skinner changed this view somewhat as he warned against using conceptualized entities as causes of behavior, which shall be addressed later in this article (Skinner, 1950). The use of vague concepts and the inability to measure many of the covert mental process that were proposed for behavior led to the pursuit of increased order and a more thorough scientific

analysis when first-generation methodologies emerged. As behavioral treatment progressed, clinicians started to evaluate the role of covert cognitive behavior and its capacity to influence unwanted behavior. Prior to the initiation of the second generation of behavior therapy, behaviorists were split into separate camps of behaviorism and neobehaviorism.

The inclusion of observable behavior and the empirically based treatment protocols produced a significant impact in the field of psychology via the first generation of behavior therapy. There was a general consensus in the neobehaviorist camp that something was not complete with respect to first-generation conceptualizations of behavior (Hull, 1952). The issues of private events and the ability to address them within the context of behavior therapy were said to be missing in the analysis. This movement spawned what has been called the "second generation" of behavior therapy.

As new conceptions of behavioral events were being formulated, radical behaviorism as espoused by Skinner was in the process of supplanting the long-held Watsonian tradition. Although Watson did not expressly prohibit the study of private events, his conceptualization of them differed from what Skinner was proposing. Watson has stated that *"At every point, we should describe all psychology in terms of what we see the organism doing. When we study implicitly bodily processes, we are studying thought"* (Watson, 1920, p. 100). Skinner's analysis was based upon a complete behavioral analysis of the events in question, whether overt or covert. His belief was that once the contingencies that controlled the response were identified, a more objective analysis had been made (Skinner, 1945). This is the core of Skinner's break with Watson, that private events needed to be assimilated in a complete scientific account of behavior.

As theorists such as Meichenbaum and Bandura moved on to study cognitive mediational events, the neobehaviorists continued to assert that they had been dealing with cognition all along (Wolpe, 1980). The primary distinguishing factor of the second generation of behavior therapy was the inclusion of nonobservable cognitive states into the etiology of psychiatric conditions. The evolution of behavior therapy during this time period is evidence of this shift.

Second-generation notions of the etiology of behavior developed as the result of a confluence of different schools of thought (Hayes, 2004). Behavior therapy approaches were a huge component of these changes. These approaches had more to do with the manner in which we examine the data that are obtained as opposed to particular clinical techniques (Franks & Brady, 1970). Clinical issues are examined based upon the observable, measurable behavior that accompanies them in the behavior therapy model. These variables are then systematically manipulated through the course of treatment. The principles of learning are at the forefront of behavior therapy approaches, most of which came out of the laboratory in the earlier stages of the field of behaviorism. The treatments that were bred from these approaches were based upon acute awareness of the environment in which both the clinician and the client were operating, such as the clinical session often conducted in an office setting (Eysenck, 1959, 1972; Franks & Brady, 1970).

Was There a Cognitive Revolution? The Second Generation Is Introduced

The frequently held tenet that behaviorism sought to dismiss the role of the "mind" in behavioral processes might have served as a catalyst for the second generation of behavior therapy, often labeled as the cognitive revolution in therapy. The revolution was an overtaking of current environmental-based etiologies serving as explanations for the etiology of behavior with a shift to more cognitive-based constructs to define behavior. The rise of cognitivism was said to have contributed to the death of behaviorism at the time. Intervening variables were now being used to account for behavior. These mechanisms were not measurable and were assumed to be the primary causal factors in the overt behavior that was observed. The flood of new concepts related to the mind and how information was processed led to what many called the death of behaviorism (Baars, 1986). Computer metaphors for how the brain worked became a foundation for purported deeper excursions into the mind's role in behavior. The cognitive revolution was the result of a confluence of factors.

The rise of cognitivism is typically viewed as being a significant impetus for the cognitive

revolution that was instituted in the second generation of behavior therapy as it is described in the present article. The broader context of cognitive science was also a huge component of the second generation (Watrin & Darwich, 2012). The shift in focus on cognitive processes was a radical deviation from the behavioral focus that had been in practice. This was a deviation, but not a displacement. Many accounts of the second generation underscore that along with its rise to prominence, there was a corresponding decline or even death of the behavioral point of view. This does not appear to be the case. The manner in which we review the history can color our opinion of the events that were to transpire. Carr (1987) states this very eloquently: "The facts speak only when the historian calls on them; it is he who decides to which facts to give the floor, and in what order or context" (p. 11). The strength of the narratives concerning the death of behaviorism were so strong that it was called a revolution and that those who are not true students of this history can be susceptible to taking assertion of the death of behaviorism at face value. A more thorough historical analysis points to significant paradigm shifts, but the absence of a wholesale revolution. We should be careful not to convey the story at the expense of behaviorism. The cognitivist movement was marked by a number of heterogeneous circumstances that involved not only psychology, but linguistics, computer science, philosophy, anthropology, and neuroscience. Although there were a number of novel applications to address behavioral issues, behaviorism remained alive during and well after the cognitive revolution. The most parsimonious explanation is that, rather than the death of behaviorism and the rise of cognitive based accounts, the two approaches continued to coexist. Not only did they coexist, but they were combined in treatment packages using both approaches. The popularity of these treatments was spurred on by numerous randomized clinical trials that showed the efficacy of these approaches. Along with the rise in cognitive approaches, the efficacy of CBT in treating unipolar depression was documented extensively (Antonuccio, Danton, & DeNelsky, 1995). Different treatment models arose based upon this new perspective.

The more popular and familiar treatments during this time period were cognitive therapy for depression espoused by Aaron Beck (1970) and rational emotive behavior therapy as delineated by Albert Ellis (1957). The use of cognitive–behavioral methods is centuries old and dates back to the experiments of Anton Mesmer and Jean Martin Charcot (Ellis, 2001). Although the efficacy of these treatments was documented when compared to psychodynamic approaches, the etiology and theoretical foundations of many of the second-generation therapies were based more on proposed private covert processes than on the principles of science.

Bridging the Gap Between the First and Second Generations

The term behavior therapy itself was coined by Skinner and Lindsley (1954); Lazarus (1958), and Eysenck (1960). The intent was to mirror what Sir Francis Bacon had written years earlier, "The first distemper of learning, when men study words, not matter" (Dicks, 1955, p. 182). Bacon espoused the importance of observable phenomena when it came to a scientific analysis. The study of words as he phrased it were mere self-reports or mental constructs that could not be readily identified and measured. The foundation of Bacon's scientific doctrines was enumerative induction in the fact-finding process. Skinner was very vocal in his allegiance to Bacon's view of the natural sciences (Macdonald, 2007). This was to the point that Skinner identified himself as an ardent Baconian. Numerous sections of Skinner's *Walden II* are formulated based upon Bacon's *New Atlantis*. Bacon and Skinner both stated that the experiment was the "royal road" to reality. Their point was that those who were the most familiar with the real world were not the contemplators but rather the manipulators, the ones who could produce the effects desired (Smith, 1992, p. 217). The scrutiny during second-generation models was now shifting to mediational events as opposed to the overarching environmental approach espoused by Watson and Skinner. The tides were starting to shift to basic questions that would usher in the second generation of behavior therapy. Examination was now moving to the possibility of cognitive events playing a role in behavior and psychological conditions.

Concepts such as irrational thoughts, cognitive schemas, and faulty information processing

styles took precedence over operant analysis, respondent conditioning, and a primary focus on environmental determinants in explaining the etiology of behavior. Treatments were aimed at modifying "dysfunctional belief systems" and faulty "information processing" (Beck, 1970). A bevy of new terms were used in addition to a goal of presenting an alternative model to not only psychoanalysis, but now to some of the basic tenets of the first generation that were now viewed as inadequate. Most of the converts to second-generation terminology started to use terms such as "cognitive behavior therapy" (CBT) to avoid a complete abandonment of first-generation sensibilities (Hayes, 2004). Although the appearance of a complete change of direction was present, much attention was paid to avoid totally discounting empirically supported first-generation change elements. It could be said that the first generation was expounded upon by the second, while still incorporating a number of its major tenets. The change in focus from purely observable environment/behavior interactions to the acceptance of mediational accounts in the second generation was done because of their practically being abandoned in first generation formulations. The improvements that were made from an empirical perspective in the first generation appeared to now be reverting back to some of the approaches that were deemed to be faulty and immeasurable that led to first-generation technologies being proposed in the first place. These changes were lamented by those endorsing the strict controls that were possible in laboratory settings.

Primary Figures in Second-Generation Conceptualizations

The second generation was ushered in by a drastic change in the way that the etiology of behavior and psychological problems was viewed. The primary components of this "cognitive revolution," as it has come to be known, was a focus on inner agents of behavior change. Some of the earliest proponents of CBT based their formulations predominantly on cognitive conceptualizations (Early & Grady, 2017). The early proponents of the second generation of behavior therapy were drifting from their psychoanalytic roots as well as the laboratory as Skinner detailed, but displayed some affinity with behaviorism, espousing the clear goals of measurable behavior change. The primary difference between first- and second-generation formulations of behavior was in their central thesis about behavior and its origins in thought processes and other internal mechanisms that could not be observed. The internalized catalyst of thought processes serving as mediating forces and causes was central to its etiology. The timeline of this shift to mediating forces occurred over the course of several decades (see Figure 1). The conceptualization of thought processes differs significantly from a purely behavioral explanation of human behavior.

The coalescence of behavioral and cognitive formulations of behavior was fostered by their similarities but hampered somewhat by their differences. The more comprehensive approach to blend the two approaches, but the utilization of two such different approaches, introduces potential confounds as to which approach is more efficacious when it is used clinically as a treatment package.

Some of the dissatisfaction that was bred through applications of behavioral interventions to problem behavior led to a blended approach. The disciplines of behavior therapy and cognitive therapy were blended into what has been termed cognitive behavior therapy (CBT). This blended approach used the strengths of an operant analysis of behavioral issues as well as incorporating hypothesized inner causes of behavior. Operant elements were included that identified the maintaining environmental variables in both assessment and intervention. The use of inner causes in the etiology of behavior was approached with much suspicion by adherents to the behavioral tradition. The second generation of behavior therapy was such a stark contrast to the first that many labeled it as a revolution. Arguments have been made as to whether or not a true revolution occurred, but the fact remains that there was a significant paradigm change that had taken place. Paradigms start to shift when our current explanations of phenomenon no longer conform to what nature reveals to us on a regular basis (Kuhn, 1963). The explanations of the past are no longer sufficient and require elaboration in order to better conceptually frame the phenomenon that is being examined. The phenomenon of interest was human behavior and how it

Prominent Figures	Time Period	Classification
John BroadusWatson Mary Cover Jones Edwin R. Guthrie Rosalie Raynor	1915-1925	Classical First Generation
Kenneth Spence Sid Bijou Clark Hull Ed Tolman	1936-1948	Neo (Hull) and purposive (Tolman) First generation
Fred Keller Nate Schoenfeld	1947-1950	First Generation
B.F.Skinner Don Baer Israel Goldiamond Arthur Staats Ivar Lovaas	1954-1973	First Generation
Montrose Wolf Todd Risley	1968-1978	First Generation
Albert Elis Aaron Beck Albert Bandura Donald Meichenbaum	1981-2001	Second Generation

Figure 1. Time scale of the development of behaviorism and behavior therapy beginning with classical behaviorism and first-generation paradigms through those promulgated in the second generation.

could be analyzed in order to better predict and control behavior.

Although cognitive mediating variables and computer analogies were thought to present a better schema of human behavior, new avenues were requested to better explain complex human behavior and private events. Dysfunctional beliefs were now held by some to be at the heart of behavioral or psychological disorders (Bouton, Mineka, & Barlow, 2001; Ellis, 2001). Many of the overt environment behavior relationships that had served as a foundation for behaviorism were being elaborated upon. The refinements that were postulated to have been unearthed with the second generation of behavior therapy still left a number of unanswered questions. Many clinicians at the time were starting to focus on the manner in which the person was evaluating covert events as being a place to focus treatment efforts. One of the chief theorists at the time was Aaron T. Beck.

Aaron T. Beck and the Rise of CBT

Aaron T. Beck made a break from psychoanalytic leanings early in his career to more of a cognitive–behavioral focus in 1961. During this time period, he was on sabbatical from the University of Pennsylvania's psychiatry department in the midst of a department-wide battle over the place of psychoanalysis in future treatment modalities. Beck began to examine depression and the current treatment options that were present (Beck, 1963; Beck, 1991). His new treatment theory was to appear in the *Archives of General Psychiatry* a few years later (Beck, 1963). Many mark this as the beginning of the cognitive therapy movement and what was to become the centerpiece to the cognitive behavior therapy movement (Rosner, 2012).

Beck was to arrive at his conceptualization of depression based upon his inability to confirm his hypothesis that depression was not a form of inverted hostility. His conclusions were that, once wish fulfillment was removed from the analysis, there was nothing to it (Rosner, 2012). He now stated from 1963 forward that cognitive psychology was more amenable to experimental investigation than a psychoanalytic perspective and was closer to his daily observations in prac-

tice. It was out of these intellectual struggles that the Beck Depression Inventory was born (Beck, 1984; Rosner, 2012). Throughout his career, he struggled to distance himself from his psychoanalytic training, as evidenced in this letter to John Bowlby in 1981:

> It might be a point of curiosity therefore for you to know that my psychiatric training was completely and exclusively psychoanalytic. At the present time in fact I am trying to reformulate many of the basic psychoanalytic concepts into cognitive terms. (Rosner, 2012, p. 2)

The concept of automatic thoughts in depression was one of these reformulations.

The centerpiece of Beck's cognitive therapy approach for depression was to address what he defined as the automatic streams of negative thought that purportedly plagued those with depression. His theory was based on how he proposed that people processed or interpreted information. The underlying theme was that many people may have a similar experience, but his depressed patients tended to interpret these experiences in a distorted manner. His depictions of these "thought processes" produced terms such as catastrophizing, overgeneralization, and other cognitive distortions that led to mood disturbance. The process of identifying these maladaptive processes and correcting them was at the core of his approach. The applications to depression were only the beginning of the work done by second-generation cognitive behavior therapy.

The Rational Emotive Therapy of Albert Ellis

Albert Ellis (2001) held that the use of cognitive–behavioral agents in personality change were actually centuries old. He maintained that the experiments of Franz Anton Mesmer, Jean Martin Charcot, and others were heralds of the second generation of behavior therapy well before such distinctions were even identified. Epictetus (1890) wrote in *The Enchiridion* that "people are not disturbed by things, but by the views which they take of them" (quoted by Ellis, 2001, p. 186).

The role of choice in the decisions that humans make was found in the writings of Kierkegaard (1953) and Sartre (1968) and relates to the concept that the views that people take of things is at the core of what disturbs them. Both

viewpoints imply intervening variables as causes for behavior. The driving force behind Ellis and his version of these ancient influences was the predominance of irrational or dysfunctional beliefs in psychological maladies.

Ellis outlined 12 common irrational beliefs that he identified as accompanying his patient's neurotic feelings and behavior (Ellis, 2001). The primary thrust of his clinical methods was to actively dispute these beliefs via empirical, logical, and pragmatic means. The specificity that was entailed in this approach brought much more detail to the table than had previous cognitively oriented interventions such as those represented in psychodynamic theory. Well over a thousand studies have documented these approaches with a variety of populations (Beck, 1991). Around the same time period, another primary figure in second-generation conceptualizations of behavior was Albert Bandura.

Albert Bandura and Modeling and Social Learning Theory

Albert Bandura reached the conclusion that challenged the existing premise of radical behaviorism. His theory acknowledges the role of positive reinforcement for direct overt behavior, but adds a social learning element whereby human behavior can be learned through the observation of the behavior of others. Bandura alluded to the initiating role of cognition in social learning scenarios (Early & Grady, 2017). His theory left the door open to a cognitive interpretation when he included the role of expectations of reinforcement that may lead to learning as opposed to direct reinforcement (Bandura, 1986). His behavioral formulations of behavior at the time were related to the ability of the individual to influence events around him (Kazdin, 1978). The demonstration of a person's ability to exert this influence was a process that he likened to self-control. Social learning theory postulated that self-control highlights the influence that the individual can have on overt events in his environment without excess focus on the environment's role in this process.

The existing first-generation view espoused by behaviorism was now being challenged by a viewpoint holding that human knowledge and behavior is active and constructive, involving more elements than just environment–behavior interactions. Each person was seen as capable of

constructing their own reality, similar to the core etiology of rational emotive therapy teaching clients how to change their view of situations and stimuli in order to try and change their responses (Guba & Lincoln, 1994). This viewpoint differed from previous conceptualizations in that the stimuli that preceded responses were subject to internal processes that could change what was observed. These processes were the constructs of evaluation and assessment of the stimuli that had been experienced by the person. This was a purely mediational model. The effects of these external environmental forces on behavior was now being interpreted in light of the individual's perceptions and reactions to what had occurred in the environment. The behavior therapy techniques that were pursued in second-generation models targeted the change of cognitive processes and was a significantly different conceptualization than that proposed in first-generation conceptualizations. The philosophical intent was to provide a more comprehensive treatment paradigm than the options available through the behavioral and cognitive approaches in isolation. Many of the CBT approaches that were being endorsed at the time had a number of components that mirrored those being used during the first generation. The work of Donald Meichenbaum is a testament to the incorporation of first-generation approaches with the different views being adopted in the second generation.

Stress Inoculation Training

Donald Meichenbaum fashioned his variant of CBT based upon some of the work that was done by Ellis and Beck. His work incorporated learning history formulations that were characteristic of first-generation models along with second-generation cognitive-based therapy. The distinction between adaptive thought process and ones that were unproductive came to serve as a guidepost for the formulation of his own brand of CBT based upon thought-stopping or stress-management practices.

Meichenbaum saw his contributions to the field as setting the table to focus less on the laws of learning and more on what he called information processing. His attempts were to bridge the gap between cognition and behavior (Meichenbaum, 2017). His new treatment approach was dubbed cognitive behavior modifi-

cation and was introduced in the midst of what was called the cognitive revolution. The primary thrust of his approach was to bolster the learning theory of the time as well as conceptualizing covert behavior that he stated could not be explained through strictly behavioral models of learning, in his estimation. One of the core tenets of his approach was his formulation that stress reactions can be determined from the additional information that is based upon client's prior experience with stressful situations and their reactions to them (Meichenbaum, Turk, & Burstein, 1975). The approach involved three core elements.

The initial element or phase of stress inoculation training involved an educational component. The client was to be presented with an overview of the stress response and how it was manifested in those who experienced it. This conceptual foundation was then built upon by the introduction of the second element of the training of coping and self-management skills to address the aforementioned stress response systems in the client. The skills were to be rehearsed frequently so that the client could become fluent in their use in the event of a stressful life event. The client was then provided with an opportunity to utilize the third element, which was the practice of these skills during exposure to a variety of graded stressors according to stimuli identified by the client (Meichenbaum & Novaco, 1985). These procedures were first implemented with law enforcement personnel to determine their superior in vivo efficacy.

The training of law enforcement officers consisted of a similar protocol with ordered steps to train the procedures that could be used in the field for officers. These procedures had been successfully implemented with others persons that he had treated that experienced significant problems with anger (Meichenbaum & Novaco, 1985). One of the core components of his stress inoculation approach was coping self-statements. These statements were covert verbal behavior that the client was to engage in to address stressful events as they were encountered. Prominent in his description of some of the factors that led to anger and aggression were what Meichenbaum called setting events. The way that he defined setting events was the same way that behaviorists define it. These events were defined as phys-

iological, social, or environmental events that increased the likelihood of an aggressive response as he defined it in his work on anger. His description of the anger response was laden with behavioral terminology such as situational cues, modes of responding, and the consequences of in vivo scenes. Although concepts such as concept formulation and cognitive preparation were also incorporated into his conceptualization of treatment for anger issues, many of the components of his approach were behavioral in nature, with a cognitive overlay. The skills training that Meichenbaum used also fits this same mold. His description of skills training is very behavioral in nature with respect to antecedent coping strategies that are prefaced by the identification of muscle tightness and the ultimate utilization of stress management skills.

The manner in which self-management skills were taught bears a great resemblance to behavioral skills training. Scenarios for intervention are derived from group meetings and rehearsed with a trainer. These subjects are then trained to use the statements in vivo. The trainer is there to make sure that the strategies are employed in real-life situations. Meichenbaum used cognitive terminology to describe what looks like a behavioral procedure. He describes the process as self-regulated private speech that functions as cues for the clients to assist them with respect to their thoughts, feelings, and behavior. This can then impact the person's appraisal of the situation and how they respond to it. This formulation is not far from a behavioral approach based upon self-generated rules.

Evaluation of Second-Generation Models

The advances that were sought were not being realized within this second generation of treatment models. One of the biggest drawbacks within the history of the second-generation therapies is that they did not perform well with respect to scientific testing (Hayes & Strosahl, 1999). The research that was conducted with CBT continued to demonstrate that measures of cognitive change were not the primary catalyst for the improvements observed with CBT (Burns & Spangler, 2001). Repeated investigations into these therapies have led some cognitive therapists to state that there may be no additional improvement noted by providing

cognitive interventions in CBT (Dobson & Khatri, 2000). The lack of significant progress in these areas begged for change in treatment modalities.

Several of the tenets of cognitive accounts have been challenged in the literature. This was evident in the examination of the efficacy of the behavioral components included in CBT-based interventions (Watrin & Darwich, 2012).

One of the perceived mechanisms of change that was fostered by CBT interventions was a change in what the CBT theorists called dysfunctional attitudes (DAs). The mechanism of behavior change in CBT interventions has been postulated to involve changes in depression as a result of changing DAs. The literature reflects that the mechanisms of action in CBT treatments are murky at best. Research has continued to demonstrate that changes in DAs do not mediate changes in depression (Antonuccio et al., 1995). The presence of DAs has been shown to have little causal impact on measures of depression in general (Hollon, DeRubeis, & Evans, 1987). Burns and Spangler (2001) examined a large sample of patients seeking treatment for anxiety and depression with respect to changes in their DAs and how that related to improvements in their measures of depression. Their study showed that DAs did not have a causal effect on the measures of depression and anxiety that they employed in their study (Burns & Spangler, 2001). These findings pose conceptual challenges for Beck's cognitive mediation hypothesis and indicate that mediational models as espoused in CBT approaches may not be responsible for the behavioral improvements observed during CBT treatments. These conceptual issues are at odds with the formulations of those making the shift to more cognitive based approaches.

Some Closing Thoughts

The effectiveness of CBT approaches has been examined widely. One of the key findings of meta-analysis-based studies of the efficacy of CBT approaches has shown their efficacy compared to other psychoanalytic based approaches. An area where they have not performed so well has been when compared against behaviorally based interventions. Component analyses of CBT-based interventions have not shown their efficacy over and beyond the behavioral inter-

ventions that they were proposed to supplant (Ahn & Wampold, 2001; Spielmans, Pasek, & McFall, 2007). A complete comparison of the efficacy of these first- and second-generation approaches is beyond the scope of this article, but the data do not indicate that significant clinical ground was gained with second-generation mediational-based approaches. The early pioneers in the history of behaviorism and behavior therapy were very clear related to the etiology of behavior and behavior change procedures being firmly grounded in environment/ behavior interactions that were observable.

Behavior therapy grew out of dissatisfaction with psychoanalytic practice. This is not a situation where these procedures are to be criticized, but rather to acknowledge the broader framework that behavior therapy brought to the table. The first and second waves of behavior therapy were offered as social learning alternatives to the medical model that had been present at the time that they were introduced (Ullman & Krasner, 1965). Bandura's work integrated the research of Skinner, Wolpe, and Watson while adding additional social learning components (Krasner, 2001). It has been noted that the cognitive and behavioral approaches themselves are two contradictory models. Given this, the term cognitive behavior therapy can be viewed as an oxymoron (Krasner, 2001). As behavior therapy grew and expanded, learning histories and other behavioral formulations were integrated into the cognitive-based model that it had once been an alternative to. Skinner's work was always central to behavior therapy, as evidenced by his work with Ogden Lindsley at Metropolitan State Hospital in Massachusetts (Skinner, Solomon, & Lindsley, 1953). Skinner and Don Baer were both pioneers of first-generation behavioral models.

Don Baer was a champion of truth and demanded proof in all of his pursuits. He stated that "when you give up proof, you give up knowing" (Baer, 2001, p. 263.) He consistently stated that cognitive–behavioral therapists needed the addition of operant logic. He was obviously a proponent of first-generation methodologies. During the sea of change brought on by CBT, Baer warned us to stand our ground and recognize what this meant. The operant nature of behavior must be understood, and the use of sound research practices would assist in discovering the truth in research matters. He

contended that CBT paid behavior analysis an immense compliment by adopting some of its procedures. Cognitive theorists also dealt a serious insult by imposing an internal mechanism-based argument on the behavior analytic thesis (Baer, 2001). With behavior analysis that is informed by radical behaviorism, the notion of private events is not ignored at all, but rather examined from a different perspective. Baer preferred to look at first-generation ideas versus second-generation ideas in terms of the fact that both have their own evolutionary niche (in the field), they both prosper and reproduce there, and each will probably continue to do so (Baer, 1993). Even in the face of these beliefs, his first-generation roots run deep and he advocated these core tenets throughout his life. He notes that a "population with some diversity has a better chance of surviving some sudden change in the survival contingencies than a population with little diversity" (Baer, 2001, pp. 264). As Krasner (2001) has succinctly stated, the introduction of the word "cognitive" into our nosology during the 1970s and 1980s still saw the core components of behavior therapy remain intact. The fear that the introduction of this term would lead to some of the basic scientific assumptions of behavior therapy to be abandoned never materialized, and empiricism was never denounced. The poor intellectual formation and training of students in behavior analysis often lead to inaccurate representations of the field. The focus of training is often restricted to early intervention and applications of the scientific tenets of behaviorism to that population (Guercio & Murray, 2014). The importance of a deeper knowledge of the major events expounded upon in this article is vital to a fuller understanding of them. Many students today are unaware of the historical and scientific underpinnings of behaviorism detailed throughout this article. Keller and Schoenfeld asserted that the verbal behavior of the scientist should be taken as the central datum to be examined. The work of pioneers from Watson to Skinner and the seminal work of Keller and Schoenfeld, among others, stands as an informative guide for students that behavioral contingencies are foundational to our science. The diversity that Baer refers to is clearly present in the third wave of behavioral therapy, where the cognitive–behavioral tradition has been expanded once again to incorporate the intricacies of more

complex behavioral patterns. By continuing to pay attention to the private events that Skinner wrote about, behaviorism is addressing the survival contingencies necessary to continue to be relevant as the landscape of the field of psychology changes.

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