

*REAFFIRMING THE IMPORTANCE OF ANALYSIS IN
APPLIED BEHAVIOR ANALYSIS: A REVIEW OF
FUNCTIONAL ANALYSIS OF PROBLEM BEHAVIOR:
FROM EFFECTIVE ASSESSMENT TO EFFECTIVE SUPPORT,
EDITED BY A. C. REPP AND R. H. HORNER*

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In recent years, much has been written about the topics of functional assessment and functional analysis in applied settings. In their book, *Functional Analysis of Problem Behavior: From Effective Assessment to Effective Support*, Repp and Horner (1999) have compiled a series of essays from experts on the topic. In this article, we review their work and comment on each chapter's contribution to the relevant literature. We conclude that the book meets its primary goals of expanding our view of functional analysis as well as providing those new to the field with a stronger understanding of the topic. We do, however, note some concerns with inconsistent use of functional analysis terminology and a lack of practical guidance regarding its implementation in applied settings, but we believe these limitations are inherent in the empirical literature and are not unique to this book. Thus, we strongly endorse this book as "must reading" for behaviorally oriented researchers, students, and practitioners.

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Much of the early work in applied behavior analysis consisted of the application and empirical evaluation of interventions derived from principles of learning and conditioning to alter socially significant problem behaviors. With a few notable exceptions (e.g., Ayllon & Michael, 1959; Bijou, Peterson, & Ault, 1968), these interventions were typically superimposed over a set of preexisting environmental contingencies (for the targeted problem behavior) that were seldom identified or analyzed. The absence of preintervention assessment of the "causes" of problem behavior precluded the possibility of matching or tailoring interventions to the causes of that behavior. In contrast to the

applied and clinical psychology of the era, this approach, often referred to as *behavior modification*, was a major technological advance in behavior management, but the approach had several inherent limitations.

Absent a methodology to identify and alter the maintaining variables for a problem behavior, much of the early behavior modification work was forced to rely on either (a) response-decelerating contingencies that were powerful enough to override the existing but unidentified maintaining variables for a problem behavior or (b) strengthening of incompatible, and sometimes arbitrarily selected, behaviors via contrived reinforcement contingencies. These strategies probably required the implementation of more restrictive and intrusive interventions, often variations of punishment procedures, than would have been necessary had a methodology been available to identify the maintaining variables for the problem behavior and match interventions to those variables. Had such an assessment methodology been

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available, it may have been possible to weaken the maintaining contingencies for a problem behavior or to match the intervention to the idiosyncratic causes of a problem behavior, perhaps by substituting a socially acceptable behavior that served the same function as the problem behavior. Interventions that are matched to the causes of a problem behavior are presumably more effective and efficient and less intrusive than those that are simply superimposed over a set of unidentified maintaining variables.

Second, treatment failures often went unanalyzed because there was no established strategy to identify the conditions (i.e., the controlling variables for the problem behavior) under which an intervention would be effective or ineffective. As a result, efforts to understand the behavioral processes accounting for the success of an intervention in one instance and for its failure in other instances proved futile, as did efforts to match interventions to the controlling variables for a problem behavior.

Finally, programming generalization and maintenance of behavior change proved to be elusive, because problem behaviors often reemerged after termination of contrived, and often resource intensive, interventions allowed the unidentified, and all too often unaltered, natural contingencies to reacquire control over the problem behavior. This state of affairs contributed to a lengthy debate about the degree to which applied behavior analysis had become "technological" to the point of ignoring the behavioral processes underlying problem behavior and had become insulated from basic research on fundamental behavioral processes (e.g., Azrin, 1977; Baer, 1981; Dietz, 1978; Hayes, Rincover, & Solnick, 1980; Morris, 1991; Poling, Picker, Grossett, & Hall-Johnson, 1981).

In this context, it is reasonable to claim that one of the most important advances in the short history of applied behavior analysis

has been the development and widespread application of functional assessment and functional analysis methodologies (e.g., Mace, 1994). Although these methodologies have become ubiquitous in applied research and practice, especially in the area of developmental disabilities, relatively few texts, other than practical handbooks (e.g., O'Neill *et al.*, 1997; Witt, Daly, & Noell, 2000), have addressed the topic. In *Functional Analysis of Problem Behavior: From Effective Assessment to Effective Support*, Repp and Horner (1999) have assembled a collection of chapters from experts on functional assessment and analysis. This assembly of chapters is designed to present "an expanded vision of functional assessment" (p. 5) and to provide "those new to the field with a sound foundation in theory, history, and techniques associated with functional assessment" (p. 5).

An introductory chapter by Repp and Horner (chap. 1) places functional analysis in its historical context and provides an overview of the book's purpose, contents, and organization. The chapters that follow are organized into three major sections, "Linking Functional Assessment to Effective Intervention," "Functional Assessment in Preschool and School," and "New Directions for Functional Assessment." Individual chapters are prefaced by brief introductory comments from Repp and Horner that preview the contents of the chapter and facilitate linkages across chapters.

Carr, Langdon, and Yarbrough (chap. 2) describe the widely applied three-stage assessment process that moves from interview to direct observation (functional assessment) to experimental manipulation (functional analysis) as a means of identifying and verifying hypotheses about the controlling variables for a problem behavior. Carr, Newsom, and Binkoff's (1980) analysis of the relationship between instructional demands and aggression for 2 students with mental

retardation in a classroom setting is used to illustrate the assessment process. This study, a predecessor to the frequently cited work of Iwata, Dorsey, Slifer, Bauman, and Richman (1982/1994), depicts a model in which hypotheses and conditions for experimental analyses are derived from teacher interviews and observations. This chapter also includes a brief discussion of the derivation of interventions from the conclusions of a functional assessment and analysis, with special focus on the role of setting events.

Wacker, Cooper, Peck, Derby, and Berg (chap. 3) provide several case examples to illustrate the implementation of very brief functional assessments in outpatient clinical settings. They describe details of the assessment process and include a flowchart that will provide valuable guidance for practitioners who attempt to use functional assessment strategies in outpatient settings. Their emphasis on efficiency of assessment and involvement of parents in both assessment and intervention phases provides a contrast with more intensive, less naturalistic assessment strategies. In addition, in this chapter, Wacker and colleagues introduce a distinction between "structural" (antecedent-based) and "functional" (consequence-based) analyses. Although this terminological distinction is not consistently reflected in other chapters in the book, it represents an important conceptual model that is the focus of another book on functional assessment, *Antecedent Control: Innovative Approaches to Behavioral Support* (Luiselli & Cameron, 1998).

The next five chapters address difficult challenges for the field of functional assessment and alternatives for overcoming such challenges. Piazza, Fisher, and Hilker (chap. 4) review strategies for predicting and enhancing the effectiveness of reinforcers and punishers, including preference assessments, forced-choice assessments, and caregiver reports. Reinforcer identification and enhancement procedures often focus primarily on

the stimuli of interest (i.e., identifying which stimulus classes function as reinforcers or punishers, often using an arbitrary or convenient response) rather than on the controlling variables for an extant problem behavior, as is the case with a functional assessment. Nevertheless, the connection between the two topics becomes more obvious when, as the editors note, we construe functional assessment and analysis procedures as one method of identifying reinforcers, in this case with the starting or focal point being the problem behavior. We were pleased to see this chapter included. We believe that direct and comprehensive assessment of effective reinforcers and punishers during functional assessment may permit the determination of idiosyncratic and sometimes surprising controlling variables that may be excluded or overlooked during prescriptive functional analyses. Furthermore, methods for strengthening replacement behaviors and weakening existing problem behaviors are enhanced when powerful reinforcers and punishers are systematically identified.

Mace and Mauk (chap. 5) describe a biobehavioral diagnosis and treatment approach to self-injurious behavior (SIB). After noting the hypothesized connections between SIB and biomedical conditions, especially neurotransmitter disorders, the authors propose a preliminary biomedical classification system for SIB that provides some guidance in selecting pharmacological interventions for SIB that has proven to be non-responsive to behavioral interventions. In addition, the authors describe the linkages between classifications of SIB based on response function and behavioral interventions. They use two case examples to illustrate an integrated, biobehavioral model for the analysis and treatment of SIB. Parts of the model are admittedly speculative, having been based on preliminary pilot data. Furthermore, there are still major conceptual and research challenges to be addressed (e.g.,

whether neurotransmitter disorders function as a primary cause, a correlate, or a consequence of SIB; the psychometrics and treatment validity of a proposed classification model based on operant vs. biological or mixed diagnosis). Nevertheless, the chapter may spark renewed interest in research on biological factors in the etiology, maintenance, and treatment of SIB, and facilitate interaction with biomedical personnel who participate in research and treatment of SIB.

In chapter 6, Sprague and Horner address the challenges presented by low-frequency high-intensity problem behaviors. This chapter has several laudable features, including conceptual linkages with the matching law and concepts of behavioral allocation and functional equivalence. Sprague and Horner articulate an expanded functional analysis model that includes consideration of setting events and establishing operations. Although the development of procedures to include setting events and establishing operations in the functional assessment process is in the early stages, we believe that these refinements will improve the validity of assessment and the efficacy of the resulting interventions. Although the conceptual model and linkages are thought provoking, we believe that the behavior analyst faced with a mandate to conduct a functional assessment of a low-frequency high-intensity behavior (e.g., a student with or suspected of having a disability engages in physical aggression) would benefit from more practical guidance than is provided in this chapter. For example, how can a practitioner arrange for more frequent observations of a low-frequency behavior, particularly in school settings in which time and resources are limited? Practitioners would have benefited from some discussion of how to arrange setting events, establishing operations, and response opportunities, and other strategies to allow observation of otherwise low-frequency behaviors. The ensuing discussion could have provided

an excellent opportunity to acknowledge the ethical dilemmas associated with providing response opportunities and arranging setting events to allow the observation of problem behaviors.

Sprague and Horner argue that response class concepts and sequential analysis methods are relevant to the assessment problems posed by low-frequency behaviors. Unfortunately, neither topic is sufficiently developed to provide guidance to the practitioner. For example, two or more behaviors may be members of the same response class to the extent that they produce the same functional effect (at least at one point in time). By implication, it should be possible to gather assessment data about a low-frequency problem behavior by observing higher frequency members of the same response class. Thus, monitoring higher frequency responses (e.g., whining, complaining, pushing task materials) that are part of the same functional response class (defined by escape from task demands in this hypothetical example) as a lower frequency problem behavior (e.g., aggression) could reveal information about the controlling variables for the problem behavior. Alternatively, it would also be possible to arrange the extinction of some of the lower intensity but more frequent members of the response class, thus allowing observation of the less frequent but more intense problem behavior (Lalli, Mace, Wohn, & Livezey, 1995; Richman, Wacker, Asmus, Casey, & Andelman, 1999). Some elaboration of these assessment strategies, the manner in which responses within a class might be organized into hierarchies, and the impact of interventions on one member of the response class (e.g., aggression) on the other response class members would have been most welcome.

In addition, some discussion of response chaining, another condition in which covariation between a low-frequency problem behavior and other higher frequency behav-

iors can occur, would have been a helpful addition to this chapter. In a response chain, higher frequency behaviors may be early components of a response sequence in which the terminal link is the problem behavior. For example, assume a set of establishing operations that renders signs of physical damage to Child A as an effective reinforcing stimulus for Child B (colloquially put, Child B is "mad" at Child A). Under these conditions, Child B may engage in a chain of behaviors that includes (a) moving close to Child A; (b) insulting or teasing Child A; (c) responding with indignation and threats when Child B takes umbrage with the insult; and (d) becoming physically aggressive when Child B touches or otherwise resists Child A. This is a response chain rather than a response class because early members of the chain (e.g., moving close) provide opportunities for the latter components of the chain (insulting or teasing), including the problem behavior (physical aggression) that produces a stimulus change (signs of physical damage to Child A under conditions in which "self-defense" might be claimed) that helps to maintain the entire response chain. Interestingly, interventions to reduce early components of the response chain (e.g., unacceptable incursions into Child A's personal space) would be predicted to also reduce later components, including the problem behavior. Had the above sequence of behaviors been a response class (emitted in hierarchical fashion) in which all behaviors produced the same reinforcer (signs of physical damage to Child A), then interventions to reduce one member of the response class would be predicted to increase the frequency of other response class members that still produce the same response consequence (see Lalli et al., 1995; Richman et al., 1999). Thus, the distinction between response classes and response chains, both concepts relevant to the analysis of low-frequency problem behaviors,

could have practical as well as theoretical relevance.

Shore and Iwata (chap. 7) provide a thorough discussion of the problems associated with the analysis and treatment of behaviors maintained by automatic reinforcement. After establishing the conceptual link between automatic reinforcement and the study of private events (Vaughan & Michael, 1982), this chapter presents a variety of potential treatment strategies (e.g., alteration of establishing operations, extinction, and differential reinforcement) that are applicable to behaviors maintained by automatic reinforcement. Notably, Shore and Iwata also discuss the conditions under which interventions based on punishment procedures might be used and acknowledge the limitations inherent in using such procedures. This chapter successfully links discussion of the biological basis of self-injury and automatic reinforcement to the topic of functional assessment. Unfortunately, this chapter is not integrated with chapter 5, "Biobehavioral Diagnosis and Treatment of Self-Injury," in spite of areas of obvious overlap.

Repp and Munk (chap. 8) provide a conceptual framework for considering the reliability and validity of typically employed functional assessment methodologies. More specifically, this chapter discusses the relevance of four threats to internal validity (i.e., maturation, history, testing, and instrumentation) and four threats to external validity (i.e., reactive effects of testing, selection bias, reactive effects of experimental arrangements, and multiple treatment interference) derived from Campbell and Stanley (1966). Repp and Munk describe the challenges posed by each of these threats to both the results of a functional assessment and analysis and to the results of interventions derived from those assessments. In addition, the concepts of sampling, test-retest reliability, content validity, and predictive validity are presented as a framework for addressing

these threats. For example, with regard to sampling issues, Repp and Munk discuss whether data gathered at one point in time are representative of behavior over the entire session and whether data gathered in one session are representative of behavior over a longer time period. Repp and Munk raise important psychometric issues about functional assessment and analysis, many of which are also addressed in an excellent article by Cone (1997). Although we agree with the majority of their concerns, we have some reservations about their conceptualization of how to assess predictive validity. More specifically, they propose a comparison of the efficacy of an intervention indicated by a functional assessment with an intervention *contraindicated* by such an assessment. Perhaps a more appropriate method to test the predictive validity of functional assessment should parallel the research strategies used by the pharmaceutical industry, in which a promising new drug is compared either to a placebo or to a drug considered to be “best practice” for the condition under research.

The second section of the book addresses the application of functional assessment in school settings. Typically, functional assessment is a reactive, individualized process for identifying effective interventions for students who experience behavior problems that interfere with learning. McGee and Daly (chap. 9) provide a refreshing alternative to this reactive arrangement by emphasizing the proactive implementation of prevention strategies in a preschool setting. According to McGee and Daly, it is important to assess whether the system that is already in place supports the development of appropriate classroom deportment and learning and to consider how individualized behavior management plans fit within such an arrangement. Among the prevention strategies examined are arranging the physical environment to promote appropriate behavior and

prevent inappropriate behavior; creating “fun” (i.e., time-in) environments in the classroom, assessing preferences, assessing and maintaining active engagement for students, and varying tasks and reinforcers to prevent satiation. McGee and Daly summarize a study that evaluates the effects of various prevention strategies on classroom behaviors. They also provide logistical advice for managing prevention packages.

Like McGee and Daly, Kern and Dunlap (chap. 10) also focus on the application of functional assessment methodology in the schools. However, their focus is on the development of individualized treatment plans for children who exhibit significant emotional and behavioral disorders. This chapter describes an intervention-focused model of assessment for application in natural classroom settings that places more emphasis on the development of potential intervention strategies than on confirmation of function through analogue experimental functional analyses. A reprint of the *Student-Assisted Functional Assessment Interview* (Kern, Dunlap, Clarke, & Childs, 1994) is included, as is detailed information regarding each stage of this intervention-focused model of functional assessment (Kern, Childs, Dunlap, Clarke, & Falk, 1994). Of particular note is the inclusion of a case study with a normally developing child with behavior problems who assists the researchers in the development of function-based interventions. The authors note that more research is needed to assess the validity and treatment utility of student input in the functional assessment process.

In chapter 11, Shores, Wehby, and Jack begin to address the need for more sophisticated assessment procedures in the analysis of school problems. After a brief and all too cursory review of behavior rating scales, behavioral interviews, and experimental analyses, the chapter is almost entirely devoted to discussion of the utility of lag sequential

analysis procedures during descriptive functional assessments. The chapter describes the use of conditional probabilities to describe event sequences that may reflect existing contingencies governing social behavior in the natural environment. Although they provide summaries of descriptive and experimental studies on lag sequential analyses, the authors do not provide sufficient detail regarding how to conduct such analyses. Appropriately, Shores et al. acknowledge difficulties in obtaining reliably coded data for event sequences and raise concerns about the stability of relations between variables over time, noting that behavior changes as a function of changes in the environment.

Repp (chap. 12) presents a naturalistic approach to functional assessment, meaning the initial assessment process does not include any artificial manipulations in the classroom context. This approach is based on the following assumption: If the classroom environment maintains problems, then direct analysis of the existing environment is the best way to identify behavior function. According to Repp, the naturalistic functional assessment process has been refined over the last 10 years through more than 150 case examples. Repp includes flowcharts to illustrate potential relations among environmental contexts (setting events, antecedent stimuli), problem behaviors, and consequences. He also illustrates potential intervention strategies with an emphasis on the identification of replacement behaviors to fulfill the same function as the problem behavior. This approach should enhance the external validity of functional assessments, but it may require extensive training in behavior analysis to help the practitioner sort through the "noise" (irrelevant, confounding, and extraneous variables) in a complex stream of stimuli and responses.

Munk and Karsh (chap. 13) conclude this section of the book with a review of various antecedent curriculum and instructional var-

iables for preventing or reducing problem behaviors. When conducting a functional assessment, it is important to determine which variables to assess. This chapter delineates several instructional variables that are potentially valuable for assessment purposes including instructional content, choice or preference, task variation, task length, task difficulty, sequencing, and predictability. In contrast to an emphasis on the assessment of maintaining variables, this chapter focuses on the role of antecedent curricular variables that might be modified in a proactive manner to reduce motivation for, and thus prevent the occurrence of, problem behaviors. Similar to the rationale provided by McGee and Daly (chap. 9), Munk and Karsh claim that when systematic implementation of effective teaching strategies in a proactive manner fails to maintain appropriate classroom deportment, formal and informal procedures may be used to identify controlling variables at an individual level.

The final section of the text is devoted to new directions in the field. Fredricks and Nishioka-Evans (chap. 14) address applications of functional assessment to sex offenders who live in specialized residential programs. This chapter provides an introduction to various categories of sex offenders, common characteristics of this population, and an overview of treatment options. The unique contribution of this chapter is that it describes a process of assessment designed to determine the circumstances under which a particular sex offender is most likely to offend as well as the reinforcing contingencies that maintain such behavior. To illustrate the process, this chapter includes a completed functional assessment interview, a completed functional analysis observation form, and two case examples.

Burgio and Lewis (chap. 15) discuss how the functional assessment process can be employed to address problems associated with Alzheimer's disease and other age-related

conditions. This chapter is brief, in part due to the sparseness of research in this area. As Burgio and Lewis point out, very little research has attempted to apply principles of free-operant conditioning to geriatric prosthetic environments despite arguments for this approach by Lindsley (1964) over 30 years ago. This chapter provides readers with an overview of the utility of functional assessment for the treatment of dependent behaviors and disruptive behaviors maintained by social reinforcement as well as a summary of some preliminary research on its application to urinary incontinence.

The 1997 amendments to the Individuals with Disabilities Act (IDEA) is the first federal legislation to legally mandate functional assessment and positive behavior support in school settings. Thus, we were pleased to see legal issues addressed in chapter 16. Using two case studies, Turnbull argues that a functional assessment approach to intervention selection in school settings may help school districts to avoid IDEA violations. These cases illustrate the basic principles of the special education law (e.g., due process, nondiscriminatory evaluation, free and appropriate education, least restrictive environment, parent participation, and individual education plans). Unfortunately, Turnbull does not describe details of the 1997 IDEA amendments that are specific to functional assessment and positive behavioral support, and thus provides little useful guidance to practitioners and educators. We believe the absence of details regarding the 1997 amendments to IDEA may be due to the fact that, when the chapter was written, regulations to IDEA 1997 may not have been available (for an excellent discussion of IDEA 1997 mandates, see Turnbull, Wilcox, Stowe, Raper, & Hedges, 2000). In chapter 16, although Turnbull accurately portrays legal violations for the case examples and substantiates these violations with reference to relevant case law, some of the procedural and

substantive errors illustrated in these cases are not confined to functional assessment issues, thus obscuring the connection with the overarching theme of this book. Nevertheless, Turnbull provides a cogent reminder of the rationale and importance of the special education laws, including IDEA 1997.

Guess, Roberts, and Guy (chap. 17) present an alternative approach to functional assessment that relies on analyses of behavioral states rather than the typical analysis of the relation between target behaviors and specific environmental events. The behavioral state approach to assessment was initially described by Wolff (1959) and focuses on the production of profiles of behavior patterns for individuals with profound disabilities through the collection of real-time data. Data are collected to determine the degree to which individuals remain in certain states (e.g., asleep vs. active), the order in which individuals typically move from state to state, cycles of movement between states, and the frequency of changing states. In addition, data are collected on various demographic, medical, and developmental characteristics of the individual and environmental factors that influence behavioral states. According to Guess *et al.*, state conditions mediate attentiveness and responsiveness to environmental stimuli, and thus have implications for behavioral programming. Although we were impressed with the scope of the model presented in this chapter, we have reservations about what advantages such a model offers over more traditional functional assessment approaches.

In the final chapter, Tierney and O'Donohue (chap. 18) discuss the relation between theories of Darwin and Skinner and the relevance of those theories to functional assessment. More specifically, this chapter summarizes Skinner's view that selection of behaviors by their consequences is both a process that parallels that of evolution and a product of evolution. As such, parallels of

Darwinian accounts of the three critical processes in evolution (i.e., generation of behavioral variability, retention of certain modifications, and selection mechanisms) should hold true for the selection of behaviors within an individual's lifetime. Tierney and O'Donohue argue that we know very little about the mechanisms responsible for the generation of behavioral variability and retention of behaviors (i.e., why certain behaviors are selected and others are not). We do, however, know more about selection mechanisms (e.g., reinforcement), but there is a need to adopt a more contemporary account of the concept of reinforcement. Tierney and O'Donohue describe optimal foraging theory, the Premack principle, and the response-deprivation hypothesis in their discussion of new directions in applied research on selection mechanisms. This chapter provides an intriguing introduction to the complexities of human behavior and the limitations of current reinforcement theory. They remind us of the challenges that we will ultimately face as we seek to develop a powerful applied technology to facilitate the selection and retention of appropriate behaviors.

Concluding Comments

There is much to praise about this book. As one can surmise from the previous chapter descriptions, the range of topics is indeed impressive. In that sense, Repp and Horner have certainly achieved one of their primary purposes—to present a broadened view of functional assessment. There is discussion of the application of functional assessment strategies to novel populations (e.g., sex offenders and Alzheimer's disease patients) and in novel settings (e.g., home environments). We were especially pleased to see a discussion of some novel hypotheses about controlling variables and appropriate test conditions (e.g., setting events, biological factors) above and beyond those that have char-

acterized much of the early research on functional analysis (escape, alone, social attention, play conditions). Certainly this is a healthy development and indicates that functional assessment methodologies are maturing to reflect the full complexity of plausible causal variables for behavior problems. Unfortunately, guidelines for deriving hypotheses and the appropriate test and control conditions remain to be systematically developed. Although the book is not designed as a practical assessment manual, we suspect that many practitioners would be hard pressed to derive plausible hypotheses and appropriate test conditions solely on the basis of the guidance from this book. A practical handbook on how to develop and conduct a functional assessment and analysis across a range of settings, populations, and behaviors would be an excellent companion to this thought-provoking and scholarly book.

The scholarship that is reflected throughout this book is indeed impressive. Many chapters include comprehensive reviews of the empirical literature on functional assessment and a number of related topics that are seldom covered in mainstream behavior analysis literature. In some cases the reference lists are so extensive that their value as a resource rivals that of the chapter content itself. For example, Shore and Iwata (chap. 7) include an excellent review of the biological basis of self-injurious behavior and the range of behavioral and pharmacological interventions that have been applied to it. Other chapters review current assessment procedures and describe alternative and potentially more sophisticated assessment methods (e.g., lag sequential analysis, chap. 11). These chapters are not designed as a "how-to" manual, but they do provide case examples to illustrate a variety of functional assessment tools as well as a wealth of references for those wishing for more in-depth coverage of each topic.

In addition to the abundance of information provided, several chapters link functional assessment methodologies to other fields (e.g., education, clinical psychology, gerontology, and medicine). Chapter 3, for example, provides readers with a format for conducting functional analyses in outpatient clinical settings. Chapter 5 conveys insights as to how the medical community conceptualizes some problem behaviors and goes on to describe a bibehavioral model that links the two fields. We view the integrative aspects of these chapters to be a major contribution to the field. If functional assessment models are to be adopted across a variety of settings to address a broad range of problem behaviors, then it is important for researchers and practitioners to understand how to integrate functional approaches within existing models and how to coordinate divergent models.

Without reservation, we believe the breadth of information covered in this book makes it an essential reference for those who conduct research in functional assessment, particularly for those who are interested in broadening the scope of functional assessment and addressing issues and barriers inherent in existing methods. Yet, as with many edited books, there are several caveats to our positive recommendation that we would like to discuss further. We believe these shortcomings fall into two major categories: terminology and pragmatic issues. However, these criticisms may be inherent to the field in general rather than limitations unique to the contents of this book.

First and foremost, we were troubled by the lack of consistent use of terminology across various chapters, a common problem for edited books. There seemed to be confusion, for example, as to the distinction between the terms *functional assessment* and *functional analysis*. In chapter 2, the terms are distinguished: "Interview and direct observation are collectively referred to in the

literature as functional assessment rather than functional analysis to highlight the fact that only the latter term involves systematic manipulation of the environment" (p. 11). Later in the text, however, these distinctions are contradicted when the term *functional assessment* is used to describe experimental manipulations of environmental variables (e.g., pp. 35, 40, and 106). In chapter 3 an additional, and in our opinion useful, distinction is made between the terms *functional analysis* (i.e., manipulation of consequences) and *structural analysis* (i.e., manipulation of antecedents), yet this particular distinction is not universally adopted in later chapters in which *functional analysis* refers to the manipulation of both antecedents and consequences. Another example of the need to clearly integrate or distinguish terms becomes apparent throughout chapters 2, 5, and 7, in which the terms *automatic reinforcement*, *biomedical model*, and *sensory reinforcement* are defined clearly within each respective chapter but are difficult to distinguish across chapters. These are just a few examples of how terms and concepts might be confused by readers, particularly those who are new to the field. Because functional assessment is a field with varied and emerging lines of research, it is not surprising that there is a need to more clearly defined terms. In fact, this need has been discussed elsewhere (e.g., Cone, 1997). To their credit, the editors preface each chapter with some comments that place the ensuing chapter in context and highlight its contributions. Much of the confusion and inconsistencies could have been avoided had the editors either imposed an agreed-upon terminology across all chapters or included a chapter on terminology, a glossary of terms, or both.

Our second concern is the need for some clear direction regarding the role of functional assessment in applied research and practice (i.e., pragmatic issues). What seems to be missing from this text (and perhaps

from the literature on functional assessment as a whole) are clear and agreed-upon guidelines for determining when to conduct a functional assessment, how to do so (with specific step-by-step procedures), and what to do with the information once it is collected. Although some chapters provide case examples or samples of observation or interview forms, we believe that readers would have a difficult time determining which specific measures or procedures to employ in various settings and situations. Further, if functional assessment is to compete with conventional psychometric and diagnostic assessment, more attention to the relative cost and benefits of both approaches is warranted. Accordingly, although readers of this book will be exposed to a wealth of information that accurately reflects the cutting edge of the functional assessment and analysis movement, they might also be left with some important questions.

1. Are functional assessment and analysis practical for general use, including applications in settings and with problem behaviors beyond those that have formed the core of functional assessment research to date?

2. Who should be trained to conduct functional assessments and with what degree of sophistication and integrity?

3. Are there situations in which functional assessment and, especially a full-scale functional analysis, are contraindicated because the time and resources cannot be justified by the benefits derived from the efforts? Quite possibly there are some behavior problems (e.g., thumb sucking, trichotillomania) for which a functional assessment or analysis is not obligatory. This situation might occur because an empirically validated intervention with relatively few side effects has been developed that has broad generality across the range of cases with a topographically defined problem behavior. It could also occur because epidemiological research reveals homogeneous controlling variables across a

wide range of problem behaviors, thus limiting the useful information to be derived from a functional assessment. Finally, for some mild behavior problems (e.g., no serious consequences if the first intervention proves ineffective), it may be more efficient to implement a stepped sequence of interventions if adequate assessment procedures are in effect to monitor progress and adverse side effects. Perhaps it is premature to articulate such guidelines, but they will need to be developed in the not-too-distant future if behavior analysts wish to disseminate this valuable assessment strategy.

4. Are functional assessment methods more efficient, more reliable, and more valid than other psychometric approaches? Of particular concern is the degree to which test conditions in a functional analysis represent the complex contingencies that control the problem behavior in the natural environment. In addition, we have concerns about the stability of naturalistic contingencies and the possibility that the controlling variables for problem behaviors may shift over time, especially when interventions are implemented. If sources of control are multiple and they do shift, it may be necessary to repeat functional analysis procedures, especially during the intervention phases of a behavior-management procedure.

5. To what extent is functional assessment methodology applicable to the psychological problems that are often the focus of mainstream outpatient psychotherapy, including behavior therapy? A number of common psychological problems (e.g., depression) have causal mechanisms (e.g., a drop in reinforcement density or quality; high levels of dysfunctional beliefs, perhaps better conceptualized as self-verbalizations, that could alter the stimulus function of environmental events; biological factors, sometimes of a seasonal nature) that would be amenable to some form of functional assessment. How might functional assessment be applied in

these important arenas and with what benefits to the design of efficacious clinical interventions?

6. What are the implications of the functional assessment and analysis movement for the larger enterprise of assessment and diagnosis of psychological problems? Can, and should, functional assessment be incorporated into the current diagnostic system, or should a different diagnostic system, based at least partially on the analysis of behavior function, be developed?

Although some of these questions are touched on in individual chapters (e.g., chap. 8 is devoted to the topic of reliability and validity; chap. 9 provides the first encounter with systems issues), they are not a focus of the book, and for us, the book does not provide sufficient information to answer some of the questions regarding the applicability of functional assessment. Yet, because several of these concerns are relevant to functional assessment in general, and not solely to this book, perhaps this book will do a service by sparking some interest in addressing these limitations of functional assessment, thereby developing effective parameters for using functional assessment.

Overall, we believe this book has certainly met its stated goal of broadening the picture of functional assessment and providing those new to the field with a stronger understanding of functional assessment. Therefore, we have no reservations about strongly endorsing Repp and Horner's book as "must reading" for behaviorally oriented researchers and practitioners as well as for students who have a strong background in behavior analysis and some familiarity with functional assessment. We highlighted some concerns regarding inconsistent use of functional assessment terminology, but the development of an agreed-upon terminology will surely occur as the area matures. Our reservations about the utility of the book for practitioners is legitimate but perhaps an unfair stan-

dard by which to judge a book that was not designed as a workbook or training manual. Nevertheless, absent some practical guidance in how to implement the more advanced procedures discussed in this book, even the conceptual points may be lost to the less sophisticated reader. In spite of these minor reservations, Repp and Horner's book has done much to reaffirm the importance of analysis in applied behavior analysis.

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