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Applying Behavior Analysis in Organizations: Organizational Behavior Management

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Organizational behavior management (OBM) is the application of behavioral principles to individuals and groups in business, industry, government, and human service settings. OBM has its roots in the field of applied behavior analysis, which involves the application of operant and respondent procedures to produce socially significant change in human behavior. Modern OBM includes a number of subdisciplines such as performance management, systems analysis, and behavior-based safety. Its focus is on organizational problems such as lack of knowledge and skills, occupational injuries, productivity improvement, and quality deficits. This review provides a description of the theoretical and conceptual background of OBM, a brief history of the discipline, and a description of common topics and areas of applications. An example of a typical OBM application in a human service setting is also included.

Keywords: applied behavior analysis, organizational behavior management, performance management

Organizational behavior management (OBM) is the application of behavioral principles to individuals and groups in business, industry, government, and human service settings. OBM has its roots in the field of applied behavior analysis (ABA), which involves the application of operant and, to a lesser extent, respondent procedures to produce socially significant change in human behavior. The purpose of this article is to introduce the discipline of OBM. First, we describe the theoretical and conceptual background of OBM. Next, we provide a brief history of OBM and its principal journal, the *Journal of Organizational Behavior Management* (*JOBM*). We then delineate common topics and areas of application in OBM, and we provide a case study describing an OBM consult. Finally, an Appendix provides a list of suggested readings in OBM.

Theoretical and Conceptual Background

OBM is a subdiscipline of ABA, which is in turn the applied wing of the discipline of behavior analysis, or the science of behavior. Two other branches of behavior analysis are the experimental analysis of behavior, which focuses on the study of basic principles of behavior with both human and nonhuman animals, and behaviorism, which is the branch of behavior analysis that focuses on the conceptual and philosophical underpinnings of the science of behavior. ABA emphasizes the use of operant and, to a lesser extent, respondent procedures to produce socially significant change in behavior (i.e., changes that are meaningful to someone). In contrast to much of mainstream psychology, ABA does not use the hypothetico-deductive model of research. That is, theory testing is not the focus of ABA. Instead, the field has adopted an inductive model of research in which procedures are evaluated for their utility irrespective of theoretical significance. Of course, the discipline

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is not atheoretical; radical behaviorism is the philosophy or theory underlining ABA.

Moore (2008) described radical behaviorism as being very poorly understood by both philosophers and psychologists. The adjective *radical* is often taken to mean *anticognition*. In fact, the *radical* in *radical behaviorism* means just the opposite. It refers to the notion that private events, or behavior occurring beneath the skin such as thinking and dreaming, must be included in a scientific analysis of human behavior. However, because these events cannot be directly manipulated, they cannot be considered as causes of behavior. Radical behaviorism is often contrasted with methodological behaviorism, an older version of behaviorism popularized by John Watson and others in the middle of the 20th century, which proposed that events occurring beneath the skin are not observable and therefore cannot be candidates for a scientific analysis. For a detailed account of radical behaviorism and how it differs from methodological behaviorism, see Moore (2008) or Chiesa (1994).

Guided by its roots in radical behaviorism, behavior analysis as a science has very explicit goals. Prediction and control of behavior, with an emphasis on control, are the objectives of behavior analysis (Hayes & Brownstein, 1986). These goals largely dictate the type of topics investigated in ABA and, more specifically, OBM. The focus of these two fields is almost exclusively on practical strategies that can be used to change behavior. Thus, functional topics such as the investigation of methods to directly improve performance, as opposed to structural topics such as the personality traits that are most predictive of high performers, are most prevalent in ABA and OBM.

OBM is sometimes referred to as a branch of industrial–organizational psychology, and the two fields do have in common a fundamental focus on the behavior of people at work. However, beyond this similarity, many differences between the two fields exist. Industrial–organizational psychology is generally theory driven, uses the hypothetico-deductive model of research, and has historically emphasized topics such as personnel selection and placement, although topics such as culture and management have also been of interest to industrial–organizational psychologists. In contrast, OBM is guided by a single theory of human behavior, uses an inductive model of research, and has historically emphasized identification and modification of the environmental variables that affect directly observable or verifiable (not self-reported) employee performance (Bucklin, Alvero, Dickinson, Austin, & Jackson, 2000).

History of OBM

The history of OBM is similar to the history of ABA, at least early on. The work of E. L. Thorndike and John Watson influenced B. F. Skinner and the development of behavior analysis as a science. Skinner's applications of behavioral principles to instructional design and other early applications of what was then termed *behavior modification* to clinical populations influenced OBM greatly. These clearly showed that human behavior could be changed for the better with the use of operant principles (Bucklin et al., 2000).

Although OBM did not officially begin until the 1960s, there are a number of historical influences outside of behavioral psychology that contributed to its development. First, Fredrick Taylor, the "father of scientific management," is often cited as an influence on the field's development. He was the first individual to advocate for the use of the scientific method to improve employee and organizational performance. An early event that influenced OBM was the Hawthorne Studies, a series of studies conducted at the Western Electric Plant near Chicago in the 1930s. One of the main outcomes of these studies was the erroneous assumption that a variety of environmental manipulations, such as increased attention to the well-being of employees and even a change in lighting quality, can have an impact on employee performance. Instead, reanalysis of the data from a behavior analytic perspective suggested that the changes in behavior were the result of the manipulation of knowledge of results and positive reinforcement in the form of monetary incentives (Parsons, 1992). For these and other related reasons, Parsons (1992) argued that the Hawthorne Studies represent an early OBM experiment.

The main outlet of the field, the *JOBM*, began publication in 1977. However, by this time more than 45 articles on OBM had been published in other journals and at least one OBM consulting firm had been established. Aubrey Daniels was the first editor of *JOBM*, and his

influence on the field remains strong to this day through his many publications describing OBM and through the consulting firm he founded, Aubrey Daniels International (Bucklin et al., 2000). *JOBM* is now a quarterly journal published by Haworth Press and is in its 28th volume. It has recently been ranked as having the third highest impact factor among applied psychology journals according to the Journal Citation Reports published by Thompson/ISI Publishers (Hantula, 2005).

JOBM publishes original research, review articles, research reports, reports from the field, discussions, and book reviews on assessing and intervening to improve the performance of individuals and groups in organizations. More specifically, *JOBM* focuses on specific workplace concerns such as employee productivity, safety, knowledge and skill development, absenteeism, tardiness, turnover, the use of monetary and nonmonetary incentives, and the evaluation of employee satisfaction and feedback systems. The *JOBM* editorial board is made up of more than 50 practitioners and researchers in the field of OBM. An international conference devoted exclusively to OBM is held every other year, and OBM-related presentations are also common at the annual meeting of the Association for Behavior Analysis, International.

A number of graduate programs in OBM have been established. In some cases, OBM programs exist as separate tracks in ABA graduate programs, whereas in others they are distinct from ABA programs. OBM programs are generally housed in university psychology departments (e.g., Western Michigan University, Florida Institute of Technology, University of Nevada, and Appalachian State University; more information can be obtained at http://www.obmnetwork.com), but in some cases they are in schools of business (e.g., University of Detroit). Graduates of these programs work in the private sector as external consultants for a number of OBM-related consulting firms (e.g., Aubrey Daniels International, Continuous Learning Group, and Quality Safety Edge), as internal consultants for large organizations (e.g., Chevron Corporation and Nissan), or as program managers for state-funded human service organizations. A number of graduates also take faculty positions in academia. Currently, no licensure or certification program for OBM practitioners exists, although some practitioners do seek and obtain board certification in behavior analysis, particularly if they work in or seek employment in a human service setting.

Common OBM Topics and Areas of Application

Early OBM work was characterized by a focus on small-scale organizational problems such as improving the attendance of one or a few employees (Kempen & Hall, 1977) and decreasing negative comments made by a shift supervisor (Chandler, 1977). The work often served (and in many cases, still does) the dual purposes of practice and research. That is, it often took place in the context of a consultation to an organization. The research designs used in these studies and reports were often less than what would be considered adequate by today's standards. Nevertheless, the discipline attracted the interest of many students, professors, and business owners and managers and continues to do so today.

One particularly interesting early application of OBM occurred at Emery Air Freight. Edward J. Feeney, who was at the time a sales manager for Emery Air Freight, attended an OBM-related workshop at the University of Michigan in the late 1960s. On the basis of what he learned at this workshop, Feeney later went on to design a sales training package for Emery that resulted in large sales increases. He then took additional OBM-related workshops and, bolstered by his initial success, created performance improvement programs throughout the company that eventually resulted in a $2 million increase in annual profits (O'Brien, Dickinson, & Rosow, 1982, p. 459). Feeney's success was widely publicized in both the academic and business literature (an article describing Feeney's work appeared in the magazine *Business Week* in 1971), and he eventually left Emery Air Freight to start his own OBM consulting firm, which disseminated OBM to hundreds of businesses, both small and large (Dickinson, 2000).

Another interesting early application of OBM occurred in the textile industry in Georgia and other southern states. Aubrey Daniels, the first editor of *JOBM* and then-president of Behavioral Systems, Inc., an early OBM consulting firm, started working with companies in the textile industry after learning that many of them had turnover rates of more than 200%. Daniels

and his firm were asked to reduce turnover in many of these companies. Daniels's model was straightforward: Supervisors in the companies were taught to deliver feedback by regularly graphing individual and group employee performance and to increase positive reinforcement for improving performance. Daniels and his firm managed to decrease turnover by more than 50% in just 3 months using these methods. Daniels's success in this industry set the stage for the creation of his own consulting firm, Aubrey Daniels International, which is still in operation today and continues to work with clients such as 3M, Xerox, AT&T, and Honeywell (Dickinson, 2000).

Today, OBM applications are more diverse but are still based on the same fundamental principles of behavior analysis. The field focuses on the isolation, analysis, and modification of the environmental events that most directly affect performance. A target performance is first described and defined. Next, a system to measure the target performance is developed and tested. Analysis of the variables that may be responsible for the (lack of the) target performance often begins with an examination of antecedent events and stimuli such as the presence or absence of specific people (e.g., managers), written prompts, working conditions such as number of staff, the establishment of goals, and the arrangement of work materials that may correlate with the target performance. Consequences that may affect performance, such as the immediacy and frequency of feedback, monetary and nonmonetary incentives, and the consequences associated with goal attainment, are also examined. On the basis of assessment results, an intervention is then developed, tested, and applied on a large scale, and measurement of the target performance continues. If the intervention is effective, it remains in place. If it proves ineffective, additional components are added or an altogether new intervention is applied. A financial cost–benefit analysis is then often conducted. Finally, the social validity of the intervention is formally examined, often by asking employees and, in some cases, customers, about the extent to which they approve of the intervention.

The research designs that are used to evaluate OBM interventions include within-subject designs such as ABAB reversal designs, multiple baseline designs, and alternating treatment or multi-element designs. However, it is often difficult to implement designs such as ABAB designs that involve the removal, even if only temporarily, of an effective intervention. For this reason, multiple baseline designs and even simple AB designs with systematic replications must be used in some cases. Therefore, the data that appear in academic journals and that require meeting rigorous standards may not be typical of the effects of most OBM interventions (Austin & Mawhinney, 2005).

Recently, formal assessment procedures such as the Performance Diagnostic Checklist (PDC; Austin, 2000) have been developed by OBM researchers and practitioners. The PDC is a questionnaire completed by an employee or manager that examines the variables that might be responsible for the (lack of the) target performance. The PDC is divided into four categories of questions: antecedents and information, equipment and processes, knowledge and skills, and consequences. On the basis of employee or manager responses to the questions in each of the categories, an intervention targeting the areas most in need of improvement is then developed and tested. Although OBM researchers and practitioners much prefer the direct observation of performance to the use of self- or other report of performance, direct observation of many of the variables affecting employee performance in organizations (e.g., directions or rules given to employees by managers) can be difficult. Thus, informant-based tools such as the PDC are sometimes used to supplement direct observation procedures.

OBM interventions can be classified into two categories: antecedent-based interventions and consequence-based interventions. Antecedent-based interventions include task clarification, equipment modification, goal setting, prompting, and training. Consequence-based interventions include feedback (many varieties of feedback exist), praise, and monetary and nonmonetary incentives. Task clarification consists of simply operationally defining the tasks for which employees are responsible. In many cases, employees have not been adequately informed about their responsibilities; task clarification is most appropriate under these circumstances. Equipment modification is also as straightforward as it sounds. In some cases, the equipment employees are asked to use prevents optimal performance. Identification and modification of the limiting variables

in the functioning of the equipment can be very useful. Goal setting consists of defining a specified, preset level of performance to be obtained and then, contingent on goal attainment, providing access to some previously agreed-on reward. Prompting involves the use of verbal, gestural, or written prompts to perform or continue performing an activity. Training consists of identification and modification of inadequate employee knowledge, skills, or capacity.

Feedback involves the delivery of information about past performance to the employee. However, as it is used in research and practice, feedback is not as simple as it sounds. Feedback varies according to format (i.e., verbal, written, or graphic), frequency (i.e., daily, weekly, or monthly), and delivery agent (i.e., manager–supervisor, consultant–researcher, or fellow employee). Two comprehensive review articles on feedback (Alvero, Bucklin, & Austin, 2001; Balcazar, Hopkins, & Suarez, 1985), both published in *JOBM*, have found that certain combinations of feedback are more effective than others. For example, graphic feedback delivered daily or weekly by supervisors or managers has been shown to be more effective than other types of feedback. The use of monetary and nonmonetary incentives involves the delivery of money, benefits, or tangible items contingent on improved performance. Although these interventions have been presented separately, in both practice and research they are often combined. That is, package interventions are common in OBM.

Feedback is by far the most common intervention used in OBM. In fact, some form of feedback was used in 75% of *JOBM* studies published between 1987 and 1997 (Bucklin et al., 2000). More recent OBM research is no different; a quick glance at current issues of *JOBM* suggests that feedback or a combination of feedback and other interventions accounts for a majority of interventions investigated in *JOBM*. Although no formal data exist to confirm this, it is likely that some form of feedback is included in most recommendations to improve performance made by OBM practitioners.

Recently, OBM has grown such that specialty areas have been established within the field. Three specialty areas that are now often recognized are performance management, systems analysis, and behavior-based safety. Consulting firms specializing in each of these areas have begun to appear (e.g., Quality Safety Edge, Aubrey Daniels International, and Performance Design Laboratory), and research in these areas is being published and presented at professional conferences with increasing frequency.

Performance Management

Performance management is the application of behavioral principles to manage the performance of employees. This term was once used synonymously with the term *OBM* by many, but with the recent growth of the field it is now more often used to refer to an area of OBM application. It is contrasted with specialty areas that are geared toward other levels of the organization, such as the process level (see *Systems Analysis* section). Performance management focuses on changing worker behavior to achieve more valuable organizational results.

Systems Analysis

Systems analysis refers to the analysis and modification of organizational processes to produce the greatest benefit to the organization. Systems analysis focuses on how individuals or groups of employees go about working on a series of interdependent tasks that culminate in the creation of products or services important to the organization as a whole. Intervention at the systems level involves improving the efficiency with which processes are completed by rearranging the order or assignment of tasks and creating effective workflow systems.

Behavior-Based Safety

Behavior-based safety is perhaps the fastest growing specialty area within OBM. It focuses specifically on the analysis and modification of work environments to reduce injuries and promote the safe behavior of employees. In contrast to other disciplines that approach safety from the standpoint of mechanical or structural engineering, behavior-based safety focuses on changing the behavior of employees so that injuries are reduced and safe performance becomes more common. Behavior-based safety has become so popular in recent years that consulting firms specializing in this area and graduate programs with behavior-based safety tracks have appeared. An annual conference

devoted exclusively to this topic, Behavioral Safety NOW, has also been established.

Case Study

Although the details of OBM cases vary greatly, all cases generally follow the same seven steps that characterize the course of OBM consults regardless of problem, setting, and intervention (Austin & Mawhinney, 2005).

1. *Determine key results.* The typical OBM case solution is one in which the practitioner or researcher first works with managers and executives to identify the key results they hope to achieve.

2. *Find the pinpoints.* After the key results are made obvious, the OBM practitioner then works with executives and managers to determine the important behavior and intermediate results needed to accomplish the key results. These behaviors and results are often called "pinpoints," or "targets."

3. *Develop a measurement system.* The OBM practitioner then helps the target audience to develop an accurate and reliable means of measuring the pinpointed behavior and results. In many instances, this measurement system will also involve tracking costs associated with the pinpoints. The purpose in this case is to get an idea of the current levels of the important behaviors and results and to provide a baseline comparison that can later be used to evaluate the effects of solutions.

4. *Diagnose the problem.* In this phase, the practitioner teaches managers to ask questions and conduct observations of work completion and the work environment to determine the cause(s) of the performance deficiencies. Typically, this functional assessment involves asking questions and collecting data about four broad areas of potential causes: antecedents, knowledge and skills, equipment and processes (including a systems analysis), and consequences.

5. *Develop and implement a solution.* On the basis of the results of the assessment, the practitioner should work with managers and employees to help them develop and implement a set of solutions that addresses the identified deficiencies. In practice, employees and managers are trained to implement on their own and to maintain the practices specified by the solution once the practitioner withdraws from the organization.

6. *Evaluate the effects.* Results are typically measured before, during, and after solution implementation. At least three types of results are of interest to the OBM practitioner and researcher: behavior change results, treatment acceptability, and cost–benefit results. Behavior change results are of interest for obvious reasons, including that the practitioner wants to be sure that the solution changed the intended behaviors and produced the intended outcomes. Treatment acceptability is very important in OBM because the solution will not be maintained if employees and management find it to be unpalatable. Finally, cost–benefit results are important to calculate return-on-investment figures. These figures tell the practitioner and managers how many dollars were earned or saved by the organization for every dollar spent on the OBM efforts.

To further illustrate OBM services, we provide a real-world example of an OBM case. This example is set in a human services agency. In fact, many OBM applications take place in human service settings (see Vol. 18, Issue 2/3, of *JOBM*). A residential center serving adolescents with severe behavior problems, referred to as *Therapeutic Center*, contacts a consulting firm that offers OBM services. Therapeutic Center employs approximately 100 direct-care professionals (staff members) who work with their residents, carrying out the details of intervention plans developed by center psychologists. Although the staff members are well trained, many of the plans require frequent prompting and praising of appropriate resident behavior and tedious data collection on resident behavior. Because of these detailed requirements, the integrity with which the plans are implemented by staff often suffers. Realizing that plan implementation is critical to resident progress, center psychologists request assistance from the OBM consulting firm to improve

staff performance. Once Therapeutic Center and the OBM consulting firm agree to the case, the consulting firm sends an employee to the work site to work with the psychologists and the administration. Consultants are usually on site for a few days in the beginning stages of a consult; however, the consultant and his or her organizational contact person are usually in contact regularly via phone and e-mail.

The consultant's first task is to learn more about Therapeutic Center. To do this, she asks questions about the size, health, and key results desired by the organization and the specific department or unit (i.e., adolescent residential unit) she is working with. After gathering this information, the consultant turns her attention to the identification of the pinpoints. The organizational contact person (unit psychologist in this case) and the consultant discuss and agree that the focus of the consult should be the percentage of opportunities in which plans are implemented appropriately. Next, the unit psychologist and administrative representative walk through (both figuratively and literally) the treatment plan implementation process with the consultant; this helps the consultant gain hands-on knowledge and experience with the processes involved to make more appropriate suggestions for improvement.

The next step is to develop a tool to measure the number of opportunities in which staff implement a treatment plan appropriately. Surprisingly, it is often the case that no such tool or methodology exists. A simple data sheet (or computer tracking program) is created from a spreadsheet, and the consultant spends some time teaching the unit psychologist and a number of direct-care professionals how to complete the data sheet. After the consultant has explained how to use the data sheets, she encourages Therapeutic Center to collect some data to test out the data sheets and to determine the mean number of opportunities in which staff members implement treatment plans accordingly. As it turns out, the children's unit at Therapeutic Center is having similar problems, so the consultant proposes that data be collected for that unit as well. In many cases, an evaluation design such as a multiple-baseline design across units (adolescent and child) can be used to evaluate the effects of an intervention.

After testing the data sheets for a couple of weeks, the consultant determines that staff members are correctly implementing treatment plans on only about 60% of opportunities. In other words, staff are missing about 40% of opportunities to correctly implement plans. The consultant graphs these data, and she and the unit psychologist then jointly establish an initial goal to increase the opportunities in which plans are correctly implemented from a mean of 60% to 75%.

To learn more about the reasons for the treatment plan implementation problems, the consultant then interviews the unit psychologist and several direct-care professionals using the PDC; the psychologist and staff members are asked additional questions about the treatment plans and how they should be implemented. After the PDC has been completed, the consultant notes consistent problems pertaining to the antecedents and information, equipment and processes, and consequences sections. Antecedent issues noted by Therapeutic Center are that task aids are absent from the immediate environment. Process issues that are noted include obstacles that prevent staff members from properly implementing the treatment plans they are assigned. In addition, it is determined that although staff members receive training on treatment plans when they are first hired, the plans are kept in a location to which staff members do not have access. Thus, staff cannot refer back to the plans when they have questions about implementation. Consequence issues that were mentioned include a lack of consistent feedback about staff performance. Thus, the consultant suggests to the psychologist that the intervention focus on the issues identified by the PDC. In consulting practice, the assessment phase is often not made explicit; consultants are fluent at this process and may not teach clients how to do it in detail.

An intervention plan is discussed by the consultant, psychologist, and center administration and is jointly agreed on. The intervention consists of training each staff member to a mastery criterion for each treatment plan, the installation of visual prompts (i.e., signs informing staff members how to collect data and follow specific activity schedules) to prompt general treatment plan implementation at the center, and feedback. Specifically, it is suggested that each staff member be trained such that she or he can score at least 90% correct implementation on both a written and in vivo test of each resident's plan. The

psychologist must sign and date a data sheet indicating that each staff member has achieved this criterion before the staff member is eligible to work with residents. Also, framed signs indicating resident activity schedules and data collection procedures will be placed in each resident's room. Finally, the psychologist will randomly measure staff treatment plan implementation using the data sheets previously developed. Weekly, group graphic feedback will be posted in each unit break room showing the percentage of opportunities in which staff correctly implemented treatment plans. The intervention is to be implemented on the adolescent unit first, followed by the children's unit.

After 2 months of intervention, Therapeutic Center reports that the percentage of opportunities in which staff members correctly implement treatment plans increased from 60% to 80%, meeting the goal, which was set at 75% (see Figure 1 for hypothetical data). The psychologist and administration are satisfied with the results and are interested in continuing to increase correct plan implementation to a subsequent goal of 90% correct. Before the consultant turns over the intervention to the psychologist, she examines the social validity of the intervention by asking direct-care staff members and center residents what they think about the new process and the feedback they now receive. Once assured that all staff members and residents are satisfied, she conducts a cost–benefit analysis of the intervention. She determines that the intervention appears to be saving Therapeutic Center money by reducing

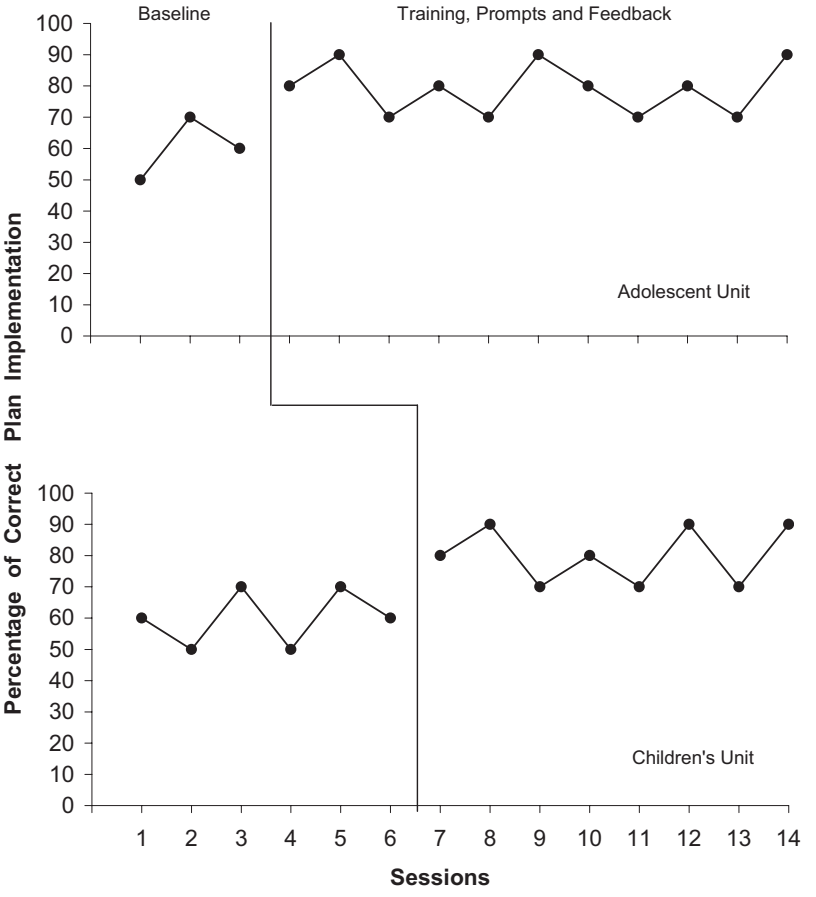

Figure 1. Hypothetical data depicting the evaluation of baseline and intervention phases with Therapeutic Center using a multiple baseline design.

staff turnover and increasing the number of residents who can be treated, and she presents these data to the psychologist and administration. From this point on, the consultant maintains close contact with the psychologist and visits the company about every 3 months. Data collection and the intervention remain in place, and Therapeutic Center continues to improve the integrity of its treatment plans, increasing the mean percentage of correct plan implementation to 90% within 6 months.

Summary

To summarize, OBM is the application of behavioral principles to individuals and groups in business, industry, government, and human service settings. The history of OBM is similar to the history of ABA in general, and the field also shares some historical events with industrial–organizational psychology. OBM now includes subdisciplines such as performance management, systems analysis, and behavior-based safety. Given the diverse settings in which it is practiced, the objective way in which its interventions are evaluated, and society's increasing focus on improving human performance at work, the future of OBM appears bright.

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Appendix

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