

Positive Behavior Support and Applied Behavior Analysis

A Familial Alliance

Glen Dunlap

University of South Florida

Edward G. Carr

State University of New York at Stony Brook

Robert H. Horner

University of Oregon

Jennifer R. Zarcone

University of Rochester Medical Center

Ilene Schwartz

University of Washington

Positive behavior support (PBS) emerged in the mid-1980s as an approach for understanding and addressing problem behaviors. PBS was derived primarily from applied behavior analysis (ABA). Over time, however, PBS research and practice has incorporated evaluative methods, assessment and intervention procedures, and conceptual perspectives associated with a number of additional disciplines. Recently, there has been some confusion regarding the definition of PBS and, in particular, its relationship to ABA. In this article, it was noted that the practice of PBS and ABA, in some instances, can be indistinguishable but that important differences in definitions and emphases mandate an explicit distinction. The purpose of this article is to address some of the key points of confusion, identify areas of overlap and distinction, and facilitate a constructive and collegial dialog between proponents of the PBS and ABA perspectives.

Keywords: *positive behavior support; applied behavior analysis*

Positive behavior support (PBS) is a practical approach for decreasing problem behaviors and improving quality of life (QOL) for individuals of all ages and abilities. The approach involves a data-based assessment process, empirically validated intervention strategies, systems change to promote utilization and sustainability, and procedures for heightening responsiveness to consumers' preferences and community relevance. PBS

emerged in the mid-1980s in response to (a) escalating concerns over the use of aversive procedures (Lavigna & Donnellan, 1986; Meyer & Evans, 1989; Will, 1999) and (b) the desire to produce more meaningful and sustainable outcomes in complex community settings (Horner et al., 1990). The approach grew from the scientific and procedural foundations of applied behavior analysis (ABA), benefiting, in particular, from the technologies of functional assessment and analysis. In the past two decades, the definition of PBS has been refined and considerable data have documented its efficacy with diverse populations (Bambara & Kern, 2005; Carr, 2007; Carr et al., 1999; Dunlap & Carr, 2007; Koegel & Koegel, 2006; Koegel, Koegel, & Dunlap, 1996; Lucyshyn, Dunlap, & Albin, 2002), and the approach has been elaborated into a systematic perspective relevant to multiple units of analysis and application (e.g., Anderson & Kincaid, 2005; Sugai et al., 2000). In a relatively short period of time, PBS has been established as a major influence in the way that practitioners and policy makers address the challenge of problem behavior.

The dramatic growth of PBS has been associated with some misunderstandings and criticisms. Misunderstandings and confusion arose from the rapid expansion and popularity of PBS, with a large number of individuals and organizations claiming to practice the approach. Even a cursory search of the Internet uncovers a large number of Web sites, some of which describe practices and principles that bear little resemblance to the foundations of PBS elaborated in the general research literature, in the *Journal of Positive Behavior Interventions (JPBI)*, or by the international Association for Positive Behavior Support (APBS). The problem of inaccurate attributions, of course, is familiar to many practices and disciplines, including ABA. In addition, some behavior analysts have published scholarly analyses and thoughtful critiques that questioned the merits of viewing PBS as a distinct discipline (e.g., Carr & Sidener, 2002; Wacker & Berg, 2002). Others have published more disparaging critiques of the PBS approach (e.g., Johnston, Foxx, Jacobson, Green, & Mulick, 2006; Mulick & Butter, 2005; Osborne, 2005).

Authors' Note: The authors express sincere gratitude for the encouragement and substantive comments provided by Judith E. Favell, Dennis H. Reid, and Todd R. Risley. Although the responsibility for this article is owned by the authors alone, the content was improved as a result of detailed suggestions and guidance from these authorities. Please address correspondence to Glen Dunlap, Department of Child and Family Studies, Florida Mental Health Institute, University of South Florida, 2778 Mayberry Drive, Reno, NV 89509; e-mail: glendunlap@sbcglobal.net.

As behavior analysts who have concurrently been involved with the development of PBS, we are concerned that the misunderstandings of PBS have engendered confusion and the potential for unnecessary counterproductive polarization within the field. Therefore, the purpose of this article is to provide some explanation and elaboration of the definition and status of PBS and its relationship to ABA. Our intention is to clarify the issues and, hopefully, to launch a collegial and constructive discussion concerning the beneficial interactions that can and should occur between proponents of these two disciplines.

Positive Behavior Support

PBS is an intervention technology based on social, behavioral, educational, and biomedical science that combines evidence-based practices with formal systems change strategies focused on both improving the valued lifestyle options available for an individual and reducing problem behaviors (Carr et al., 2002). PBS is an overtly value-based technology that integrates consumer preferences with data-based decision making. The individuals receiving support (and their advocates) are the key decision makers in defining the goals and the parameters of the support. PBS is an empirical approach in that (a) the practices build from formal scientific principles, (b) the practices are subjected to formal research validation tests, and (c) the practices include the collection and use of publicly interpretable data as part of individual application. PBS is a systems approach in that intervention practices are selected to fit the unique social context in which they are applied and to focus on the larger organizational variables that affect fidelity and sustainability of intervention implementation and effects. In concert with many other authors, Carr et al. (2002) identified ABA as the essential foundation and source from which PBS practices have emerged and acknowledged, in particular, the operant conceptual framework and the assessment and intervention technologies that stem from ABA as core components of PBS.

There are a number of features that are important to consider when defining PBS and appreciating its role in the panorama of behavioral science and practice. Table 1 provides a list of distinctive features that were delineated by Carr et al. (2002). These features describe a highly pragmatic, problem-solving approach that is open to effective inputs derived from multiple perspectives, with the key criteria being that these inputs be subject to the processes of empirical accountability and validation and that they be consistent with the PBS goals of decreasing problem behaviors and improving QOL.

Table 1
Defining Features of Positive Behavior Support

| | |
|----|--|
| 1 | Comprehensive lifestyle change and improved quality of life are goals of any intervention and can only be defined based on the values of those receiving support. |
| 2 | Interventions and supports are to be seen and implemented from a long-term, life span perspective. |
| 3 | Interventions must possess ecological validity, in that strategies of intervention and support must be feasible in, relevant to, and effective in real-life settings and situations. |
| 4 | Principal stakeholders (such as parents, teachers, friends, employers, and siblings) function as collaborators and partners in the development and implementation of interventions and support plans. |
| 5 | Social validity is a primary and pervasive criterion of effective procedures and intended outcomes. |
| 6 | Interventions are developed with an understanding that ensuring fidelity with respect to support and sustainability requires attention to systems variables. |
| 7 | Support plans are developed with a comprehensive emphasis on prevention, and an acknowledgment that active and functional intervention occurs when problem behaviors are not present. |
| 8 | Support plans are (a) based on assessment of medical, behavioral, and educational variables; (b) guided by principles drawn from behavioral and biomedical science; and (c) evaluated through overt measurement of impact. |
| 9 | An appreciation that optimal effectiveness requires the utilization of knowledge derived from a variety of methodological practices. |
| 10 | A pragmatic understanding that contributions to the development of effective interventions and supports can come from multiple theoretical perspectives. |

PBS is sometimes criticized for not being new. However, as many authors have stated (Anderson & Freeman, 2000; Carr et al., 2002; Dunlap, 2004; Horner et al., 1990), although the basic building blocks of PBS are not new, the ways in which these building blocks have been taken from a variety of approaches and integrated into a unified approach is different. In addition, changes in the assessment and intervention methodologies required to make the integration work effectively in complex naturalistic settings have been a major focus of PBS research (e.g., Clarke & Dunlap, 2008; Gable, Hendrickson, & Van Acker, 2001; Scott et al., 2005). The challenges involved in integrating research with practice, including the analysis and application of factors characteristic of complex social environments, led to an entity (PBS) that differs in many ways from the parent discipline (ABA) from which it evolved (Carr, 1997). In order to clarify this relationship, we turn now to a brief discussion of the commonalities and distinctions (or shared and differing emphases) between PBS and ABA.

Shared Emphases Between ABA and PBS

The emergence of PBS in the mid-1980s was propelled by social forces demanding effective, socially and ecologically valid procedures for producing needed changes in serious destructive and disruptive behaviors. The conceptual and technical means to respond to these forces involved operant psychology and ABA. Most pivotal among the contributions of ABA in the mid-1980s was the research on functional analysis and functional behavioral assessment (Carr, 1977; Iwata, Dorsey, Slifer, Bauman, & Richman, 1994; Repp & Horner, 1999) that enabled a new preventive technology of functional skill training (e.g., Carr & Durand, 1985; Wacker et al., 1990) and the expansion of assessment-based applications of stimulus control that helped define a preventive technology of environmental redesign (e.g., Dunlap & Kern, 1996; Luiselli, 2006; Wolery & Winterling, 1997).

Given the critical importance and demonstrated efficacy of the technology and methodology of ABA, it is not surprising that a large proportion of the principal contributors to PBS were trained as behavior analysts, published research in and served on the editorial boards of ABA journals (e.g., the *Journal of Applied Behavior Analysis* [*JABA*]), and remained committed to and identified with ABA. Indeed, Todd Risley, a prominent cofounder of ABA, was also a prominent cofounder of PBS. His description of lifestyle arrangements (Risley, 1996) is one of the seminal articles defining the essential elements of PBS. PBS is viewed as an opportunity to build upon the ABA tradition by incorporating concepts and strategies from a variety of sources to address issues and problems whose resolution would further enhance our pragmatic impact on society (Dunlap, 2006; Risley, 2003). Although PBS embraces input from multiple disciplines and consumers, it subjects that input to rigorous empirical analysis and, like ABA, uses pragmatism as its philosophical center and contextualism as its world view (Morris, 1988).

Because PBS evolved from ABA, it is not surprising that there are many areas of overlap, or shared emphases, between the two perspectives. Some of the most important features that link PBS and ABA are discussed subsequently.

Empiricism

Similar to ABA, PBS is an empirical approach that relies on valid and reliable data to support its practices. Research and practices in both areas are routinely peer reviewed and published in numerous, highly regarded

journals. Similarly, federal funding for research studies has been provided following peer review of grant proposals in both PBS- and ABA-based research. Both fields use empirically derived practices to implement assessment and intervention strategies that are based on high-quality research.

Conceptual Foundation

The conceptual foundation of ABA is Skinner's framework of instrumental (operant) learning. This framework also forms a significant part of the conceptual basis of PBS. Thus, principles of reinforcement, contingency management, stimulus control, shaping, fading, prompting, functional equivalence, generalization, and maintenance are fundamental to PBS and ABA. Although, as will be discussed shortly, PBS is exploring additional concepts that may prove useful in improving community-based outcomes (e.g., contextual fit, the role of relationships in intervention planning and implementation, increased reliance on social validity, and systems variables related to replication and sustainability), its conceptual core comes from the same source as that of ABA.

Research Methods

The dominant methodologies in both PBS and ABA involve reliable direct observations with respect to data collection and experimental and quasi-experimental designs (Baer, Wolf, & Risley, 1968; Bailey & Burch, 2002; Sidman, 1960). The majority of research uses single-subject research methods to demonstrate the internal validity of intervention strategies. There is also a movement in both areas toward additional research methodologies such as group comparison designs (including randomized clinical trials), descriptive studies, and an array of statistical techniques that will need to be used as emerging research questions demand greater latitude in the selection of designs and analytic tools.

Assessment and Intervention Procedures

The technology of ABA involves reinforcement and contingency management, functional assessment and functional analysis, shaping and fading, and manipulations of stimulus control and establishing operations. Being derived from ABA, these general procedural categories also serve as the foundation of PBS interventions. Given that these strategies come from the basic laws of behavioral science, this concordance is not at all surprising.

As we have noted earlier, the basic technology of behavior change has not been created anew with the emergence of PBS, and it is clear that PBS practice continues to be defined to a great extent by procedures developed and validated in ABA.

A Focus on Pragmatism and Utility

In conversations regarding ABA and PBS, it is easy to lose sight of the fact that both approaches have a deep commitment to present-day utility for people with problems in behavioral adaptation (Dunlap, 2006). Both approaches emphasize generation of knowledge that can be applied now. This point of view is not universally accepted. Indeed, there is a potent and dominant lobby in our society that is centered on the notion of *cause and cure* (Carr, 2007). Although we all support identifying the causes of human problems and using such knowledge to effect cures, there now exists in the field a profound imbalance between public support for and interest in pragmatic environmentally oriented approaches on the one hand and basic biological research on the other hand. The cause and cure lobby and its allies in the pharmaceutical industry have facilitated federal research funding patterns (e.g., National Institutes of Health [NIH]) that strongly favor the support of basic biological science (e.g., animal models, genetics, magnetic resonance imaging [MRI], and neurochemistry) whose practical impact on families, schools, and community functioning is, for the most part, minimal at present and whose promise may not be realized for decades to come.

Working together, ABA and PBS have the potential to apply a science that is effective in meeting the needs of people with diverse abilities and challenges in complex naturalistic settings. A persuasive focus on pragmatism and utility, which truly meets consumer needs, may help rekindle society's interest in supporting applied research to a degree that makes possible the amelioration of serious problems today and not at some vague time in the future. An ABA–PBS alliance is an excellent strategy for meeting this goal.

Differing Emphases Between PBS and ABA

Along with an enduring set of core commonalities are features that distinguish PBS from ABA. The features are not unique to PBS and are present in some manifestations of ABA, but they are distinctive in that the level of emphasis is different in the two approaches. The distinctions arise from the PBS effort to make strategies more effective in complex settings and at

multiple levels and larger scales of implementation. The need to add to, alter, and rethink the approach defined by ABA became apparent as more practitioners moved beyond laboratory demonstrations and controlled environments to homes, schools, workplaces, and other community settings. This movement was the result of a healthy confidence in the efficacy of ABA and a strong desire to become an important voice in larger society with respect to issues of remediation, support, and policy. Being derived from ABA, PBS can be seen as an effort to expand, enrich, and transcend boundaries of behavior analysis and other disciplines in order to document and understand the achievement of broader outcomes in community settings for individuals with problems of behavioral adaptation.

Multiple Theoretical Perspectives and Methodologies

PBS accepts and uses multiple perspectives in its efforts to identify functional relationships and to examine and validate approaches for producing behavior change. PBS has embraced principles and practices that go beyond the operant conditioning principles that overwhelmingly define behavior analysis (Cooper, Heron, & Heward, 2007) but that, nonetheless, have evidence of pragmatic value. For example, a recent movement toward understanding gene–brain–behavior relationships supports an interdisciplinary view of problem behavior across pharmacological, genetic, neurodevelopmental, and psychological methods (e.g., Rondal, Hodapp, Soresi, Dykens, & Nota, 2004; Schroeder, Oster-Granite, & Thompson, 2002). This cross-discipline approach may lead us to not only take environmental factors into account but consider medical, pharmacological, and genetic status as an establishing operation or a setting event upon which behavioral interventions can be based (e.g., Carr & Owen-DeSchryver, 2007; Eisenberg et al., 2005; Hatton et al., 2002; Zarcone et al., 2004).

PBS accepts and uses research methods that are associated with the broader field of social and behavioral science. For example, most psychosocial research approaches involve conducting large group studies. As appropriate, PBS has used these models when evaluating PBS interventions (e.g., Feldman, Condillac, Tough, Hunt, & Griffiths, 2002) and large-scale programs, such as school-wide interventions (Sugai et al., 2000). PBS researchers also use descriptive and qualitative methods to explore questions involving issues such as family perspectives on PBS interventions (e.g., Fox, Vaughn, Wyatt, & Dunlap, 2002; Ruef, Turnbull, Turnbull, & Poston, 1999).

PBS has been influenced by the need to consider variables that go beyond those affecting short-term behavior changes for individuals. The technology that PBS is developing includes and honors the science of ABA. At the same time, PBS is challenged to identify variables that affect long-term outcomes and short-term outcomes; to become relevant for larger units of analysis including local, regional, and state-wide programs; and to document the effects not just of individual variables but of the interactions associated with multielement interventions. These challenges require openness to multiple methodological and conceptual perspectives.

Independent and Dependent Variables

Researchers and practitioners in the field of PBS have emphasized the necessity of operationalizing and analyzing independent variables that push the envelope of traditional ABA methods and language. For example, intervention variables that are considered important to parents and teaching and direct care staff include multidimensional constructs related to “buy-in with the intervention,” having an ongoing “relationship with the individual,” and the centrality of detailed input from and comprehensive collaboration with family members and other caregivers with respect to the “design of the behavioral support plan” (Hieneman & Dunlap, 2000, 2001). Most critically, there is an emphasis, derived from the generic literature on organizational management (Knoster, Villa, & Thousand, 2000), on systems change as the sine qua non of successful intervention planning. These factors identified as the most important in producing effective community-based support are sometimes difficult to define and evaluate using traditional ABA methods; however, they are increasingly emphasized in PBS guidelines and research (e.g., Albin, Lucyshyn, Horner, & Flannery, 1996; Carr, 2007; McLaughlin & Carr, 2005).

There has been a tendency in ABA to focus on the immediate environmental contingencies that are affecting behavior. In addition to looking at these variables, PBS has placed relative emphasis on intervention at a broader level, looking beyond the immediate environment to classroom, group, and systems-level contingencies that may also be affecting behavior. There is also a more equal focus on prevention and intervention strategies to reduce problem behavior. A focus on replacement of problem behavior is also more proactively promoted rather than only the elimination of problem behavior. Authors in the area of PBS have noted that macrovariables, such as lifestyle adjustments that include living arrangements, educational

placements, and interpersonal relationships, are legitimate foci of concern not only as independent variables but also as dependent variables (Risley, 1996; Turnbull & Turnbull, 1999). This perspective has led to the notion that the central dependent variable in PBS is QOL (Carr, 2007). QOL is a multidimensional construct involving issues of material well-being, health and safety, social well-being, emotional well-being, recreation and leisure, and personal autonomy. The conceptualization and measurement of these variables are drawn from a wide variety of sources beyond ABA that include multiple social and behavioral sciences, education and disability studies, and biomedical science (Koegel, Koegel, & Dunlap, 1996; Lopez & Snyder, 2003; Lucyshyn et al., 2002; Rappaport & Seidman, 2000; Schalock, 1990; Snyder & Lopez, 2005; Wehmeyer & Patton, 2000). Although PBS is expanding the range of dependent variables addressed, it relies on its behavioral roots to insist upon careful measurement and evaluation to determine the effectiveness of an intervention. In this way, PBS can be viewed as an evolution of ABA, attempting to study and understand behavior that new technology enables us to transform from private to public.

Centrality of Validity Issues

The concept of social validity was developed by behavior analysts and has long been an important tenet of ABA (Baer et al., 1968; Wolf, 1978). The field of PBS has taken this concept and highlighted the need to make validity, in all its forms, the gold standard for judging all broad-based intervention efforts. There is an emphasis on identifying the needs and interests of those who will be implementing the interventions so that long-term implementation will be sustained. Thus, it has been argued that PBS research must move toward a model that emphasizes (a) the use of interventions across all relevant settings, (b) the perceptions of relevant stakeholders, and (c) the presence of desired behavior change in relevant contexts and across time (Clarke & Dunlap, 2008). In examining the issue of relevant contexts, Clarke and Dunlap (2008) noted that from 1999 to 2005, research articles published in *JPBI*, the prototypical PBS journal, differed in systematic ways from research articles published in *JABA*, the prototypical ABA journal. Specifically, 63%–69% of the venues described in *JPBI* involved typical (naturalistic) physical, activity, and social contexts, whereas only 19%–24% of the venues described in *JABA* involved typical contexts. Although it is clear that a number of the ABA studies were concerned with ecological validity, it is similarly apparent that a much

greater proportion of the PBS studies were concerned with that aspect of validity. In sum, the practical and research focus of PBS is heavily invested in ecological, social, and external validity, as well as more traditionally in internal validity.

Summary and Conclusions

The previous section addressed distinctions between PBS and ABA in rather general terms and, as such, some caveats are in order. Specifically, ABA, having developed over the past 40–50 years, is a broad umbrella term with many emphases, and a number of these overlap with aspects of PBS. The distinctions we have identified pertain primarily to approaches to behavior interventions and supports, which are the parameters of PBS. The overlap between PBS and ABA is considerable and undeniable, as we have emphasized in the previous section on commonalities. Indeed, many behavior analysts engage in practices that are indistinguishable from PBS, and some authors (e.g., Wacker & Berg, 2002) describe PBS as a model of delivering services that is essentially ABA. In some respects, PBS can be viewed as differing from ABA only as a matter of degree or levels of emphasis. Although our position differs in that we view some distinctions and directions as more substantive, we concur that this difference of perspective may sometimes be a matter of splitting hairs. Regardless, the amalgamation of factors that comprise PBS (Table 1) distinguishes PBS from other approaches and is important for communications both within the behavioral sciences and with consumers of behavioral services.

It is also important to appreciate that the features described in Table 1 are best viewed as guidelines rather than as rigid requirements for designating a procedure, support plan, or research project as PBS. For example, resolutions for many social, behavioral, or educational problems do not require the incorporation of multiple perspectives or methodologies and, similarly, some problems are relatively circumscribed and may not oblige an overtly long-term, life span perspective. Similarly, much of the research that forms the empirical basis of PBS was designed to evaluate specific procedures within experimental or quasi-experimental contexts that intentionally limit the influence of extraneous variables. Therefore, syntheses of PBS research have included many studies that do not incorporate all the recognized PBS features (e.g., Carr et al., 1999; Dunlap & Carr, 2007). But the studies, nevertheless, contribute to the PBS approach by validating and refining components of the PBS process. A study or support plan that incorporates all the

defining features would be viewed as approaching an ideal PBS exemplar. In any case, it is the entire corpus of PBS research, rather than any single study, that must and does reflect all the defining features articulated in Table 1.

PBS has often been described as an approach grounded in person-centered values (e.g., Bambara, 2005), meaning that interventions are explicitly individualized and designed with respect for consumers' preferences and consumers' dignity. We agree that values are important ingredients in any intervention or support plan and assert that the central values of PBS are manifested in the commitment to improved QOL, collaborative processes, and ecological and social validity. Interventions that are not aligned with the preferences of the individual (or family) consumer are not likely to be effective, and it is recognized that consumers have different preferences and define individual dignity and respect in idiosyncratic ways.

The enterprise of behavior change and behavior support is unquestionably complex. ABA is established as a strong applied science that continues to contribute important benefits from the vantage points of both research and practice. PBS has taken the indispensable foundations of ABA and extended them to applications in community-based settings and has highlighted the issue of long-term sustainability. Although based on ABA, PBS is seeking to integrate multidisciplinary knowledge and perspectives to advance our ability to have an optimal impact across all community domains and contexts. PBS practitioners and researchers are developing strategies that involve more focused attention to systems change and systems analysis (Sugai & Horner, 1999), to nontraditional units of analysis (Sugai et al., 2000; Walker et al., 1996), to cultural influences and cultural relativism (Chen, Downing, & Peckham-Hardin, 2002; Singh, 1995), and to the enhancement of family support (e.g., Lucyshyn et al., 2002; Singer, Goldberg-Hamblin, Peckham-Hardin, Barry, & Santarelli, 2002). A major aspect of PBS' distinctiveness is its emphasis on the broad role of context and the macrovariables that exert pervasive influences on behavior but that are relatively difficult to isolate with traditional behavior analytic methodologies.

Finally, it is important to emphasize that the distinctions between PBS and ABA do not reflect an adversarial relationship. On the contrary, PBS and ABA occupy somewhat different niches, and it is expected that the products of the two approaches will result in mutual benefits. PBS is indebted to ABA for its heritage and much of its conceptual, methodological, and technological foundation. It is encouraging that the Association for Behavior Analysis recently established a special interest group on PBS and that many researchers and practitioners are members of both ABA and APBS. These are positive and altogether appropriate signs that confusion is dissipating

and that there is every likelihood of a strong collegial relationship between ABA and PBS to which we can look forward as we attempt to meet our ultimate goal of improving the QOL for all people in our society.

References

- Albin, R. W., Lucyshyn, J. M., Horner, R. H., & Flannery, K. B. (1996). Contextual fit for behavior support plans: A model for "goodness of fit". In L. Koegel, R. Koegel, & G. Dunlap (Eds.), *Positive behavioral support: Including people with difficult behavior in the community* (pp. 81–98). Baltimore: Paul H. Brookes.
- Anderson, C. M., & Freeman, K. A. (2000). Positive behavior support: Expanding the application of applied behavior analysis. *The Behavior Analyst, 23*, 85–94.
- Anderson, C. M., & Kincaid, D. K. (2005). Applying behavior analysis to school violence and discipline problems: School-wide positive behavior support. *The Behavior Analyst, 28*, 49–63.
- Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 1*, 91–97.
- Bailey, J. S., & Burch, M. R. (2002). *Research methods in applied behavior analysis*. Thousand Oaks, CA: Sage Publications.
- Bambara, L. (2005). Evolution of positive behavior support. In L. Bambara & L. Kern (Eds.), *Individualized supports for students with problem behaviors: Designing positive behavior plans* (pp. 1–24). New York: Guilford Press.
- Bambara, L., & Kern, L. (Eds.). (2005). *Individualized supports for students with problem behaviors: Designing positive behavior plans*. New York: Guilford Press.
- Carr, E. G. (1977). The motivation of self-injurious behavior: A review of some hypotheses. *Psychological Bulletin, 84*, 800–816.
- Carr, E. G. (1997). The evolution of applied behavior analysis into positive behavior support. *Journal of the Association for Persons with Severe Handicaps, 22*, 208–209.
- Carr, E. G. (2007). The expanding vision of positive behavior support: Research perspectives on happiness, helpfulness, and hopefulness. *Journal of Positive Behavior Interventions, 9*, 3–14.
- Carr, E. G., Dunlap, G., Horner, R. H., Koegel, R. L., Turnbull, A. P., Sailor, W., et al. (2002). Positive behavior support: Evolution of an applied science. *Journal of Positive Behavior Interventions, 4*, 4–16.
- Carr, E. G., & Durand, V. M. (1985). Reducing behavior problems through functional communication training. *Journal of Applied Behavior Analysis, 18*, 111–126.
- Carr, E. G., Horner, R. H., Turnbull, A. P., Marquis, J. G., McLaughlin, D. M., McAtee, M. L., et al. (1999). *Positive behavior support for people with developmental disabilities*. Washington, DC: American Association on Mental Retardation.
- Carr, E. G., & Owen-DeSchryver, J. S. (2007). Physical illness, pain, and problem behavior in minimally verbal people with developmental disabilities. *Journal of Autism and Developmental Disorders, 37*, 413–424.
- Carr, J. E., & Sidener, T. M. (2002). On the relation between applied behavior analysis and positive behavioral support. *The Behavior Analyst, 25*, 245–253.
- Chen, D., Downing, J. E., & Peckham-Hardin, K. D. (2002). Working with families of diverse cultural and linguistic backgrounds: Considerations for cultural responsive positive behavior support. In J. M. Lucyshyn, G. Dunlap, & R. W. Albin (Eds.), *Families and positive behavior support: Addressing problem behavior in family contexts* (pp. 133–154). Baltimore: Paul H. Brookes.

- Clarke, S., & Dunlap, G. (2008). A descriptive analysis of intervention research published in the *Journal of Positive Behavior Interventions: 1999–2005*. *Journal of Positive Behavior Interventions, 10*, 67–71.
- Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied behavior analysis*. Upper Saddle River, NJ: Pearson Merrill Prentice Hall.
- Dunlap, G. (2004). Critical features of positive behavior support. *APBS Newsletter, 1*, 1–3.
- Dunlap, G. (2006). The applied behavior analytic heritage of PBS: A dynamic model of action-oriented research. *Journal of Positive Behavior Interventions, 8*, 58–60.
- Dunlap, G., & Carr, E. G. (2007). Positive behavior support and developmental disabilities: A summary and analysis of research. In S. L. Odom, R. H. Horner, M. Snell, & J. Blacher (Eds.), *Handbook of developmental disabilities* (pp. 469–482). New York: Guilford.
- Dunlap, G., & Kern, L. (1996). Modifying instructional activities to promote desirable behavior: A conceptual and practical framework. *School Psychology Quarterly, 11*, 297–312.
- Eisenberg, N., Sadovsky, A., Spinrad, T. L., Fabes, R. A., Losoya, S. H., Valiente, C., et al. (2005). The relations of problem behavior status to children's negative emotionality, effortful control, and impulsivity: Concurrent relations and prediction of change. *Developmental Psychology, 41*, 193–211.
- Feldman, M. A., Condillac, R. A., Tough, S., Hunt, S., & Griffiths, D. (2002). Effectiveness of community positive behavioral intervention for persons with developmental disabilities and severe behavioral challenges. *Behavior Therapy, 33*, 377–398.
- Fox, L., Vaughn, B., Wyatte, M. L., & Dunlap, G. (2002). "We can't expect other people to understand": The perspectives of families whose children have problem behavior. *Exceptional Children, 68*, 437–450.
- Gable, R. A., Hendrickson, J. M., & Van Acker, R. (2001). Maintaining the integrity of FBA-based interventions in schools. *Education and Treatment of children, 24*, 248–260.
- Hatton, D. D., Hooper, S. R., Bailey, D. B., Skinner, M. L., Sullivan, K. M., & Wheeler, A. (2002). Problem behavior in boys with Fragile X syndrome. *American Journal of Medical Genetics, 108*, 105–116.
- Hieneman, M., & Dunlap, G. (2000). Factors affecting the outcomes of community-based behavioral support: I. Identification and description of factor categories. *Journal of Positive Behavior Interventions, 2*, 161–169.
- Hieneman, M., & Dunlap, G. (2001). Factors affecting the outcomes of community-based behavioral support: II. Assessing the relative importance of factor categories. *Journal of Positive Behavior Interventions, 3*, 67–74.
- Horner, R. H., Dunlap, G., Koegel, R. L., Carr, E. G., Sailor, W., Anderson, J., et al. (1990). Toward a technology of "non-aversive" behavioral support. *Journal of the Association for Persons with Severe Handicaps, 15*, 125–132.
- Iwata, B., Dorsey, M., Slifer, K., Bauman, K., & Richman, G. (1994). Toward a functional analysis of self-injury. *Journal of Applied Behavior Analysis, 27*, 197–209. (Reprinted from *Analysis and intervention in developmental disabilities, 2*, 3–20, 1982).
- Johnston, J., Foxx, R., Jacobson, J. W., Green, G., & Mulick, J. A. (2006). Positive behavior support and applied behavior analysis. *The Behavior Analyst, 29*, 51–74.
- Knoster, T. P., Villa, R. A., & Thousand, J. S. (2000) A framework for thinking about systems change. In R. A. Villa & J. S. Thousand (Eds.), *Restructuring for caring and effective education* (pp. 93–128). Baltimore: Brookes.
- Koegel, R. L., & Koegel, L. K. (2006). *Pivotal response treatments for autism*. Baltimore: Paul H. Brookes.

- Koegel, L. K., Koegel, R. L., & Dunlap, G. (Eds.). (1996). *Positive behavioral support*. Baltimore: Paul H. Brookes.
- Lavigna, G. W., & Donnellan, A. M. (1986). *Alternatives to punishment: Solving behavior problems with non-aversive strategies*. New York: Irvington.
- Lopez, S. J., & Snyder, C. R. (Eds.). (2003). *Positive psychological assessment*. Washington, DC: American Psychological Association.
- Lucyshyn, J. M., Dunlap, G., & Albin, R. W. (2002). *Families and positive behavior support: Addressing problem behavior in family contexts*. Baltimore: Paul H. Brookes.
- Luiselli, J. K. (2006). *Antecedent assessment & intervention: Supporting children & adults with developmental disabilities in community settings*. Baltimore: Paul H. Brookes.
- McLaughlin, D. M., & Carr, E. G. (2005). Quality of rapport as a setting event for problem behavior: Assessment and intervention. *Journal of Positive Behavior Interventions*, 7, 68–91.
- Meyer, L. H., & Evans, I. M. (1989). *Nonaversive interventions for problem behaviors: A manual for home and community*. Baltimore: Paul H. Brookes.
- Morris, E. K. (1988). Contextualism: The world view of behavior analysis. *Journal of Experimental Child Psychology*, 46, 289–323.
- Mulick, J. A., & Butter, E. M. (2005). Positive behavior support: A paternalistic utopian delusion. In J. W. Jacobson Jr., R. M. Foxx, & J. A. Mulick (Eds.), *Controversial therapies for developmental disabilities: Fad, fashion, and science in professional practice* (pp. 385–404). Mahwah, NJ: Lawrence Erlbaum Associates.
- Osborne, J. G. (2005). Person-centered planning: A faux fixe in the service of humanism? In J. W. Jacobson Jr., R. M. Foxx, & J. A. Mulick (Eds.), *Controversial therapies for developmental disabilities: Fad, fashion, and science in professional practice* (pp. 313–329). Mahwah, NJ: Lawrence Erlbaum Associates.
- Rappaport, J., & Seidman, E. (Eds.). (2000). *Handbook of community psychology*. New York: Kluwer/Plenum.
- Repp, A. C., & Horner, R. H. (Eds.). (1999). *Functional analysis of problem behavior: From effective assessment to effective support*. Belmont, CA: Wadsworth.
- Risley, T. R. (1996). Get a life! In L. K. Koegel Jr., R. L. Koegel, & G. Dunlap (Eds.), *Positive behavioral support* (pp. 425–437). Baltimore: Paul H. Brookes.
- Risley, T. R. (2003, March 27). *Applied behavior analysis as a necessary, but not sufficient component in the past and future of positive behavior support*. Keynote address at the First International Conference on Positive Behavior Support, Orlando, FL.
- Rondal, J. A., Hodapp, R. M., Soresi, S., Dykens, E. M., & Nota, L. (2004). *Intellectual disabilities: Genetics, behaviour, and inclusion*. London: Whurr.
- Ruef, M., Turnbull, A. P., Turnbull, H. R., & Poston, D. (1999). Perspectives of five stakeholder groups: Challenging behavior of individuals with mental retardation and/or autism. *Journal of Positive Behavior Interventions*, 1, 43–58.
- Schalock, R. L. (Ed.). (1990). *Quality of life: Perspectives and issues*. Washington, DC: American Association on Mental Retardation.
- Schroeder, S. R., Oster-Granite, M. L., & Thompson, T. (2002). *Self-injurious behavior: Gene-brain-behavior relationships*. Washington, DC: American Psychological Association.
- Scott, T. M., McIntyre, J., Liaupsin, C., Nelson, C. M., Conroy, M., & Payne, L. D. (2005). An examination of the relation between functional behavior assessment and selected intervention strategies with school-based teams. *Journal of Positive Behavior Interventions*, 7, 205–215.

- Sidman, M. (1960). *Tactics of scientific research: Evaluating experimental data in psychology*. New York: Basic Books.
- Singer, G. H. S., Goldberg-Hamblin, S. E., Peckham-Hardin, K. D., Barry, L., & Santarelli, G. E. (2002). In J. M. Lucyshyn, G. Dunlap, & R. W. Albin (Eds.), *Families and positive behavior support: Addressing problem behavior in family contexts* (pp. 155–183). Baltimore: Paul H. Brookes.
- Singh, N. N. (1995). In search of unity: Some thoughts on family-professional relationships in service delivery systems. *Journal of Child and Family Studies, 4*, 3–18.
- Snyder, C. R., & Lopez, S. J. (Eds.). (2005). *Handbook of positive psychology*. New York: Oxford University Press.
- Sugai, G., & Horner, R. H. (1999). Discipline and behavioral support: Practices, pitfalls, and promises. *Effective School Practices, 17*, 10–22.
- Sugai, G., Horner, R. H., Dunlap, G., Hieneman, M., Lewis, T. J., Nelson, C. M., et al. (2000). Applying positive behavioral support and functional behavioral assessment in schools. *Journal of Positive Behavioral Interventions, 2*, 131–143.
- Turnbull, A. P., & Turnbull, H. R. (1999). Comprehensive lifestyle support for adults with challenging behavior: From rhetoric to reality. *Education and Training in Mental Retardation and Developmental Disabilities, 34*, 373–394.
- Wacker, D. P., & Berg, W. K. (2002). PBS as a service delivery system. *Journal of Positive Behavior Interventions, 4*, 25–28.
- Wacker, D. P., Steege, M. W., Northup, J., Sasso, G., Berg, W., Reimers, T., et al. (1990). A component analysis of functional communication training across three topographies of severe behavior problems. *Journal of Applied Behavior Analysis, 23*, 417–429.
- Walker, H. M., Horner, R. H., Sugai, G., Bullis, M., Sprague, J. R., Bricker, D., et al. (1996). Integrated approaches to preventing antisocial behavior patterns among school-age children and youth. *Journal of Emotional and Behavioral Disorders, 4*, 194–209.
- Wehmeyer, M. L., & Patton, J. R. (Eds.). (2000). *Mental retardation in the 21st century*. Austin, TX: Pro-Ed.
- Will, M. (1999). Foreword. In E. G. Carr, R. H. Horner, A. P. Turnbull, J. G. Marquis, D. M. McLaughlin, M. L. McAtee, et al. *Positive behavior support for people with developmental disabilities* (pp. 15–16). Washington, DC: American Association on Mental Retardation.
- Wolery, M., & Winterling, V. (1997). Curricular approaches to controlling severe behavior problems. In N. N. Singh (Ed.), *Prevention and treatment of severe behavior problems: Models and methods in developmental disabilities*. (pp. 87–120). Belmont, CA: Brooks/Cole.
- Wolf, M. M. (1978). Social validity: The case for subjective measurement or How applied behavior analysis is finding its heart. *Journal of Applied Behavior Analysis, 11*, 203–214.
- Zarcone, J. R., Lindauer, S. E., Morse, P. S., Crosland, K. A., Valdivinos, M. G., McKechar, T. L., et al. (2004). Effects of risperidone on destructive behavior of persons with developmental disabilities: IV. Functional analysis. *American Journal on Mental Retardation, 109*, 310–321.

Glen Dunlap, PhD, is a research professor with the Department of Child and Family Studies at the University of South Florida. His research focuses on early intervention, behavior analysis and positive behavior support, foster care, autism, and family-centered interventions.

Edward G. Carr, PhD, is leading professor in the Department of Psychology at the State University of New York at Stony Brook. His research interests include autism, community integration, family support, systems change, biomedical factors, and problem behavior.

Robert H. Horner, PhD, is Alumni-Knight Professor of special education at the University of Oregon. His interests focus on positive behavior support, applied behavior analysis, stimulus control, instructional technology, severe disabilities, and sustainable systems change.

Jennifer Zarcone, PhD, is the codirector of the Clinical Trials Program at the Strong Center for Developmental Disabilities, Department of Pediatrics, University of Rochester Medical Center. She is a board-certified behavior analyst and a licensed psychologist. She was recently elected as president for the Association for Positive Behavior Support. Her areas of expertise are autism, severe behavior disorders, and Prader-Willi syndrome.

Ilene Schwartz, PhD, is a professor and chair of special education at the University of Washington. She is the faculty advisor of an integrated early childhood program at University of Washington and the director of project Developmentally Appropriate Treatment for Autism (DATA), a model program designed to develop effective school-based services for toddlers and preschoolers with autism.