
Contributions of Applied Behavior Analysis to School-Based Mental Health Services in Rural Communities

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Jeannie A. Golden, Dorothy Dator, Kathryn Gitto,
and Christelle Garza

Barriers to Accessing Mental Health Services in Rural Communities

Estimates indicate that about 20% of children nationwide suffer from a mental illness and if those children do not get treated they are likely to become debilitated (Kataoka, Zhang, & Wells, 2002). Mental illness appears to be less prevalent in rural areas (Hartley, Bird, & Dempsey, 1999), but there exist higher rates of suicide among rural residents, especially children and men (Eberhardt, Ingram, & Makuc, 2001; Hartley et al., 1999). However, in rural communities, behavioral health care is often in short supply (Mullin & Stenger, 2013). Due to the scarcity of human resources across large geographic areas, there are simply fewer available services (McCormick, Kass, Elixhauser, Thompson, & Simpson, 2000).

People in rural communities are generally not within walking distance of educational, medical, and recreational facilities and resources (Arcury, Preisser, Gesler, & Powers, 2005; Yousefian, Ziller, Swartz, & Hartley, 2009). Rural residents

might have to travel long distances to receive mental health services, and most do not have the financial means to receive such services (Goldsmith, Wagenfeld, Manderscheid, & Stiles, 1997; Hartley et al., 1999; Holzer, Goldsmith, & Ciarlo, 1998; Sawyer, Gale, & Lambert, 2006). Financial problems that are more prevalent in rural areas include: being uninsured and ineligible for Medicaid (such as children of undocumented migrant workers), inability to rely on public funding, requirements for reimbursement that are restrictive, fragmented and complicated systems of funding, more expensive service delivery (due to smaller numbers because of expansive geographic areas), and failure to fund evidence-based practices (Logan, Stevenson, Evans, & Leukefeld, 2004; Sawyer et al., 2006; Stamm, 2003).

Less qualified personnel are available in rural communities (Rowland & Lyons, 1989; Wagenfeld, 2003). Furthermore, existing clinicians lack training for providing mental health treatment and specific expertise for working with children and adolescents (Sawyer et al., 2006). Yet, clinicians serving in rural primary care and community-based health care settings require an extensive range of skills to address the varying needs that exist in the rural environment (McIlwraith, Dyck, Holms, Carlson, & Prober, 2005). The stigmatization of psychiatric disorders, the lack of trust in medical professionals, and concerns over lack of confidentiality are

J.A. Golden (✉) • D. Dator • K. Gitto
East Carolina University, Greenville, NC, USA
e-mail: goldenj@ecu.edu

C. Garza
Fielding Graduate University,
Santa Barbara, CA, USA

additional barriers for individuals in rural communities to accessing mental health services (DeLeon, Wakefield, & Hagglund, 2003; Sawyer et al., 2006; Stamm, 2003).

Schools in rural communities have the potential to provide these much-needed behavioral health services while overcoming barriers to service (e.g., lack of transportation, financial need, stigma). Students in rural communities are often unable to stay after school for enhanced learning opportunities, extracurricular activities, after-school monitoring, social events, or mental health sessions. Providing mental health services that are school-based can ameliorate each of these problems. Rural youth can access these services during the school day, not requiring them to stay after school, eliminating the problems of transportation and cost, and reducing stigma (by simply going to the health clinic or the guidance counselor's office).

There are still, however, some problems in rural schools preventing them from being the ideal place for providing mental health services. Effective mental health service delivery requires collaboration and cooperation among the mental health providers, school administrators, parents and families, and school personnel (teachers, guidance counselors, nurses, social workers, psychologists). However, parents in rural communities face unique challenges that could make it difficult to attend parent-teacher conferences, school functions, or ongoing school activities (Semke & Sheridan, 2012), particularly parents of children from minority groups, such as Hispanic parents (Smith, Stern, & Shatrova, 2008). Minority families also show lower participation in mental health services (Angold et al., 2002; Kazdin, Holland, & Crowley, 1997). Families experiencing poverty is also a risk factor for low parental involvement in schools and in mental health services due to financial difficulties and higher stress levels (Armbruster & Kazdin, 1994; Brannan, Heflinger, & Foster, 2003; McKay & Bannon, 2004; Powell, 1993; Reynolds, 1992).

In a rural sample both ethnic groups were at equal risk for having psychiatric disorders, although black youth were less likely to receive

mental health services than white youth (Angold et al., 2002). On the other hand, school-based mental health services were accessed equally and at a higher rate than community services by both groups. This speaks to the potential for mental health services to be provided to youth in rural communities by schools.

Not only is there a problem with the lack of parental involvement hampering the collaboration and cooperation necessary to provide mental health services in the schools, there is also the scarcity of services and human resources in rural communities. This may lead to a shortage of competent, credentialed, and trained teachers, administrative staff, and student support personnel (e.g., psychologists, social workers, counselors, nurses). These school personnel may lack the training and supports they need to provide mental health services. One example of this is the school psychologist. Although school psychologists are required to provide a range of integrated health services to their students (DeLeon, Giesting, & Kenkel, 2003), they are often unlikely to have received training to provide mental health services.

So, then, how can Applied Behavior Analysis (ABA) make a difference? ABA is a set of principles governing human behavior and the application of those principles to alter behavior in ways that improve outcomes for a diverse range of individuals with a wide variety of problems (Bellack, Hersen, & Kazdin, 1990; Fisher, Piazza, & Roane, 2011). For example, Miltenberger and Gross used ABA to teach safety practices to children (2011) and several researchers have used it in the treatment of substance abuse (Holden, Moncher, & Schinke, 1990; Silverman, Kaminski, Higgins, & Brady, 2011; Sobell, Wilkinson, & Sobell, 1990). A book entitled *International Handbook of Behavior Modification and Therapy* has chapters outlining ways that ABA has also been used in the treatment of obesity (Israel, 1990; Wadden & Bell, 1990), habit disorders (Adesso, 1990), eating disorders (Garner & Rosen, 1990), sexual deviation (McConaghy, 1990), sexual dysfunction (LoPiccolo, 1990), marital distress (Weiss & Heyman, 1990), and pain (Turk & Rudy, 1990). ABA has been used to

treat various psychiatric disorders, such as anxiety disorders (Emmelkamp, 1990), obsessive-compulsive disorder (Steketee & Cleere, 1990), conduct disorders (Kazdin, 1990), and schizophrenia (Bellack & Mueser, 1990). The principles and strategies of ABA cross disciplines and as such have been used in adult medicine (Peterson & Harbeck, 1990; Taylor, Ironson, & Burnett, 1990), pediatric medicine (Friman & Piazza, 2011), neuropsychology (Goldstein, 1990), geriatrics (LeBlanc, Raetz, & Feliciano, 2011; Patterson, 1990), and education (Martens, Daly, Begeny, & Van Der Heyden, 2011).

Services that are typically provided by behavior analysts may include the conducting of functional behavioral assessments, the collection and analysis of data, the development of function-based treatment plans, and the training and monitoring of those who implement treatment plans (Behavior Analysis Certification Board, 2016). For example, when a child is exhibiting aggressive, oppositional behavior, the behavior analyst (BA) would assess to determine the function of this problematic behavior (i.e., to gain attention or escape task demands), take data to determine the environmental circumstances in which the problem behavior has high vs. low frequency of occurrence, develop a treatment plan to replace that problem behavior with a more acceptable behavior that serves the same function, and then assist the adults in that child's environment (parents, teachers) to implement the plan. The BA would also facilitate continued data collection to ensure that the treatment plan was in fact effective at ameliorating the problem behavior. This is in direct contrast to a traditional psychologist who may make a diagnosis based on symptomology and then treat the child's disorder rather than the child's behavior (Cipani & Schock, 2011).

Strategies often employed by behavior analysts may include positive and negative reinforcement, prompting, shaping, fading, modeling, and providing feedback. Examples would include: praising a child for staying on task, prompting a child with an anxiety disorder to use a coping strategy (Minahan & Rappaport, 2012), gradually getting a sedentary adolescent to walk for longer durations on the treadmill (shaping),

gradually removing supports that assist an individual with anorexia nervosa (fading), modeling for a husband how to deliver loving statements to his wife, and providing feedback to a parent who is attempting to use a new behavioral strategy with her child.

Thus, the versatility and wide range of uses of ABA can work well in a rural school environment. It can be used for providing skills and support to struggling parents, dealing with challenging behaviors associated with psychiatric disorders in children, assisting classroom teachers with behavior management and instructional strategies, and improving how administrators deal with issues such as bullying, discipline problems, and poor academic skills on a system-wide basis. In sum, ABA can make significant contributions to School-Based Mental Health Services (SBMHS) in rural settings.

Schools are adopting a more comprehensive, multisystem approach for coping with the challenge of students with needs at various levels of intensity (Teske, 2011) and incorporating multiple significant others across environments (Lauchlan, 2003) for dealing with these challenges. Rather than considering SBMH as the purview of one individual providing services to an individual student or small groups of students, the ABA perspective would view SBMH as altering and structuring environments so that they encourage and support good mental health and prevent and ameliorate mental health problems. Therefore, ABA makes contributions to SBMH through classroom-level interventions, school-wide programs, changing school personnel's behavior, and changing parents' behavior.

ABA Contributions to Classroom-Level Interventions

There are indications that behavior management strategies focusing on changing environmental events, antecedents as well as consequences, at home and in the classroom, have been effective with both problem behaviors and academic functioning. This includes students with a variety of psychiatric diagnoses, such as ADHD (DuPaul &

Eckert, 1997; Pelham, Wheeler, & Chronis, 1998), ODD, and CD (Brestan & Eyberg, 1998). These studies have demonstrated that the use of ABA in classroom settings is among the most efficacious school-based treatment for children with these disorders.

One study demonstrated the efficacy of comprehensive behavioral treatment for children with ADHD in a rural setting (Owens et al., 2005). This treatment program had several components in addition to a classroom-level intervention. It was conducted in three rural elementary schools, and also included consulting with parents and teachers, implementing a manualized parent training program, performing care coordination with other providers, and providing individual counseling sessions to children. The entire treatment package employed several ABA procedures including the daily report card (DRC), reinforcers and consequences at home for behaviors at school, and behavior management techniques (both individual and classwide) employed by teachers in the classroom. Results indicated that not only did the intervention reduce ADHD symptoms such as hyperactivity and impulsivity, but it also reduced oppositional, defiant, and aggressive behaviors and improved academic and social behaviors. Finally, in terms of accessing psychosocial treatment, more than half of the participants in this study were not receiving services prior to this study, although 43% of the treated children had previously been taking psychoactive medication.

One of the most researched and efficacious classroom-level ABA interventions available that can be used as a classroom-level intervention is the Good Behavior Game (GBG) (Nolan, Houlihan, Wanzek, & Jenson, 2014). The GBG is a procedure in which the teacher divides the class into two teams and each team competes to earn the least number of marks for infractions or inappropriate behaviors. Each member of the winning team or the winning team as a whole receives prizes at the end of the class, day and/or week.

Kleinman and Saigh (2011) used the GBG with urban high school students and found significantly reduced rates of class disruption using a reversal research design. A study in Belgium with rural elementary school students who had low

rates of on-task behavior experienced significant reductions in aggression and improved peer relationships after teacher use of the GBG. Ruiz-Olivares, Pino, and Herruzo (2010) demonstrated a reduction in disruptive behaviors with maintenance during a 1-year follow-up using a combination of the GBG and Say-Do-Correspondence Training in a group of elementary school students in a rural area of Spain.

Embry (2002) provides an extensive review of the literature documenting the short- and long-term positive effects of the GBG in reducing impulsive and disruptive behavior. The short-term effects included significant improvement on teacher ratings of male and female students' aggressive behaviors, and an increase in student on-task performance in the classroom. Long term effects included a future decrease in the initiation of substance abuse and violent and antisocial behavior. In 2014, Nolan and his colleagues conducted a cross-cultural review of the literature of the effectiveness of the GBG and found it to create positive immediate and long-lasting change across cultures, in varying socioeconomic groups, and with a wide variety of student populations.

Contributions of ABA to School-Wide Programs

ABA provides a potential solution to the lack of available resources and poor quality of behavioral health services in rural communities through its contributions to school-wide programs. The advantages of school-wide programs that use ABA principles are: (1) they can be provided within the school day so no before- or after-school monitoring or transportation are necessary, (2) they don't require singling out specific students with behavioral or mental health needs since interventions can be implemented school-wide or classroom-based so there is no stigma, (3) they are more cost effective because school-wide interventions reach more students, and (4) by providing teachers and parents with strategies and interventions that are evidence-based, many behavioral and mental health problems can be prevented.

Schools are important arenas to promote child and adolescent development, playing an influential role both directly and indirectly. Interactions and strategies that are used in the classroom and throughout the school to support children with mental health issues are just as important, or possibly more important, than outside treatment. Children benefit more from treatment when administrators, teachers, student support staff, and parents are part of the “treatment package” rather than when adults view the problem as solely within the child and something that can be dealt with in isolation or through individual therapy (Elias et al., 1994; Flannery, Sugai, & Anderson, 2009; Quinn, Kavale, Mathur, Rutherford, & Forness, 1999).

Two such school-wide programs that incorporate the elements of ABA include: Positive Behavioral Interventions and Supports (Positive Behavioral Interventions and Supports (PBIS), 2016) and Project ACHIEVE (Knoff, 2000; Knoff & Batsche, 1995).

PBIS, which is based on principles and practices of ABA, is a program created to ensure that all students have access to the most effective and accurately implemented instructional and behavioral practices and interventions. There are several hallmarks of ABA that are used by PBIS. In fact, Horner and Sugai entitled a published article “School-wide PBIS: An example of applied behavior analysis implemented at a scale of social importance” (2015, p. 80). This journal article delineates specific ways in which ABA shaped key features and implementation strategies of PBIS. Whereas other authors (Critchfield,

2015; Loukus, 2015) may disagree that PBIS is totally behavioral, they do agree that the fundamental components of PBIS have their origins in ABA. These fundamental components include: functional behavioral assessment to identify the source of problem behaviors, behavioral interventions that have evidence to support their effectiveness (e.g., positively reinforcing appropriate behaviors and delivering consequences for inappropriate behaviors), and ongoing data collection as a means of monitoring treatment effectiveness.

PBIS approaches students’ school-wide behavior using a triangular model with three levels of prevention/intervention (Dunlop, 2013; Molloy, Moore, Trail, Van Epps, & Hopfer, 2013) (see Fig. 19.1). Each of the three levels of services provided by PBIS use principles and strategies from ABA.

The primary level, Tier 1, reaches all students in the school by promoting a school climate that emphasizes a “culture of consistency” through school-wide expectations and progress monitoring, positive reinforcement for students who meet those expectations, and standardized disciplinary measures when those expectations are not met. These features of PBIS are all based on ABA principles, such as positive reinforcement, providing feedback, and public posting (Luselli, Putman, & Handler, 2000).

Positive reinforcement is one of the most widely researched and recommended procedures of ABA. Positive reinforcement can take the form of social, tangible, and token rewards.

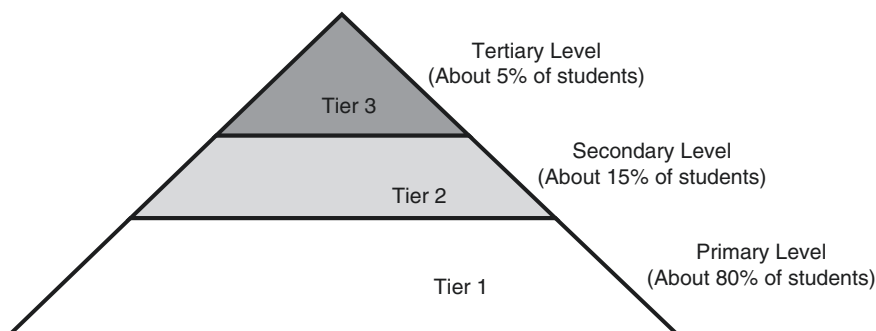


Fig. 19.1 PBIS three-tiered model of services

Social reinforcement in the form of praise, tickles, and head rubs, for example, has been shown to increase a target behavior (children passing a chip) (Smaby, MacDonald, Ahearn, & Dube, 2007). Tangible rewards such as candy have been highly effective in increasing the rate at which children learned a novel task (Unikel, Strain, & Adams, 1969). Tokens, which function as reinforcers because of their exchange value for accessing backup reinforcers, are considered generalized reinforcers. Researchers have demonstrated the effectiveness of token reinforcers in the academic performance of delinquent male juveniles (Tyler & Brown, 1968). The “bucks” that are delivered to students and school personnel for rule-following behavior and meeting expectations are used in PBIS are tokens that can be exchanged for a variety of reinforcers available in the PBIS store. De Martini-Scully, Bray, and Kehle (2000) were able to reduce disruptive behavior of two students in a general education classroom through the use of an intervention package that combined many behavioral analytic treatment strategies: contingency contracting, posting of rules, teacher interaction style (proximity, voice tone, and eye contact), differential reinforcement, token reinforcement, and response cost.

The secondary level, Tier 2, reaches those students who are struggling due to a lack of appropriate skills needed to meet expectations and focuses on teaching new skills, often in a group format. Several ABA procedures are used in teaching new skills, including positive reinforcement, prompting, shaping, fading, modeling, and providing feedback.

The tertiary level, Tier 3, deals with less than 5% of the student population, creating individualized plans for those who cannot meet expectations with school-wide or small-group interventions (PBIS, 2016). In Tier 3, when a child is identified as having problem behaviors that require more individualized attention, functional behavioral assessment (FBA) of target behaviors is used to identify their functions or causes, making it more likely that the child will receive the needed help. Once the unique reasons for the problem behaviors occurring with that child are discovered, function-based interven-

tions can be developed that teach and reinforce the child for exhibiting more appropriate replacement behaviors (Barrett, Bradshaw, & Lewis-Palmer, 2008). FBA and function-based interventions are two procedures that distinguish ABA from other types of assessment and intervention for children exhibiting behavior problems (Cipani & Schock, 2011).

PBIS is founded on evidence-based academic and behavioral practices and incorporates the use of data for decision-making, identifying measurable outcomes, and providing evidence that such outcomes have been achieved (Turnbull et al., 2002). Data-based decision-making is one of the hallmarks of ABA, along with operationalizing outcomes and being evidence-based (Cooper, Heron, & Heward, 2007).

When schools implement these practices, PBIS provides a support system to enable them to be more successful (Turnbull et al., 2002). This system targets all the children in a school, whether they are adequately progressing or have identified academic, social-emotional, or behavioral needs.

Although there is evidence to support the efficacy of PBIS in urban and suburban schools (Bradshaw, Mitchell, & Leaf, 2010; Lassen, Steele, & Sailor, 2006), a review of the literature revealed a lack of studies documenting the use of PBIS in rural schools. This is most likely due to a lack of professionals with this expertise who are available to support the development and implementation of this approach (Mendel, 2008). It may also be attributable to a scarcity of resources to support its implementation as well as a lack of interest or involvement on the part of administrative, teaching or support staff, and/or parents and community members. Even specific to PBIS, Mendel (2008) reported that there is a lack of professionals in rural areas who can provide support at the secondary and tertiary levels of PBIS and that transportation costs to access those professionals is prohibitive. A study that measured the effectiveness of PBIS in two schools located in rural communities yielded some promising results tempered by a lack of sustainability (Flores, 2010). Although there were significant effects in the second year on discipline referrals, suspensions, and attendance, these effects

appeared to diminish in the third year as the schools received less support from PBIS trainers. There was also a lack of noticeable change in academic achievement.

An intervention that is similar to PBIS and also uses several components of ABA is Project ACHIEVE (Knoff & Batsche, 1995). Components of this program have been used in schools throughout the United States in urban, suburban, and rural areas (Knoff, 2000). The goal of the Project ACHIEVE School Safety and Effective Behavior Management Model is to set up a school-wide approach to handling student behavior that focuses on positive discipline and the development of prosocial skills. The model emphasizes the development of school personnel ability to train and reinforce students' problem-solving and socialization skills. Teachers are taught to use positive reinforcement and timeout in a consistent manner as well as other behavioral intervention strategies.

Community and family outreach is another important component, with emphasis on training parents to use behavior management strategies and to teach prosocial skills to their children. It incorporates methods from ABA including modeling, role play, feedback, application, and reinforcement. Outcomes in participating schools have been impressive in terms of improved student retention, reduced discipline referrals and suspensions, and fewer special education placements (Knoff, Finch, & Carlyon, 2004).

Thus, these two programs illustrate that using ABA principles and strategies on a school-wide basis has the potential of making a positive impact on school-wide student behavior and placement. However, there has not been enough documented evidence of the effectiveness of using PBIS in rural schools.

Contributions of ABA to Changing School Personnel's Behavior

Another potential contribution of ABA to SBMHS in rural communities is its ability to effect change in the behavior of school personnel. According to the tenets of ABA, the most

significant impact on students is through the modification of the environments where they spend most of their time and that are the most meaningful to them (Cooper et al., 2007). Parents, teachers, and other significant adults that surround children and adolescents influence their choices and behaviors and have the potential to prevent and modify undesirable behaviors (North Carolina Institute of Medicine (NCIOM), 2009).

In order for significant and lasting behavior change to occur, appropriate social behavior must be taught and reinforced within natural settings such as the classroom and the home (Elias et al., 1994; Franco et al., 2009; Quinn et al., 1999). An accepted strategy for increasing the use of appropriate social skills (and decreasing inappropriate behavior) is the alteration of antecedents or consequences of target behaviors in the natural classroom setting (Elliott & Busse, 1991). If a replacement behavior results in immediate and salient reinforcement in the natural environment, the frequency of the behavior will increase in that environment (Elliott & Gresham, 1991). Teachers and other significant adults can be trained to enhance the effects of social skills training (SST) by prompting the use of target behaviors, providing feedback and praising appropriate skills (Nazar-Biesman, 2000).

Behavior analyst can provide significant assistance to teachers as they attempt to cope with the many behavioral challenges and academic difficulties that students exhibit. Often the controlling variables for students' problem behaviors are access to attention or access to a preferred item, activity, person, or place (Cipani & Schock, 2011). The problem that sometimes occurs in schools is that teachers deny access to these environmental variables when students are exhibiting appropriate behaviors and inadvertently make them available when problem behaviors occur. For example, a teacher may attend to problem behavior by reprimanding a student and/or becoming visibly upset. If the student's behavior escalates and the student "gets out of control," the teacher may feel that he/she has no other choice but to give the student something to calm them down (the item or activity that was denied upon request) or send them to the office or a

“time out” area (which may be a preferred place or have preferred people or activities). On the other hand, the controlling variables for students’ problem behaviors could be escape from an aversive task or activity—aversive because it is too lengthy or too difficult (Cipani & Schock, 2011). If a request for a break (from a lengthy task) or assistance (with a difficult task) is denied or an “allowed break” is not forthcoming, the problem behavior may be exhibited in order to get an immediate break, often in the form of an escalation to “out of control” either to escape or postpone the aversive task or activity.

The behavior analyst as a consultant interviews the teacher and observes the student in the classroom to develop a hypothesis about the function of the problem behavior. This hypothesis is then tested by systematically altering the possible controlling variables to determine their effect on the student’s behavior (Witt, Gresham, & Noell, 1996). This in-situ hypothesis testing actually consists of comparing the student’s behavior under the existing stimulus conditions of the classroom (baseline) to the student’s behavior under altered treatment conditions to empirically test the hypothesis about the behavior’s function (Cipani & Schock, 2011). Once the controlling variables are identified, the next step is to develop a treatment that alters the environmental variables that instigate and maintain problem behavior. Then it is the role of the behavior analyst to assist the teacher in the implementation of a treatment with procedural integrity and to assess its effectiveness in ameliorating the problem behavior. This is accomplished through the consultation process.

In a nationwide survey conducted by the Substance Abuse and Mental Health Services Administration (Foster et al., 2005) investigating the types of services available to address the mental health needs of children in public schools in the United States, the two most prevalent services provided (in more than 80% of schools) were behavioral assessment and consultation. Although the personnel may be available in the schools to implement these empirically based strategies and interventions, many lack the training and system support to do so effectively

(DuPaul, 2007). In addition, a shortage of school psychologists has led to these professionals being assigned several schools across a school district, rather than being allowed to focus their efforts on one school. This could lead to psychologists only having the time, resources, and skills to conduct testing and write reports while being unable to provide much-needed behavioral assessment and consultation (Davis, McIntosh, Phelps, & Kehle, 2004).

Providing schools with training and consultation regarding effective behavior management techniques can provide preventive strategies for promoting good student mental health. An example of this was a study conducted with a middle school female student who exhibited severely disruptive, aggressive behavior and had several diagnoses, including “severe emotional disturbance,” schizophrenia, and attention deficit disorder for which she was medicated with Ritalin, Dexedrine, and Mellaril (Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991). A functional assessment was conducted by behavior analyst consultants and curricular revisions were made in line with the findings of the functional assessment. Revisions included: shortening fine-motor and academic tasks and interspersing them with large-motor tasks, using interesting content with concrete outcomes, and providing a menu of tasks to choose from. Following the curricular revision intervention, levels of disruptive behavior were reduced from 0% to 90% of the intervals observed (with a mean of about 40% of the intervals) to 0% of the intervals observed on all but 1 day (in which it occurred in 3% of the intervals) for over a month with 10 weeks of follow-up. During the same time period, on-task behavior ranged from 89% of the intervals to 100% of the intervals observed. This dramatic change likely would not have occurred without the expertise of the behavior analyst consultants.

Whereas the purpose of this section of the chapter is not to provide an extensive review of effective consultation practices, it is important to note the contributions that ABA can make to this process. Performance feedback, which consists of providing objective information based on continuous data collected on target behaviors, has

been demonstrated to increase the integrity of teacher-implemented evidence-based strategies and result in ensuing effects on student performance (Fuchs, Fuchs, Hamlett, Walz, & Germann, 1993; Jones, Wickstrom, & Friman, 1997; Mortenson & Witt, 1998; Noell, Witt, Gilbertson, Ranier, & Freeland, 1997; Noell et al., 2000; Noell et al., 2005; Reinke, Lewis-Palmer, & Martin, 2007; Witt, Noell, LaFleur, & Mortenson, 1997).

Behavior analysts have for a long time been publishing articles about the effect of performance feedback and praise on teachers as well as paraprofessionals working in settings with children and adults with developmental disabilities. In an early study by Cossairt, Hall, and Hopkins (1973), performance feedback combined with praise of the teacher by the consultant proved to be the most effective strategy for increasing teacher use of praise with students. The following are some examples of the statements used by the consultant when the teacher praised the students: "(1) 'You had the whole class attending to you, Mrs. A.', (2) 'John was really responding to your attention, Miss B.', (3) 'You certainly have the ability to hold their attention with your praise', (4) 'Your praise is powerful. The target students really respond to you'" (1973, pp. 91–92). Not only did contingent praising of the teacher result in more teacher praise and more student attention to the teacher, but teacher praise of student behavior maintained and even increased with an intermittent schedule of social reinforcement. Harchik, Sherman, Sheldon, and Strouse (1992) used performance feedback in a group home to increase staff engagement of clients in activities and improving interactions. Leblanc, Ricciardi, and Luiselli (2005) used performance feedback to improve discrete trial instruction by assistant teachers working with children with autism.

In a study by DiGennaro, Martens, and Kleinmann (2007), researchers examined the effects of setting goals, providing feedback on the performance of the teacher or the student, and escape from the consultation meeting (negative reinforcement), all three of which are behavioral analytic strategies, on the extent to which four

teachers implemented treatment procedures with integrity. The treatment procedures, which consisted of function-based treatments, were effective in reducing problem behavior for three out of four students and performance feedback plus escape from the consultation meeting was the most effective in increasing treatment integrity and student performance. Reinke, Lewis-Palmer, and Merrell (2008) attempted to increase the rate of teacher-delivered positive reinforcement (praise statements) by implementing two separate strategies of teacher consultation. The first was the use of class wide check-up (CCU) combined with a self-monitoring procedure. The second consisted of CCU combined with visual performance feedback (VPF). CCU used techniques from motivational interviewing to encourage teachers to use praise statements as a classroom-wide strategy. Although teachers may initially be reluctant to use behavioral techniques because they are time-consuming and use valuable instructional time, they may become aware of the benefits of these strategies as they experience positive outcomes in terms of increased student cooperation and improved academic achievement (Owens & Murphy, 2004).

Contributions of ABA to Changing Parent Behavior

One of the hallmarks of ABA is teaching significant others to use its principles and strategies to affect and maintain positive changes in the identified client. For example, Lovaas (1978) had a tremendous impact on the outcome for children with autism when he trained parents as therapists using the principles and techniques of ABA to work with their children. The benefits of parent training in applied behavior analysis techniques have been well documented (Kaminski, Valle, Filene, & Boyle, 2008; Kazdin, 1997; Reyno & McGrath, 2006).

In a meta-analysis of the effectiveness of parent training, Kaminski et al. (2008) concluded that there were four factors that enhanced the efficacy of parent training: (1) observed in vivo practice by parents with their child, as well as

parent skill training in communicating about emotions; (2) teaching parents to reward appropriate behavior with enthusiastic, positive attention while allowing the child to lead in play; (3) providing parents with instruction in time out procedures; and (4) teaching parents to consistently provide consequences for inappropriate behavior.

A thorough review of the literature revealed that there is a scarcity of empirically tested programs specifically geared towards rural parents. A parenting program that targeted 175 low-income, rural families in a Midwest state found statistically significant self-reported improvements in specifically targeted parenting behaviors following treatment (Kosterman, Hawkins, Haggerty, Spoth, & Redmond, 2001). The intervention included the use of paired workshop leaders who were recruited from the community in which the trainings took place, and these leaders held two sessions each week in order to accommodate schedules of the parents. By recruiting leaders from the community and offering alternative training times, this approach addressed two unique characteristics of rural populations: (1) a tendency to mistrust mental health providers and perceive a stigma attached to receiving mental health services (DeLeon, Wakefield, & Hagglund, 2003; Sawyer et al., 2006; Stamm, 2003) and (2) difficulty receiving mental health services that are offered due to travel distances (Bischoff, Hollist, Smith, & Flack, 2004).

Another program was conducted with 24 rural families with preschool children in Australia (Connell, Sanders, & Markie-Dadds, 1997). This self-directed program based on the Triple P (Positive Parenting of Preschoolers) program (Markie-Dadds & Sanders, 2006) employed the use of mailed materials (e.g., parenting book, workbook, and checklist) in which the parents practiced goal setting, self-monitoring, and strategy implementation with the help of weekly telephone conversations with behavioral consultants. The goal of the program was to teach parents skills in problem solving and how to self-monitor behaviors, select their own goals, and choose their own reinforcers. When parents had diffi-

culty implementing specific program components, they were asked to refer to the written materials rather than rely on consultant assistance. Improvements were found in measures of child behavior as well as parent satisfaction and feeling of competence that were maintained at 4-month follow-up.

Access to parents is a particularly challenging aspect of providing mental health services in rural areas. However, the benefits of providing parents with strategies and tools to handle problem behaviors in their children has far-reaching benefits in terms of improved behavioral outcomes and parent adjustment (Sanders, 1999). The principles and strategies of ABA are well documented for improving child behaviors and preventing and treating childhood disorders such as attention deficit/hyperactivity disorder (ADHD) (Fabiano et al., 2009; Owens et al., 2005), oppositional defiant disorder (ODD) (Barkley, Edwards, Laneri, Fletcher, & Metevia, 2001), and conduct disorders (CD) (Reid, Patterson, & Snyder, 2002; Serketich & Dumas, 1996). The greater challenge is sharing this information and teaching and motivating parents, particularly in rural areas, to consistently use these strategies with their children.

Remaining Challenges for Contributions of ABA

There still remain several gaps in the literature related to school-based services. Areas in need of further research include the efficacy of these strategies across diagnostic categories (Hoagwood, Burns, Kiser, Ringeisen, & Schoenwald, 2001; Weisz, Donenberg, Han, & Weiss, 1995), the impact of comprehensive school-wide interventions, and the effectiveness of these interventions without the support of university researchers. The SBMHS program that significantly increased the accessibility and acceptability in several rural schools did so with the support of charitable trust and federal grants to university personnel for the administration of the grant (Golden, Ongsoco, & Letchworth, 2013). The study by Owens and her colleagues

(2005) that demonstrated the efficacy of comprehensive behavioral treatment for children with ADHD in a rural setting was also supported by grant funding provided to university personnel. This raises an issue as to how public schools in rural communities can secure access to sustainable SBMHS.

There are many ways in which ABA has made significant contributions to SBMHS in all geographic areas. The special vulnerabilities associated with the rural setting can make the contributions even more important in this setting. Although there are some promising benefits of the use of ABA principles and procedures, or programs that incorporate those procedures, to enhance SBMHS in rural communities, there still remain some challenges that need to be addressed.

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- Jeannie Golden** is a licensed psychologist with a Ph.D. in school psychology from Florida State University, is an associate professor in the psychology department at East Carolina University, and became the first national board certified behavior analyst in NC in 2000. Over the past 8 years, Jeannie has been the principal investigator for grants from the Kate B. Reynolds Charitable Trust and the Department of Health and Human Services to provide school-based mental health services in rural schools.
- Dorothy (Dottie) Dator** is a doctoral student in the Pediatric School Psychology program at East Carolina University. Dottie was a police officer for 7 years before deciding to change careers. She became interested in applied behavior analysis while obtaining a second bachelor's degree in psychology at the University of North Carolina at Greensboro.
- Kathryn Gitto** was a student in the School Psychology program at East Carolina University (ECU) from 2014 to 2017. She graduated in May 2017 and is now working as a school psychologist in Wayne County Public Schools. Kathryn's thesis involved exploring the effects of childhood maltreatment on later psychological development.
- Christelle Garza** earned a master's degree in experimental psychology with a specialization in applied behavior analysis at the University of Texas-Pan American and a master's degree in psychology from Fielding Graduate University, where she is currently pursuing her Ph.D. in clinical psychology. Christelle's research interests include rural mental health, behavioral interventions, tele-psychology, implicit prejudice, ASD, psychopharmacology, and infertility counseling.