Using Staff and Student Time Engaged in Disciplinary Procedures to Evaluate the Impact of School-Wide PBS

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Abstract: This article presents an example of how school time was monitored to facilitate a cost analysis of school-wide systems of positive behavior support (PBS). The article provides descriptions of how (a) PBS efforts were initiated in the school, (b) time and money were spent preparing for and implementing PBS, and (c) changes in behavior referrals and suspension were used to evaluate the effect of PBS on the larger system. The results indicated a positive assessment of PBS based on predetermined criteria. The discussion focuses on larger issues of cost analyses as systemic evaluation tools for assessing lifestyle change.

In a now classic 1987 article, Baer, Wolf, and Risley postulated that 20 years into the future, success in the field of behavior analysis largely would depend upon the degree to which the field was able to measure change within larger systems. They advocated a focus on “lifestyle” change, which they characterized as a change in an individual’s behavior that predicts positive outcomes in the larger system or environment. Their concern was that we not judge intervention simply on measures of individual behavior without also examining what effect those behaviors have on the system within which that individual operates. Such an examination, sometimes referred to as a cost–benefit analysis, involves a comparative analysis of (a) benefits for the individual and system (i.e., positive life outcomes, resource savings, social acceptance) and (b) the costs of intervention in terms of undesired outcomes (resources spent, negative side effects, negative social acceptance; Wood, 1991). Baer, Wolf, and Risley strongly advocated for analysis of this relationship as the key measure of success in any discipline, stating that such analysis is “the essence of effectiveness” (p. 322).

Analyses of systemic costs and benefits have recently been used to evaluate a range of intervention efforts, including early intervention programs (Karoly, Kilburn, Bigelow, Caulkins, & Cannon, 2001; Keilty, 2001), Title I and Head Start initiatives (Reynolds, Temple, Robertson, & Mann, 2002), Job Corp and supported employment programs (McConnell & Glazzerman, 2001), and programs for intervening with students with seriously challenging behaviors (Putnam, Luiselli, Sennett, & Malonson, 2002; Sugai & Fuller, 1991; Wood, 1991).

Positive behavior support (PBS) has been defined as “the application of positive behavioral interventions and systems to achieve socially important behavior change” (Sugai et al., 2000, p. 133). Under a system of PBS, intervention is focused on proactive prevention at three levels: primary (the entire system, prior to problems), secondary (small groups of students, to reduce initial problems), and tertiary (individuals with the most intense problems, to prevent crises and long-term failure). Across all three levels, systemic, team-based interventions are concerned with lifestyle change, measurable outcomes, and effective practice as the key foci of PBS (Carr et al., 2002; Sugai et al., 2000; Scott & Eber, 2003). Intervention studies at the secondary and tertiary levels have included use of more global lifestyle change criteria for evaluating success on a systemic level (Clarke, Worcester, Dunlap, Murray, & Bradley-Klug, 2002). To date, however, literature on the evaluation of school-wide primary prevention practices beyond the individual level has not been available. That is, although data existed to suggest that primary prevention decreases problem behaviors among individuals in the system (i.e., office discipline referrals, suspensions), no analyses of how these outcomes affect the individual’s lifestyle or the system as a whole have been reported.

This article describes how staff and student time engaged in disciplinary procedures may be used as an evaluation of the school-wide impact of PBS. Detailed im-
Implementation descriptions are used as a framework for identifying important system components and measures. Implications of this process are discussed in relation to individual systems and long-term, systemic lifestyle change.

**Method**

**SCHOOL PARTICIPANT**

In 2000, the Maryland State Department of Education, in coordination with the Sheppard Pratt Health System, provides support for a leadership team, state coordinator, and training funds to assist in advertising and supporting implementation of PBS across the state. The school described in this study is an elementary school located in an urban area of Maryland. In the summer of 2000, this school sent a five-person team, including an assistant principal, to attend a 2-day training on school-wide PBS implementation. Training was conducted by partners in the National Technical Assistance Center on Positive Behavior Interventions and Supports (PBIS; funded by the Office of Special Education Programs) and consisted of an overview of PBS followed by guidelines and examples for school-wide implementation (see Scott, 2001; Scott & Hunter, 2001). School systems provided transportation, overnight accommodations (if necessary), and stipends for nonadministrative personnel.

**PROcedure**

The team was able to introduce PBS to the rest of their school and to achieve implementation at the beginning of school in the fall of 2000. Staff members identified common student problems and the predictable times and locations of occurrence. The team developed specific teachable expectations (e.g., "walk in a single straight and quiet line," "keep self to self"); clear and consistent routines (e.g., transitions, consequences, time schedules); and physical arrangements (e.g., staff supervision responsibilities, reducing student numbers in critical areas) to prevent these predictable problems. Although a complete description of these identified problems and corresponding strategies is beyond the scope of this article, detailed examples are available in the literature (Luiselli, Putman, & Sunderland, 2002; Nelson, Colvin, & Smith, 1996; Scott, 2001; Taylor-Greene & Kartub, 2000). As an example of an agreed-upon systemic routine, a school-wide reinforcement system was initiated wherein students who exhibited expected behaviors received coupons that made them members of a special "club." Weekly and monthly club celebrations/ assemblies were scheduled, and parents were included in these activities. Support for these activities was provided by the PTA and community donations of $750 each year.

The school administrators identified lost time as a critical barrier to providing the level of positive engagement school staff members believed was necessary to facilitate larger positive systemic outcomes. The goal that was set for determining whether the strategies were successful was a reduction of 25% in the number of office discipline referrals and 25% in student disciplinary suspensions.

**Measures**

The System-Wide Evaluation Tool: School Wide (SET-SW; Sugai, Lewis-Palmer, Todd, & Horner, 2001) was used to monitor the fidelity of PBS implementation in the fall of 2001 and again in the spring of 2002. Measures of 79% and 80%, respectively, for the two SET assessments indicated that PBS was being reliably implemented (see Horner et al., this issue).

Office discipline referrals and disciplinary suspensions already were being measured under district and state policies; however, the school began using a database for tracking student misbehaviors to help determine when and where new strategies would be most effective. Both office referrals and suspensions have been used as gauges of student behavior and have been advocated as valid ways of tracking school behavior patterns (Skiba, Peterson, & Williams, 1997; Taylor-Green et al., 1997; Tobin & Sugai, 1999; Wright & Dusek, 1998).

Analyses of the past year’s discipline records were performed to determine the average duration of various incidents in terms of time lost by adult and students. These analyses indicated that processing a typical office discipline referral translated to an average of 10 minutes of administrator time and processing a typical suspension took 45 minutes of administrator time. These times are important for two reasons. First, because administrators typically make some of the highest salaries in the district, the time they spend in processing disciplinary referrals and suspensions represents a significant cost for the district. Second, and perhaps more important, time spent reacting to behavior is time that administrators cannot dedicate to prevention efforts. Any time savings realized from a reduction in problems can be reinvested to prevent problem behaviors.

Time allocated to instruction is another important variable that was tracked as part of this evaluation process. Analyses of the past year’s discipline records indicated that the average office discipline referral translated to an average of 20 minutes of student time spent out of the classroom. Because time engaged with instruction is highly correlated with student achievement (Brophy, 1988; Fisher et al., 1980; Northwest Regional Educational Laboratory, 2001), this measure represents an index of positive school climate and a positive focus on academics over behavioral failure. Of course, this assumes that students who are not misbehaving are engaged in instruction. It has been found, however, that simply maintaining successful behavior greatly increases the likelihood of positive academic en-
The salary for the administrator in charge of discipline and the yearly educational cost per student were obtained from the school district. The administrator’s salary figure was divided by the total number of contract days, resulting in a daily wage of $412.66. Student cost was divided by the number of school days in the year, resulting in an average daily cost of $43.77. These figures were then multiplied by the disciplinary time as an index of monetary cost.

**Results**

**STUDENT PROBLEMS**

Indicators of student behavior problems in the school decreased from baseline levels and continued to decrease into the second year of implementation. Because office discipline referrals and suspension continued to be used consistently as responses to specified behavior offenses across all 3 years of this project, changes in numbers are seen as changes in behavior. Over the 3 years of monitoring, the number of office discipline referrals decreased from 608 during the baseline year to 108 in Year 1 of implementation and 46 in Year 2. Student disciplinary suspensions decreased from 77 during the baseline year to 32 in Year 1 of implementation and 22 in Year 2. Figure 1 presents these data plotted on an equal ratio scale to allow assessment of the relative changes in data over time and between the two measures. Very similar rates of decreasing student problems are evident for both referrals and suspensions across both PBS years.

**ADMINISTRATOR TIME**

Based on 10 minutes as the measure of the average administrator time spent processing an office discipline referral, decreases in administrator time were realized in each of the 2 implementation years. Total administrator minutes dedicated to office referral processing decreased from 6,080 during baseline to 1,080 during the first implementation year and to 460 in the second year. Conservatively estimating an average 8-hour workday for administrators, this represents a savings of 10.4 days over baseline in the first PBS year and 11.7 days over baseline in the second PBS year (see Table 1).

Using 45 minutes as the measure of the average administrator time spent processing a disciplinary suspension, decreases in administrator time were realized in each of the 2 implementation years. Total administrator minutes dedicated to disciplinary suspensions decreased from 3,465 during baseline to 1,440 during the first implementation year and to 990 in the second year. These data indicate a 2-year average net savings of 2,250 administrator minutes. Using the same 8-hour workday, this represents an additional savings of 4.2 days over baseline in the first PBS year and 5.2 days over baseline in the second PBS year. Taken together, decreases in office disciplinary referrals and disciplinary suspension saved the school administrators 14.6 days over baseline in the first PBS year and 16.8 days over baseline during the second PBS year. These figures were then multiplied by the administrator’s daily salary to indicate the cost of the time saved. The amounts were $6,024.84 over baseline in the first PBS year and $6,932.69 over baseline in the second PBS year.

**INSTRUCTIONAL TIME**

Based on 20 minutes as the measure of the average instructional time that a student loses to an office discipline referral, increases in student instructional time were realized in each of the 2 implementation years. Total student instructional minutes missed due to office discipline referrals decreased from 12,160 during baseline to 2,160 during the first implementation year and to 920 in the second year (see Table 2). These data indicate a 2-year average net gain.
of 10,620 minutes. Using a typical 6-hour school day, this represents a gain of 27.7 days over baseline in the first PBS year and 31.2 days over baseline in the second PBS year.

Each day of suspension represents a loss of 6 hours (1 day) of instructional time. Total student instructional hours missed due to disciplinary suspensions decreased from 462 during baseline to 192 during the first implementation year and to 132 in the second year. These data indicate a gain of 45 days over baseline in the first PBS year and a gain of 55 days over baseline in the second PBS year. Taken together, decreases in office disciplinary referrals and disciplinary suspension accounted for a gain of 72.7 days over baseline in the first PBS year and a gain of 86.2 days over baseline in the second PBS year. These figures were then multiplied by the student’s daily cost to show the cost of the time saved over baseline. In the first PBS year it was $3,182.08, and in the second year the cost savings was $3,772.97. Complete summaries of instructional time savings are presented in Table 2.

FISCAL ANALYSIS

Fiscal analyses were performed to calculate the cost or value of the time that was saved. Staff time was converted to dollars by computing the average administrator’s salary and dividing by 190 required workdays ($78,405.50 average salary divided by 190 work days = $412.66). This amount was multiplied by the number of days saved each year to determine the total dollar savings realized during PBS implementation. Similarly, instructional time was converted to money by dividing the yearly per-student cost in the district by 180 school days ($7,800 yearly cost per pupil divided by 180 school days = $43.33). This amount was multiplied by the number of days saved each year. Total administrator times savings were calculated as 14.6 days × 412.66 = $6,024.84 for the first implementation year and 16.8 days × 412.66 = $6,932.69 during the second year. Total instructional time savings were calculated as 72.7 days × 43.33 = $3,150.09 during the first implementation year and 86.2 days × 43.33 = $3,735.05 during the second year. Total savings were calculated at $9,106.92 during the first year of implementation and $10,667.74 during the second year. A summary of fiscal data is presented in Table 3.

Discussion

LIMITATIONS

The limitations of this particular study include an inability to make causal inferences, a lack of demonstrated reliability of measurement, potential historical confounds over time, and definition of time as money. First, although historical analyses have indicated a long and consistent rate of disciplinary referrals and suspensions prior to PBS intervention, and despite the fact that SET evaluations showed PBS being applied in a reliable manner, the case study nature of this examination does not permit causal conclusions. Rather, the procedures and outcomes presented here are meant as an example of a method of evaluating school-wide efforts in terms of the amount of time spent reacting to disciplinary referrals and suspensions. Second, frequency counts of disciplinary office referrals and suspensions assume that school personnel defined and perceived behaviors in the same way over the 3 years of this examination. Although steps were taken to operationally define and discuss these issues as part of the ongoing PBS process, there are no data upon which to evaluate the reliability of this process or the measured outcomes. Third, because this examination took place over a span of 3 years, the potential for historical confounds cannot be eliminated. It is possible that changing populations of students; staff turnover; and other, less-systemic interventions had some impact on the results. Finally, defining time as money relies upon assumptions that are, under most circumstances, invalid. The purpose of converting time to a dollar figure was to evaluate the cost or value of the time that was saved. For time to be realized as actual dollar savings assumes that schools actually began employing the administrator for less time or cut the number of required student school days, neither of which occurred.
COST ANALYSIS AND PBS

The PBS process provides a structure by which schools can plan simple prevention-oriented strategies as a means of promoting the individual success that is necessary before taking the next steps in creating successful systems. In this example, school-wide agreements were collaboratively developed and evaluated as part of the PBS process. As a system, the school defined its own contextually specific strategies and set specific criteria for evaluation of those strategies. The key is selecting measurable criteria that lead logically from one outcome to another, in some linear fashion, toward long-term success. Lost time was identified as a critical barrier to positive systemic outcomes. Disciplinary referrals and suspensions are logical outcomes to the extent that each is identified by the school as negatively co-varying with specified important positive outcomes.

SELECTING AND EVALUATING DEPENDENT VARIABLES

Because no two schools are identical in size or physical layout and every school has its own unique faculty, student, and stakeholder cultures and beliefs, no two schools will have identical expectations or goals. Thus, variables for evaluating important change in a school will vary by school. Professionals who are involved with the system must focus on evaluation of what Carr et al. (2002) referred to as “meaningful lifestyle and cultural changes that are stable and enduring” (p. 7). That is, each system must determine and evaluate how changes in individual behavior affect important outcomes in the system as a whole. Although evaluation as a process need not be complex, the important outcomes can only be determined by individuals within the system because they represent the lifestyles and culture in question and are best capable of identifying important outcomes. For this reason, single-subject research designs are particularly appropriate.

This is not to say that there are no universally important outcome variables. These outcomes might best be characterized, however, as a means to an end—with the end being defined by the system. For instance, we have ample evidence that reading is key not just to academic success but also to success in life (Gersten, Becker, & Heiry, 1984; Juel, 1988). Although we might agree that reading is an important skill, how that skill will be applied in any given system (e.g., college acceptance, selling insurance, reading a fertilizer bag) is a function of that system’s unique makeup. In the example presented here, the school

Table 2. Student Instructional Time Missed in Response to Behavior Problems and Realized Savings Across Project Years

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<tr>
<td>Instructional time</td>
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<tr>
<td>• Office discipline referrals (savings from baseline)</td>
<td>12,160 min. (10,000 min.)</td>
<td>2,160 min. (11,240 min.)</td>
<td>920 min. (11,240 min.)</td>
<td>(29.5 days)</td>
</tr>
<tr>
<td>• Disciplinary suspensions (savings from baseline)</td>
<td>462 hrs (270 hrs)</td>
<td>192 hrs (330 hrs)</td>
<td>132 hrs (330 hrs)</td>
<td>(50 days)</td>
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<tr>
<td>Total school days saved</td>
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<td></td>
<td>72.7</td>
<td>86.2</td>
<td>79.5</td>
<td></td>
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<tr>
<td>Realized savings</td>
<td>$3,150.09</td>
<td>$3,735.69</td>
<td>$3,442.57</td>
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Table 3. Training Time in Dollars and Realized Savings Relative to Positive Behavior Support Implementation

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<td>Total training time (noncontract)</td>
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<td></td>
</tr>
<tr>
<td>• stipend, hotel, meals, transportation for five people</td>
<td>$1,570.00</td>
<td>$1,570.00</td>
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<tr>
<td>• implementation costs</td>
<td>$750.00</td>
<td>$750.00</td>
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<tr>
<td>Total time savings converted to dollars saved</td>
<td>$6,024.84</td>
<td>$6,932.69</td>
</tr>
<tr>
<td>• administrator time saved ($)</td>
<td>$3,150.09</td>
<td>$3,735.05</td>
</tr>
<tr>
<td>• instructional time saved ($)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Realized savings</td>
<td>$6,854.93</td>
<td>$9,917.74</td>
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focused on decreasing student behavior referrals—a very common and important index of student behavior and engagement with the school culture (Skiba et al., 1997; Wright & Dusek, 1998). Still, a decrease in student referrals by itself does not necessarily indicate that the system has created any meaningful or socially valid change in the culture of the system or in the lifestyles of its members. The cost analysis provides a contextually specific, system-driven process for evaluating the relative benefits of change.

FUTURE DIRECTIONS
In the future, the school personnel in this example may wish to look deeper into how these changes affect larger student outcomes, including academic achievement, graduation rates, special education referral rates, or other variables associated with positive life outcomes. Other schools involved in PBS efforts likely will have different criteria for evaluation of their systems. Researchers would do well to provide more longitudinal analyses of systems evaluation, examining the ways in which systems build levels of evaluation strategies and criteria that assess multiple levels of success within the system.

More immediate, cost analyses of existing data might be presented to larger political systems (e.g., district, region, and state boards) whose concerns typically are with very public indices of success, such as standardized test scores and budgets. Although discipline referrals are of concern, drops in this area typically are not directly tied to public scrutiny. Using fiscal savings as an index of lifestyle change may be an effective way of capturing the attention of those persons who could provide more systemic support to PBS efforts.

ABOUT THE AUTHORS
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REFERENCES

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