

Demonstration of Combined Efforts in School-Wide Academic and Behavioral Systems and Incidence of Reading and Behavior Challenges in Early Elementary Grades



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Abstract: This study provides descriptive data on the rates of office discipline referrals and beginning reading skills for students in grades K–3 for one school district that is implementing a three-tier prevention model for both reading and behavior support. Students in the district are provided a continuum of reading and/or behavioral support based on screening measures that indicate response to universal, targeted, and intensive support. This combined approach may be more successful due to the number of shared critical features in both systems. Results document positive outcomes in prevalence of students needing additional reading and/or behavior support (in comparison to national figures) and are reported with recommendations for future experimental analyses.

Current research, practice, and policy efforts in determining eligibility for special education services have focused on a shift from an ability–achievement discrepancy model to a response-to-intervention (RTI) model (Gresham, 2001). The RTI model is based on a student’s response to an academic or behavioral intervention to determine if the student requires special education services to be successful in school (Fuchs & Fuchs, 1998; Gresham, 1991). Recent studies have provided evidence that some students can be diverted from special education with evidence-based interventions (Vaughn, Linan-Thompson, & Hickman, 2003) and that such a model can be implemented on a regional scale (Ikeda et al., 2002).

A prerequisite for successful implementation of RTI on a large scale is the implementation of a universal intervention designed to increase student success and reduce the number of students referred for evaluation (Walker & Shinn, 2002). In this approach, the questions that school-based teams consider shift from “Is there a discrepancy between intellectual ability and achievement” to “Is the student successful with the current level of support, and if not, what additional support does the student need to be successful?” Consequently, schools and school districts seeking to ensure that the most students are successful

with the least expenditure of resources have evaluated and improved the effectiveness of their universal interventions (Horner & Sugai, 2000).

Schools are ideal host environments for these preventive efforts (Kame’enui & Simmons, 1998; Walker, 2000), but schools often struggle to serve the growing numbers of students exhibiting academic and behavioral difficulties. School psychologists wishing to help all of these students must supplement the one-child-at-a-time approach with a more efficient focus on the entire student body (Shapiro, 2000). Consequently, research in academic and behavioral challenges has shifted to a model that includes early intervention and prevention of future problems as goals for public schools (Torgesen, Rashotte, Alexander, Alexander, & MacPhee, 2003; Walker et al., 1996).

Given the current state of drastic nationwide budget cuts and dwindling resources, effectiveness must be balanced with efficiency to maximize the outcomes of an intervention for an often overworked staff working with few resources (Sugai & Horner, 1999). Resources must not be wasted on interventions that are either ineffective or inefficient. It is precisely for this reason that schools might consider investing in a systems approach, one in which all students are provided with preventive interventions and

screened for additional needs, in both academics (Simmons et al., 2002) and behavior (Sugai, Horner, & Gresham, 2002).

The Three-Tier Model of Prevention

Current systems for delivering interventions in an RTI model include problem solving (Ikeda et al., 2002), response to instruction (Vaughn, Linan-Thompson, & Hickman, 2003a), and standard protocol approaches (Vellutino et al., 1996). The model of delivering both academic and behavioral support described in this article is a school-wide three-tier model of prevention. The model was used originally to describe delivery of public health services (described by Simeonsson, 1994) and was adapted to school-based support by a number of researchers, most notably Walker and colleagues (1996) in behavior and Kame'enui and Carnine (1998) in academics. The utility of the three-tier model lies in creating a school-wide system of effective academic and behavioral practices that promotes success for most students and serves as a foundation for providing additional resources. The model is based on a set of principles: (a) providing all students with universal interventions, (b) screening students to determine needed services,

and (c) delivering a continuum of services matched to the level of support indicated by screening and assessment.

Figure 1 (cited from Sugai, Horner, & Gresham, 2002) shows the type of support provided at each tier in both academics and behavior. Universal interventions are delivered to all students, all of the time. They are methods of teaching and rewarding expected academic and social behaviors, as well as providing structure to create a successful environment (Lewis & Sugai, 1999). When they are delivered effectively, approximately 80% of students do not need additional support. This system, because it is designed to serve the vast majority of students at minimal cost, is both highly effective and efficient (Sugai & Horner, 1999).

If screening determines that a student needs additional structure and support beyond what is provided in universal interventions, educators supplement these interventions with a continuum of services (i.e., targeted group or intensive individual) designed to match the individual student's need for support (Sugai et al., 2002). Screening can identify students before a referral process is necessary (Kaminski & Good, 1998). Educators can influence student outcomes by providing early intervention when problems emerge; thus, students are more likely to receive early

The Three-Tier Model of Prevention and Intervention

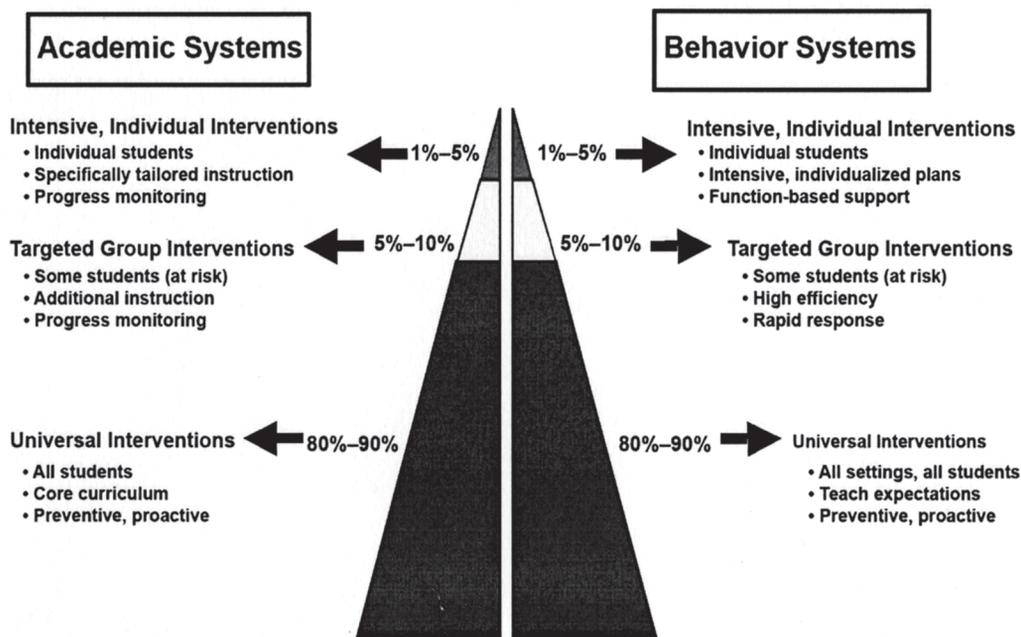


Figure 1. School-wide systems of prevention for academics (especially reading) and behavior. Both sides of the triangle feature the same levels of prevention and support: universal, targeted group, and intensive individual. Adapted from Sugai, Horner, and Gresham, 2002. Copyright 2002 by the National Association of School Psychologists. Reprinted with permission of the publisher.

intervention before academic and behavior problems become more severe and less responsive to intervention (Walker et al., 1996).

All students continue to receive universal interventions while additional support is delivered; continuous universal support is critical for removing additional support when it is no longer needed. Interventions are provided in a fluid manner so that students receive support when they need it but do not remain in intervention when it is no longer warranted. In this way, they can receive instruction in the least restrictive environment and transition up and down levels as indicated (Walker et al., 1996). This continuum of support differentiates this three-tier model from other models.

Some researchers have argued that multitier systems do not adequately serve students with severe needs because these students must repeatedly fail to get increased support (D. Fuchs, Mock, Morgan, & Young, 2003); however, the three-tier model allows students to move across or skip levels as indicated by screening. In this way, the three-tier model is not a multiple gated system, but rather a model of delivering support along a continuum. For example, when school screening measures (and confirmatory assessments) indicate that a kindergarten student has an urgent need for intensive and individualized support, personnel may provide such support without first providing only targeted support.

School-Wide Reading and Behavior Programs

Three-tier models have been applied to schools in both academic and behavior support. School-wide positive behavior support (SWPBS; Horner et al., 2005) is an effective and valued approach to behavior in schools. SWPBS is conceptualized as the redesign of environments rather than the redesign of individuals, leading to valued outcomes, including academic and behavioral competence (Sugai et al., 2000a). The elements of an SWPBS approach have been documented to be effective in reducing challenging behaviors on a large scale (Metzler, Biglan, Rusby, & Sprague, 2001; Nelson, Martella, & Marchand-Martella, 2002). Examples of universal prevention in behavior include defining, posting, and explicitly teaching school expectations, acknowledging appropriate behavior (Sugai et al., 2002), and actively supervising nonclassroom areas (Colvin, Sugai, Good, & Lee, 1997). Additional support is provided along a continuum, from social skills interventions (Gresham, 2002) and daily report card behavior programs (Hawken & Horner, 2003; March & Horner, 2002) to individualized support based on a functional behavioral assessment (Crone & Horner, 2003; O'Neill et al., 1997; Sugai, Lewis-Palmer, & Hagan-Burke, 1999–2000).

A school-wide beginning reading model focuses on teaching the big ideas of beginning reading—phonemic

awareness, alphabetic principle, fluency, vocabulary, and comprehension—starting at school entry (Kame'enui & Simmons, 1998). Schools implementing this system adopt a research-based core reading curriculum, devote at least 90 min each day to reading instruction, group students by skill level, and measure progress in basic skills at least three times each year (Simmons et al., 2002). Targeted group support includes more explicit instruction in smaller groups and weekly progress monitoring (Vaughn, Linan-Thompson, Kouzekani, et al., 2003). At the intensive individual level of support, school personnel create individualized, specially tailored plans, which may include additional instruction, one-on-one instruction, and more opportunities to practice skills (Kame'enui & Simmons, 1990).

These behavior and reading programs share a number of critical features, including the use of the three-tier model, explicit instruction, screening for additional support, team-based implementation, and a commitment to data-based decision making (Simmons et al., 2002; Sugai et al., 2002). Because of this common approach to student support and an extensive research base linking academic performance and problem behavior (see Maguin & Loeber, 1995), some school districts and state-level agencies, including the district described in this article as well as agencies in Ohio (Burns, Lateer-Huhn, Stollar, Murdoch, & Corbo, 2004) and Michigan (McGlinchey, 2004), have begun to integrate their behavioral and reading systems. Despite initial descriptive efforts, few studies have examined the outcomes associated with this combined process. Researchers and practitioners may feel compelled to ask the following questions: What are the practical implications of adopting an integrated approach in reading and behavior support, is this approach feasible, and can this concerted effort yield outcomes that exceed those observed when only one area is addressed?

Research is limited regarding the proportions of students in an entire district who are served by universal behavior and reading programs and those who need additional support. The present study was designed to provide descriptive data assessing reading and behavior patterns of students in grades K–3 when the three-tier prevention model is applied for both reading and behavior support. The specific research question explored was as follows: When school-wide universal behavioral and reading systems are in place, what proportions of students need additional reading and/or behavioral support in early elementary grades?

Method

SETTING

The setting was a small but fast-growing school district with six elementary schools located in a midsize city in the Pacific Northwest. At the time of the study (2001–2002 school year) total district K–Grade 12 enrollment was

5,246 students. The district's ethnic composition was 2% African American, 2% Asian American/Pacific Islander, 87% Euro American, 7% Hispanic or Latino, and 2% Native American. Five of the six schools qualified for Title I services, with the percentage of children receiving free or reduced lunch ranging from 37% to 63%. Within the district, 10% of students were considered at or below the poverty level. The district's students experience high rates of mobility.

In addition, all of the elementary schools had implemented both behavioral and reading support programs as described in the previous section. The district administration mandated SWPBS and scientifically based reading instruction in all elementary and middle schools. Both systems have been in place in each school for at least 5 years and have been the subject of multiple research studies in both behavior (Colvin & Fernandez, 2000, provides an example of one school in the district) and early reading (Simmons et al., 2002).

Researchers from outside of the district measured the fidelity of implementation of both programs in all elementary schools. The *School-wide Evaluation Tool* (SET; Horner et al., 2004) is a tool used to measure fidelity of implementation of SWPBS systems. The instrument has strong reliability—including internal consistency (Cronbach's $\alpha = .96$ overall), test–retest reliability (97.3%), and interobserver agreement (99%)—and validity, including construct validity (Pearson $r = .75$ with the *EBS Self-Assessment Survey*) and sensitivity to SWPBS implementation ($p \leq .001$). All schools in the district undergo yearly SET evaluations. Data used to validate the SET suggest that schools meeting two criteria (80% overall score and 80% teaching expectations score) are likely to have the critical features in place to provide effective support (Horner et al.). In the 2001–2002 school year, five of the six elementary schools in the district met the 80% overall implementation criteria (the remaining school reached 75%), and four of the six schools also met the 80% teaching expectations implementation level (the remaining schools had 75% and 60%).

Implementation of reading programs is measured by the *Planning and Evaluation Tool for Effective Schoolwide*

Reading Programs—Revised (PET-R; Kame'enui & Simmons, 2002). The PET-R is an evaluation tool used in more than 200 schools to measure what aspects of an effective school-wide reading program are in place. Research to determine the technical adequacy of the PET-R is currently under investigation. It is hypothesized that schools that meet two criteria (85% overall score and 85% assessment score) are likely to have an effective school-wide reading program. In the 2001–2002 school year, all six schools met the 85% overall implementation criteria, and five of the six schools also met the 85% assessment implementation level (the remaining school reached 81%).

PARTICIPANTS

Participants in the study were all K–Grade 3 students ($N = 1,653$) during the 2001–2002 school year. Descriptive statistics from Table 1 were derived from this set of students. The study also focused on all students in the district who were in third grade during the 2001–2002 school year ($N = 442$). As an intact grade cohort, the sample is representative of the district population as described previously.

MEASURES

Schools in the district use two ongoing measures for screening and indication of level of support needed: office discipline referrals (ODRs) for problem behavior and *Dynamic Indicators of Basic Early Literacy Skills—Sixth Edition* (DIBELS; Good & Kaminski, 2002) for reading.

ODRs are indicators of overall patterns of problem behavior. School staff issue ODRs to students for various behavioral violations, and major ODRs are written for serious behaviors, such as fighting, vandalism, harassment, or noncompliance. A major ODR documents a chain of school staff behaviors, including (a) observing a behavioral violation, (b) writing a referral to document the incident, (c) sending the student to the office for administrative action, and (d) determining actions to be taken (Sugai, Sprague, Horner, & Walker, 2000b). In total, the entire process may take between 10 and 45 min to complete (Scott & Barrett, 2004). For students without severe behavioral challenges, an ODR may serve as a punisher, and for all

Table 1. Frequencies (and Proportions) of Students Below Reading Benchmark and/or With Two or More Referrals (2001–2002)

Grade	Below benchmark	2 or more ODRs	Both	<i>n</i>
Kindergarten	137 (31%)	4 (< 1%)	3 (< 1%)	446
1st grade	111 (27%)	26 (6%)	19 (5%)	412
2nd grade	17 (4%)	53 (14%)	8 (2%)	385
3rd grade	13 (3%)	37 (8%)	2 (<1%)	442

Note. ODRs = office discipline referrals.

students it serves as a measure of individual and school-level behavior.

The district studied, as well as more than 2,500 schools across the world, uses the *School-Wide Information System* (SWIS; May et al., 2002) to track data on student discipline contacts. SWIS can be used to track ODRs to determine which students have more discipline contact than others. These data can be used to provide an overall index for a school, identify places, times, and students of concern, and provide detailed reports on individual students to assist in assessment.

Although ODRs are not direct observations of behavior, and behaviors not observed or reported are not included, they are an acceptable measure of problem behavior in large-scale studies because of their utility in assessment for entire schools and school districts (Sugai et al., 2000b). ODRs possess construct validity as a behavioral measure, and they have been highly correlated with a number of other behavioral measures, including general school misbehavior, student self-report, teacher perceptions, social maladjustment, and juvenile delinquency (Irvin, Tobin, Sprague, Sugai, & Vincent, 2004). Additionally, the number and type of ODRs received predict a range of future outcomes, including violent events in school and dropout (Tobin & Sugai, 1999). Because ODRs are currently the most useful large-scale indicators of problem behavior in schools, they were used as a behavioral measure in this study.

The strongest threat to validity of ODR data is the possibility that school personnel may use them inconsistently in similar situations. To increase the reliability of ODR data, the district studied conducts regular trainings on discriminating between behaviors that do and do not warrant a referral, based on definitions used in SWIS, the Web-based ODR data system. We strongly encourage schools using ODRs to build such practices into their regular trainings to increase the accuracy of data used for decision making.

Using ODRs, the most common metric for determining individual students' level of problem behavior is the number of major referrals per year. Schools implementing SWPBS programs employ ODRs to divide students into three groups defined by level of behavior support needed (Horner et al., 2005). Students receiving 0 to 1 ODRs per year are not likely to need support beyond the universal prevention described in the introduction (universal level), whereas students with 2–5 ODRs are likely to need additional support (targeted group level). Students with 6 or more referrals per year will need intensive, individual support (intensive individual level). The logic of using these criteria for determining level of support needed has been validated in 176 schools across nine states in the 2001–2002 school year (Horner et al., 2005).

DIBELS is used by more than 10,000 schools to indicate need for reading support. It is a research-validated,

standardized, norm-referenced, school-wide screening tool (Good, Gruba, & Kaminski, 2002; Hintze, Ryan, & Stoner, 2004; Kaminski & Good, 1998) for use in identifying students who fall below minimum criteria benchmarks for early reading skills in each grade. DIBELS assesses pre-reading skills, such as phoneme segmentation fluency (Kaminski & Good, 1996) and oral reading fluency (ORF; Shinn, 1989). Administration of ORF passages has been shown to improve both reading fluency and the more complex skill of passage comprehension (Deno, Mirkin, & Chiang, 1982). Until the spring of first grade, a variety of early literacy measures are used to determine progress. By second grade, ORF is the sole measure used in regular benchmarking. In place of DIBELS ORF passages, the district uses passages from the *Test of Reading Fluency* (TORF; Children's Educational Services, 1987), and the measure is used in accordance with the DIBELS administration and scoring guide (Good & Kaminski, 2002).

As with ODRs, schools use DIBELS to divide students into three levels of reading support needed. Specifically, progress is determined by benchmark assessments three times each academic year. Benchmarks increase according to improvement based on a national normative sample (Good, Gruba, & Kaminski, 2002). Students who meet or exceed DIBELS benchmarks are predicted to become established readers by the end of third grade and pass a number of high-stakes reading assessments (Barger, 2003; Buck & Torgesen, 2003; Good, Simmons, & Kame'enui, 2001). Students who do not meet benchmarks will need either strategic or intensive support to predict positive outcomes on third-grade state reading assessments (Good, Simmons, Kame'enui, Kaminski, & Wallin, 2002).

DATA ANALYSIS

To explore the proportion of students needing support, we used descriptive statistics of the data set for all third-grade students in the district in the 2001–2002 school year. Students were analyzed each year in the district and categorized by whether they were adequately supported by universal systems or if they needed additional support as described earlier. This provided an index of how many students needed more support by grade and how effective the behavioral and academic systems were in preventing problems in each area.

Results

The purpose of this study was to determine proportions of students needing additional support in a district with behavioral and reading support systems in place. As mentioned previously, students who do not meet DIBELS benchmarks or receive two or more ODRs in one school year are identified for further assessment and may need additional support. Table 1 illustrates that the frequency

and proportion of students missing the DIBELS benchmark in reading is higher for kindergarten, but drops in first grade and is considerably lower by third grade. In contrast, the frequency of students with two or more ODRs is nonexistent in kindergarten and increases by third grade.

Figure 2 shows the proportions of students whose screening indicated the need for additional support in reading. For the district studied, 90% of the students entering school without reading skills became proficient readers by the end of third grade. Overall, 97% of students scored above the criterion indicating proficient reading skills by the end of third grade, with 2% identified as needing strategic support and less than 1% needing intensive reading support. For comparison purposes, in the 2001–2002 national normative group for DIBELS (Good, Wallin, Simmons, Kame’enui, & Kaminski, 2002), which included information on all students in the DIBELS data system (more than 12,500 third-grade students from 93 districts across the United States), 60% of students were proficient readers by the end of third grade, with 24% identified as needing strategic support and 16% needing intensive reading support.

Figure 3 shows the proportions of students whose screening indicated the need for additional support in behavior. The percentage of students receiving 0 to 1 ODRs (indicating a sufficient level of support at the universal level) in third grade was 92%, with 6.5% of students receiving 2 to 5 ODRs, and 1.5% with 6 or more ODRs. Because a national comparison group for ODRs in third grade was not available, K–Grade 5 ODR data are provided both for the district studied and a national comparison

group. For all K–5 students in the district, 90% received 0 to 1 ODRs, 8% of students had 2 to 5 ODRs, and 2% had 6 or more. In a national sample of K–Grade 5 elementary schools in 2001–2002 from the SWIS data set (more than 90,000 students across 19 U.S. states), 86% of students received 0 to 1 ODRs, 10% of students had 2 to 5 ODRs, and 4% had 6 or more.

Discussion

Results were reported from a descriptive, cross-sectional study using students from a district implementing school-wide academic and behavioral universal intervention systems. The results provide initial support for the practice of implementing school-wide academic and behavioral systems to reduce incidences of academic and behavioral challenges. The data indicate that the combined efforts of universal behavior and reading interventions are working as well or better than expected. Because the number of students requiring additional support at third grade (3% in reading and 8% in behavior) is lower than the prevalence in the national samples, universal intervention efforts may be proving effective and may reduce the need for more resource-heavy support at the targeted group and intensive, individual levels. These efforts make the proportions of students needing additional support vastly more manageable for school personnel. Scores on reading measures improved dramatically, but it took some time (through both kindergarten and first grade), because improving reading skill involves teaching students the necessary pre-reading skills.

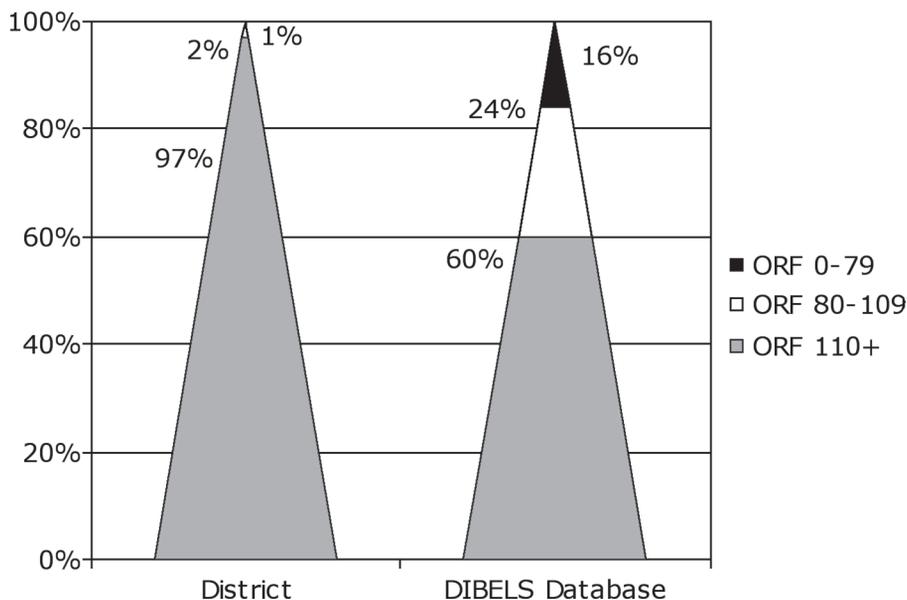


Figure 2. Proportions of third-grade students by DIBELS Oral Reading Fluency benchmarks: 2001–2002 school year.

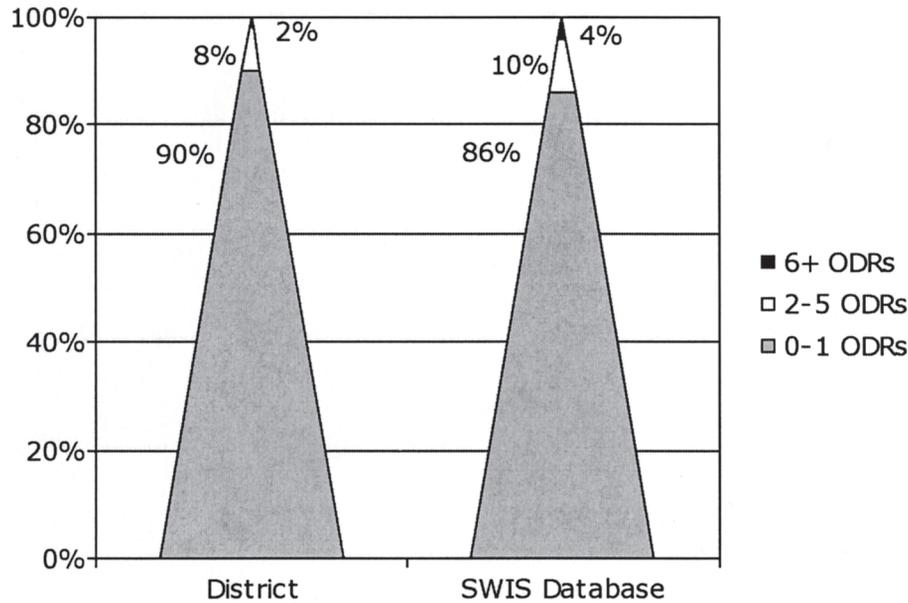


Figure 3. Proportions of kindergarten through fifth-grade elementary students by number of office discipline referrals: 2001–2002 school year.

LIMITATIONS

This study had several limitations that should be considered when interpreting the results. First, there was only one district studied, and no comparison district without school-wide reading and behavior programs. Second, the students studied were K–Grade 3 students only. We can rely on overwhelming evidence that problem behavior increases over time from school entry to high school (Walker & Sprague, 1999), but it is still unknown whether combined school-wide systems produce similar effects beyond third grade.

RECOMMENDATIONS FOR FUTURE RESEARCH

As with most studies, results from this study raise more important questions, which should be explored in future research, namely, how patterns change in Grades 4 through 8, and whether patterns are different in schools without behavior and reading support systems. Because problem behaviors tend to increase through upper elementary grades and middle school, it is assumed that more students may need behavior support in higher grades.

Finally, because this study used only one district in its sample, there are no comparison districts for use in an experimental study. Proportions for similar schools not using school-wide systems of prevention may be similar or different. Some researchers assert that implementation of school-wide behavioral programs may be associated with an increase in academic achievement, and we hypothesize that the implementation of a school-wide reading pro-

gram has reduced the frequency of problem behavior occasioned by academic failure. In that way, both programs may work symbiotically, with each program having beneficial effects on both sets of outcomes.

IMPLICATIONS FOR PRACTICE

One important implication from this study is how effective and efficient these school-wide systems of prevention can be, especially when used in conjunction with each other. Investing in prevention in early elementary grades is critical, because low-cost efforts may result in the same or better outcomes than more expensive interventions in later years (Kingery & Walker, 2002). The literature abounds with studies and case examples of effective implementation of such systems in academics (Kame'enui & Simmons, 1998; Simmons et al., 2002) and behavior (Metzler et al., 2001; Sugai et al., 2002; Taylor-Greene et al., 1997). In addition, intervening before patterns of misbehavior become well practiced consumes less time and fewer resources and reduces stress for school personnel (Walker et al., 1996).

CONCLUSION

Academic and behavioral challenges are of utmost concern to schools. Research has shown that there is a link between them, but until recently, school-wide approaches to preventing problems in both areas have been independent, using different models and interventions. We propose that they are too closely linked to approach independently and intervene separately. A combined approach to both aca-

demics and behavior using the three-tiered model appears to yield additional benefits in both areas. To help all students become proficient readers by the end of third grade, interventionists should work toward helping all students to behave appropriately by then. The converse assertion is also true.

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AUTHORS' NOTE

This research was supported in part by Educational and Community Supports, University of Oregon, and U.S. Department of Education Grant H326S980003. Opinions expressed herein do not necessarily reflect the policy of the Department of Education, and no official endorsement by the department should be inferred.

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