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Evidence-based Practices in Classroom Management: Considerations for Research to Practice[1]

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Abstract

Classroom management is a critical skill area. Teachers should be trained and supported in implementing practices that are likely to be successful; that is, practices that are backed by evidence. The purpose of this paper is to describe the outcomes of a systematic literature search conducted to identify evidence-based classroom management practices. Although the need for additional research exists, 20 practices, in general, were identified as having sufficient evidence to be considered for classroom adoption. Considerations for incorporating these practices are suggested, and a self-assessment tool is proposed as means of evaluating and enhancing use of these practices. Suggestions for future research are also presented.

Classroom management is an important element of pre-service teacher training and in-service teacher behavior (Emmer & Stough, 2001) and is comprised of three central components: maximized allocation of time for instruction, arrangement of instructional activities to maximize academic engagement and achievement, and proactive behavior management practices (Sugai & Horner, 2002). Early research on classroom management employed either descriptive or correlational methods and highlighted practices that were used by "effective teachers" (e.g., Kounin & Obradovik, 1967; Kounin, Friesen, & Norton, 1966). This research formed the foundation for chapters and textbooks on classroom management (Emmer & Stough, 2001). Thus, some practices currently disseminated to pre- and in-service teachers are based on preliminary findings of early research and may not have an established evidence base.

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Educators who follow current trends in educational policy, law, and research are guided to identify and implement scientifically-validated or evidence-based practices, a standard that has gained popularity in the past decade. For example, the words "evidence-based" were cited in 34 articles in PsycINFO (electronic data base) from 1986-1995, and were cited in 3,772 articles from 1996-2005. Consequently, researchers and practitioners must identify which classroom management practices are empirically validated. The purpose of this paper is to provide an update on what we know about classroom management research and guidelines for translating this research into practical classroom practice. We present (a) the methodology and results of the literature search conducted to identify evidence-based classroom management practices, (b) guidelines for translating research into practice, (c) a self-assessment tool, and (d) implications for future research.

Identification of Evidence-based Practices

Literature Search Methodology

We searched the empirical literature to identify evidence-based classroom management practices. To identify potential topics, ten recent classroom management texts[2] were reviewed, and a list of recommended practices was developed. Practices were grouped into five categories: (a) physical arrangement of classroom, (b) structure of classroom environment, (c) instructional management, (d) procedures designed to increase appropriate behavior, and (e) procedures designed to decrease inappropriate behavior. The empirical literature pertaining to each topic was searched to identify practices that met our criteria for "evidence-based."

Although an agreed upon heuristic for defining evidence-based practices is difficult to establish, commonalities exist among the approaches adopted by various organizations (e.g., CEC, AFT, IES; Kerr & Nelson, 2006). Specifically, most organizations agree that evidence-based practices meet the following criteria: "(a) the use of a sound experimental or evaluation design and appropriate analytical procedures, (b) empirical validation of effects, (c) clear implementation procedures, (d) replication of outcomes across implementation sites, and (e) evidence of sustainability" (Kerr & Nelson, p. 89). These criteria are similar to those used by the What Works Clearinghouse (U.S. Department of Education, 2006)

In line with these criteria, classroom management practices were considered *evidence-based* if they were (a) *evaluated* using sound experimental design and methodology (group experimental, group quasi-experimental, experimental single subject designs, or causal

comparative); (b) demonstrated to be *effective;* and (c) *supported* by at least 3 empirical studies published in peer-refereed journals.

The following search terms were used in various combinations in PsychINFO to identify potential studies: classroom, arrangement, layout, design, physical environment, rules, routines, expectations, structure, social skills instruction, opportunity to respond, response cards, choral responding, active engagement, active responding, performance, behavior, academic, reading, math, management, academic achievement, teacher praise, contingent teacher praise, specific teacher praise, specific praise, feedback, performance feedback, active supervision, scanning, peer tutoring, class wide peer tutoring, computer assisted instruction, guided notes, task engagement, cooperative learning, direct instruction, token economy, behavior contracting, differential reinforcement, group contingencies, and error correction.

Studies were selected if (a) the setting was a classroom or group context with 2 or more students; (b) school age populations (k-12) were studied; (c) the focus was classroom arrangement, instructional management, increasing behavior, or decreasing behavior; (d) specific research methodologies (group experimental, group quasi-experimental, causal comparative, experimental single subject) were employed; and (e) the journal used a peer-review process. Because the purpose of this literature search was to identify evidence-based practices, an exhaustive review was not conducted. Instead, a practice was determined to be evidence-based if a minimum of three supporting empirical studies was identified.

Results of Literature Search

Our literature search resulted in identification of 20 general practices that met the criteria for evidence-based. These practices were grouped into five empirically-supported, *critical features* of effective classroom management: (a) maximize structure; (b) post, teach, review, monitor, and reinforce expectations; (c) actively engage students in observable ways; (d) use a continuum of strategies for responding to appropriate behaviors; and (e) use a continuum of strategies to respond to inappropriate behaviors. For each critical feature, a description of the feature and the evidence base is provided in the following sections (also see Table 1).

Maximize Structure

Description. Structure refers to the amount of teacher or adult-directed activity, the extent to which routines are explicitly defined, and the design or physical arrangement of the classroom. The physical arrangement of a classroom includes (a) the permanent structure (i.e., walls, dividers, closets, etc) that defines the classroom space;

Table 1

Sample of Supporting Evidence for Reviewed Practices

Evidence-based Practice	Sample of Supporting References
1. Maximize Structure and Predictability	
High classroom structure (e.g., amount of teacher directed activity)	• Huston-Stein, Friedrich-Cofer, & Susman, 1977 • Morrison, 1979 • Susman, Huston-Stein, & Friedrich-Cofer, 1980
Physical arrangement that minimizes distraction (e.g., walls, visual dividers, etc.) and crowding	• Ahrentzen & Evans, 1984 • Burgess & Fordyce, 1989 • Maxwell, 1996 • Weinstein, 1977
2. Post, Teach, Review, Monitor, and Reinforce Expectations	
Post, teach, review, and provide feedback on expectations	• Greenwood, Hops, Delquadri, & Guild, 1974 • Johnson, Stoner, & Green, 1996 • McNamara, Evans, & Hill, 1986 • Rosenberg, 1986 • Sharpe, Brown, & Crider, 1995
Active supervision	• Colvin, Sugai, Good, & Lee, 1997 • DePry & Sugai, 2002 • Schuldheisz & van der Mars, 2001
3. Actively Engage Students in Observable Ways	
Rate of opportunities to respond (OTRs)	• Carnine, 1976 • Sindelar, Bursuck, & Halle, 1986 • Sutherland, Alder, & Gunter, 2003 • West & Sloane, 1986
Response cards	• Christle & Schuster, 2003 • Godfrey, Grisham-Brown, & Schuster, 2003 • Lambert, Cartledge, Heward, & Lo, 2006

Evidence-based Practice	Sample of Supporting References
Direct instruction	• Abt Associates, 1977 • Becker & Gersten, 1982 • Gersten, Keating, & Becker, 1988 • Nelson, Johnson, & Marchand-Martella, 1996 • White, 1988
Computer assisted instruction	• Clarfield & Stoner, 2005 • Ota & DuPaul, 2002 • Layng, Twyman, & Stikeleather, 2003
Classwide peer tutoring	• Delquadri, 1986 • DuPaul, Ervin, Hook, & McGoey, 1998 • Greenwood, Carta, & Hall, 1988 • Greenwood, Delquadri, & Hall, 1989 • Simmons, Fuchs, & Fuchs, 1995
Guided notes	• Austin, Lee, Thibeault, Carr, & Bailey, 2002 • Lazarus, 1993 • Sweeney, Ehrhardt, Gardner, Jones, Greenfield, & Fribley, 1999
4. Use a Continuum of Strategies to Acknowledge Appropriate Behavior	
Specific and/or contingent praise	• Broden, Bruce, Mitchell, Carter, & Hall, 1970 • Craft, Alber, Heward, 1998 • Ferguson, & Houghton, 1992 • Sutherland, Wehby, & Copeland, 2000 • Wilcox, Newman, & Pitchford, 1988

Table 1 (contd.)

Evidence-based Practice	Sample of Supporting References
Class-wide group contingencies	*Group contingencies in isolation* • Barrish, Saunders, & Wolf, 1969 • Hansen, & Lignugaris, 2005 • Yarborough, Skinner, Lee, & Lemmons, 2004 *In combination with the following strategies* • self-management and peer-monitoring; Davies, & Witte, 2000 • establishing and teaching expectations; Lohrmann, Talerico, & Dunlap, 2004 • social skills training; Lewis, & Sugai, 1993
Behavioral contracting	• Kelley, & Stokes, 1984 • White-Blackburn, Semb, & Semb, 1977 • Williams & Anandam, 1973 • Drabman, Spitalnik, & O'Leary, 1973
Token economies	• Jones, & Kazdin, 1975 • Main, & Munro, 1977 • McCullagh, & Vaal, 1975
5. Use a Continuum of Strategies to Respond to Inappropriate Behavior	
Error corrections	*Academic Behavior* • Baker, 1992 • Barbetta, Heward, Bradley, & Miller, 1994 • Singh, 1990 • Singh, & Singh, 1986 *Social Behavior* • Abramowitz, O'Leary, & Futtersak, 1988 • Acker, & O'Leary, 1988 • McAllister, Stachwiak, Baer, & Conderman, 1969 • Winett, & Vachon, 1974

Evidence-based Practice	Sample of Supporting References
Performance feedback (with and without the addition of other evidence-based strategies)	• Brantley & Webster, 1993 • Kastelen, Nickel, & McLaughlin, 1984 • Van Houten, & McKillop, 1977 • Yarborough, Skinner, Lee, & Lemmons, 2004
Differential reinforcement	• Deitz, Repp, & Deitz, 1976 • Didden, de Moor, & Bruyns, 1997 • Repp, Deitz, & Deitz, 1976 • Zwald, & Gresham, 1982
Planned ignoring plus contingent praise and/or instruction of classroom rules	• Hall, Lund, & Jackson, 1968 • Madsen, Becker, & Thomas, 1968 • Yawkey, 1971
Response cost	• Forman, 1980 • Greene, Pratt, 1972 • Trice, & Parker, 1983
Time out from reinforcement	• Barton, Brulle, & Repp, 1987 • Foxx, & Shapiro, 1978 • Ritschl, Mongrella, & Presbie, 1972

(b) the placement of furniture (desks, tables, etc.) that defines seating arrangements, traffic flow, teacher/student areas, etc; and (c) visual displays (i.e., decorations) on the walls.

Evidence base. In general, classrooms with more *structure* have been shown to promote more appropriate academic and social behaviors. Students in high structure classrooms exhibited greater task involvement (Morrison, 1979), friendlier peer interactions, more helpful behaviors (e.g., cleaning up after free play), more attentive behavior (e.g., paying attention during circle time), and less aggression (Huston-Stein, Friedrich-Cofer, & Susman, 1977; Susman, Huston-Stein, & Friedrich Coffer, 1980). A balance between teacher-directed structure and student independence may be necessary. Huston-Stein, Friedrich-Cofer, and Susman (1977) demonstrated that, in addition to the positive effects described above, students in high structure classes engaged in less pro-social behavior toward peers, and high structure was unrelated to independent task persistence.

The physical arrangement of the classroom also impacts student

behavior. Research indicates that the classroom should be designed to minimize crowding and distraction. Crowding at home and school can have a negative impact on behavior (Maxwell, 1996). The simplest way to *minimize crowding* is to increase the amount of space in a classroom. Burgess and Fordyce (1989) found that when children had more space, they increased their interpersonal distances and their interactions with peers, teachers, and parents regardless of room design.

In addition to increasing physical space, teachers should *minimize distraction.* Although teachers report greater satisfaction with open perimeters in their classrooms, research indicates that classrooms with more walls (visual dividers) are associated with less teacher distraction in general, less student distraction from noise, more student satisfaction, and less restriction of classroom activities (Ahrentzen & Evans, 1984).

Although altering the structure of the classroom may not be possible, *the layout,* or design, of the classroom can be *modified.* Weinstein (1977) demonstrated that making changes to the classroom design (e.g., changes to location of materials, color, attractiveness of room, use of shelving, etc.) led to (a) a more even distribution of children across locations, (b) a change in the distribution of behaviors observed, and (c) an increase in the variety of appropriate and engaged behaviors.

Post, Teach, Review, Monitor, and Reinforce Expectations

Description. Establishing expectations includes identifying and defining a small number of positively stated expectations, or rules, that are broad enough to include all desired behavior and are mutually exclusive (e.g., Be Safe, Be Responsible, Be Respectful). The identified expectations are posted and are explicitly and systematically taught to students. Frequent review is also provided, and the teacher monitors or actively supervises students. Active supervision is characterized by a teacher moving, looking around, interacting with students, correcting any errors made by students (i.e., behavior that is inconsistent with expectations), and providing reinforcement for behavior that is consistent with expectations (Colvin, Sugai, Good, & Lee, 1997).

Evidence base. Posting, teaching, and reviewing expectations (i.e., social skills) and providing feedback are associated with (a) decreases in off-task behavior and disruptive behavior (i.e., talking out) and (b) increases in academic engagement, leadership, and conflict resolution (Johnson, Stoner, & Green, 1996; Lane, Wehby, & Menzies, 2003; Lo, Loe, & Cartledge, 2002; McNamara, Evans, & Hill, 1986; Sharpe, Brown, & Crider, 1995; Rosenberg, 1986). Pairing rule instruction with feedback and reinforcement leads to the largest gains (Greenwood, Hops, Delquadri, & Guild, 1974). Although research supports the use

of individualized social skills instruction (e.g., locally developed lessons to address needs of a particular school, classroom, or group of students), empirical support also exists for various packaged social skills curricula (e.g., *Second Step*; Edwards, Hunt, Meyers, Grogg, & Jarrett, 2005).

Active supervision has been shown to positively impact student behavior in different settings including classroom and non-classroom areas (e.g., hallways). Within a general education classroom, the introduction of active supervision produced a classroom-wide decrease in minor behavioral incidents (De Pry & Sugai, 2002). Additionally, the use of similar supervision techniques resulted in higher levels of active participation (moderate to vigorous physical activity) in a physical education class (Schuldheisz & van der Mars, 2001). Furthermore, a study by Colvin and colleagues (1997) found that the degree of active supervision—and not the supervisor to student ratio—accounted for the most variance in problem behavior in non-classroom transition settings. In addition, a significant inverse relationship was identified between the number of supervisor-to-student interactions and the instances of problem behavior.

Actively Engage Students in Observable Ways

Description. Engagement is a general term that refers to how a student participates during classroom instruction (Greenwood, Horton, & Utley, 2002), and is comprised of passive (e.g., listening to a teacher) and active (e.g., writing, answering a question) behaviors. Greenwood, Terry, Marquis, and Walker (1994) found that engagement was the best mediating variable between instruction and academic achievement; if students are actively engaged in instruction, then it is difficult to engage in incompatible behaviors (e.g., talking out, out of seat). Teachers can increase active engagement, for example, by increasing students' opportunities to respond, utilizing direct instruction techniques, implementing peer tutoring, utilizing computer-based instruction, and providing guided notes.

1. An *opportunity to respond* (OTR) is a teacher behavior that prompts or solicits a student response (e.g., asking a question, presenting a demand). Two common methods used to increase the rate of presenting OTRs in a classroom include choral responding (i.e., students answering a question in unison) and response cards (i.e., erasable boards on which all students write their answers to a question and then hold the boards up for the teacher to see).

2. *Direct instruction* is an approach to classroom teaching characterized by clear presentation of content (e.g., use of signals), carefully sequenced (i.e., components and sub-components of skills are seamlessly and progressively presented) and supported instruction (e.g.,

prompts are added and systematically faded out), high rates of OTRs, judicious review of content, systematic feedback (i.e., specific praise or planned error corrections), initial and ongoing assessment of student progress and placement, and students learning concepts and skills to mastery (Becker & Gersten, 1982; Carnine, Silbert, Kame'enui, & Tarver, 2004). More specifically, direct instruction involves the teacher first modeling, then leading students through content, and finally testing student knowledge of presented content.

3. In *classwide peer tutoring* (CWPT), students are paired and assigned the roles of tutor and tutee. Students provide each other with instruction, often via rapid response trials or paired reading practice, and give each other immediate error corrections. The classroom teacher is afforded freedom to move around the classroom and assist student pairs in need of additional help (Greenwood, Delquadri, & Hall, 1989).

4. *Computer assisted instruction* (CAI) uses technology to provide students with the benefits of one-on-one instruction (e.g., frequent opportunities to respond, immediate corrective feedback, material tailored to the appropriate instructional level) without leaving the larger classroom (Ota & DuPaul, 2002).

5. *Guided notes* are teacher-provided outlines of either lectures or chapters that contain the main ideas and spaces for students to fill in additional details (Lazarus, 1993). Heward and Orlansky (1993) explain, "guided notes take advantage of one of the most consistent and important findings in recent educational research: students who make frequent, relevant responses during a lesson learn more than students who are passive observers" (p. 168).

Evidence base. In general, increasing the rate of *opportunities to respond* has a positive effect on both student achievement and behavior. A functional relationship has been demonstrated between increasing the pace with which teachers presented students with opportunities to respond and a(n) (a) increase in on-task behavior (Carnine, 1976; Sutherland, Alder, & Gunter, 2003), (b) increase in academic engagement (Carnine, 1976), (c) decrease in disruptive behavior (Carnine, 1976; Sutherland et al., 2003; West & Sloane, 1986), and (d) increase in the number of correct responses (Sutherland et al., 2003). In addition, the use of choral responding is associated with small, yet positive effects on academic achievement (e.g., Sindelar, Bursuck, & Halle, 1986) and on-task behavior (Godfrey, Grisham-Brown, & Schuster, 2003); similarly, the use of response cards is associated with an increase in student responses, on-task behavior (Christle & Schuster, 2003; Godfrey, Grisham-Brown, & Schuster, 2003; Lambert, Cartledge, Heward, & Lo, 2006), and academic achievement (Christle & Schuster,

2003). Because monitoring individual student responses with choral responding may be difficult (Sindelar et al., 1986), response cards may be a better method to increase OTRs.

Research also supports use of *direct instruction*. In the largest and most expensive federal study conducted on education (i.e., Project Follow Through), the effects of nine instructional approaches were evaluated. Local and national pooled comparison groups were compared longitudinally on multiple measures of academic achievement for economically disadvantaged students. Students who received instruction from the DISTAR programs (i.e., *Direct Instruction System for Teaching and Remediation*) of reading, arithmetic, and language (e.g., Engelmann, & Bruner, 1974) made the greatest gains across measures of basic skills, cognitive reasoning, and self-esteem (Abt Associates, 1977; Gersten, Keating, & Becker, 1988; Meyer, 1984). Additionally, when compared to students receiving traditional instruction, students receiving direct instruction demonstrated significantly greater gains in academic achievement (Becker & Gersten, 1982) and engaged in a higher rate of on-task behavior (Nelson, Johnson, & Marchand-Martella, 1996). White (1988) conducted a meta-analysis of the effects of direct instruction on academic achievement in special education and found that all 25 studies reported statistically significant effects in favor of the direct instruction group.

Three additional strategies are also supported by evidence. *Classwide peer-tutoring* (CWPT; e.g., Delquadri, 1986; Greenwood, Carta, & Hall, 1988) programs have been shown to improve both academic engagement and reading achievement (Greenwood, Delquadri, & Hall, 1989; Simmons, Fuchs, & Fuchs, 1995). Furthermore, the use of CWPT has been shown to lead to a decrease in off-task behavior as well as an increase in academic performance for students with Attention-Deficit/Hyperactivity Disorder (AD/HD; DuPaul, Ervin, Hook, & McGoey, 1998).

The use of *computer assisted instruction* (CAI) has been shown to affect an increase in both active engagement time and on-task behavior for students with AD/HD in math (Ota & DuPaul, 2002), as well as an increase in both oral reading fluency and on-task behavior for students with AD/HD in reading (Clarfield & Stoner, 2005). Similar results for students without AD/HD have been reported. Oral reading fluency and state achievement and published academic test performance of students in kindergarten and first grade have improved following computer assisted instruction (Layng, Twyman, & Stikeleather, 2003).

The use of *guided notes* during lectures and readings resulted in an increase in academic achievement as measured by quiz scores

(Austin, Lee, Thibeault, Carr, & Bailey, 2002; Lazarus, 1993; Sweeney et al., 1999). This option may be particularly relevant for older students (i.e., high school), as a greater percentage of instruction may be delivered in a lecture format.

Use a Continuum of Strategies to Acknowledge Appropriate Behavior

Description. A continuum of strategies to acknowledge appropriate behavior refers to a range of evidence-based strategies that focus on identifying and recognizing appropriate classroom behavior. The continuum should include the use of simple (i.e., contingent specific praise) as well as more complex (i.e., class-wide group contingencies) strategies to acknowledge displays of appropriate behavior. The following four strategies are supported by evidence (see Alberto & Troutman [2006] and Cooper, Heron, & Heward [2007] for a more complete discussion of each strategy).

1. *Specific, contingent praise* is a positive statement, typically provided by the teacher, when a desired behavior occurs (contingent) to inform students specifically what they did well.
2. *Group reinforcement contingencies* are employed when a common expectation is set for a group of learners and a common positive outcome is earned by engaging in the expected behavior. Three main types of group contingencies are described in the literature: (a) dependent (the outcome for the whole group depends on the behavior of a smaller subset of that group), (b) interdependent (the outcome for the whole group depends on the behavior of all students), and (c) independent (the outcome of each student depends on his or her behavior).
3. *Behavior contracts* are written documents that specify a contingency (relationship between behavior and consequence). That is, a behavior contract defines the expected behavior and outcomes for engaging or not engaging in expected behavior.
4. *Token economies* are used when students earn tokens (e.g., points, poker chips, etc.), contingent upon desired behavior, that can be cashed in for a back-up reinforcer (e.g., desired items, activities, attention from preferred people, etc.).

Evidence base. Empirical evidence supports the use of multiple classroom management strategies implemented either individually or in conjunction with one another. Praise, the simplest strategy reviewed, has perhaps the strongest evidence base. Delivering *contingent praise* for academic behavior increased participants' (a) correct responses (Sutherland & Wehby, 2001), (b) work productivity and accuracy

(Craft, Alber, & Heward, 1998; Wolford, Heward, & Alber, 2001), (c) language and math performance on class work (Roca & Gross, 1996), and (d) academic performance (Good, Eller, Spangler, & Stone, 1981). Delivering contingent praise for appropriate social behavior increased participants' (a) on-task behavior (Ferguson, & Houghton, 1992), (b) student attention (Broden, Bruce, Mitchell, Carter, & Hall, 1970), (c) compliance (Wilcox, Newman, & Pitchford, 1988), (d) positive self-referent statements (Phillips, 1984), and (e) cooperative play (Serbin, Tonick, & Sternglanz, 1977).

The effects of praise may be bolstered when the praise is specific (i.e., describes the desired behavior) and used in conjunction with other strategies. Increasing the number of behavior specific praise statements was associated with an increase in on-task behavior (Sutherland, Wehby, & Copeland, 2000). Providing contingent praise in conjunction with either establishing classroom rules in isolation (Becker, Madsen, & Arnold, 1967) or classroom rules paired with ignoring inappropriate behavior (Yawkey, 1971) was associated with increased appropriate classroom behavior. Generally, desired academic and social behavior can be increased by providing specific and contingent praise and establishing classroom expectations.

Group reinforcement contingencies and *token economies* are discussed together because a majority of the studies reviewed used a combination of both practices. Group contingencies and token economies have broad evidential support when used in classroom settings; their use: (a) increased positive and decreased negative verbal interactions (Hansen, & Lignugaris, 2005); (b) decreased transition time (Yarborough, Skinner, Lee, & Lemmons, 2004); (c) increased achievement, appropriate classroom behavior, and peer social acceptance (Nevin, Johnson, & Johnson, 1982); (d) increased student attention (Jones & Kazdin, 1975); (e) decreased inappropriate behavior (Main & Munro, 1977); (f) decreased talk-outs and out-of-seat behavior (Barrish, Saunders, & Wolf, 1969); and (g) increased student preparedness for class and assignment completion (McCullagh, & Vaal, 1975).

The effectiveness of group reinforcement contingencies and token economies is strengthened when paired with a continuum of other classroom management strategies. Appropriate classroom behavior was improved when group reinforcement contingencies and token economies were combined with (a) establishment and instruction of classroom rules (Lohrmann, Talerico, & Dunlap, 2004); (b) self-management and peer-monitoring (Davies & Witte, 2000); (c) social skills training (Lewis & Sugai, 1993); (d) individual contingencies (Solomon & Tyne, 1979); and (e) posting positively stated classroom rules and active teacher supervision (Kehle, Bray, & Theodore, 2000).

Similar to group reinforcement contingencies, the use of *behavior contracts* that define expected behaviors and associated consequences was related to (a) increased student productivity (Kelley & Stokes, 1984), (b) increased on-task behavior and daily assignment completion (White-Blackburn, Semb, & Semb, 1977), (c) improved school grades (Williams & Anandam, 1973), and (d) improved student self-control (Drabman, Spitalnik, & O'Leary, 1973)

Use a Continuum of Strategies to Respond to Inappropriate Behavior

Description. A continuum of strategies to respond to inappropriate behavior refers to a range of evidence-based strategies that decrease the likelihood of inappropriate behavior in the future. The continuum should include the use of simple (e.g., correcting inappropriate behavior) as well as more complex (e.g., differential reinforcement) strategies to respond to inappropriate behavior. The following six specific strategies are supported by evidence (see Alberto & Troutman [2006] and Cooper, Heron, & Heward [2007] for a more complete discussion of each strategy).

1. *Brief, contingent, and specific error correction* refers to an informative statement, typically provided by the teacher, that is given when an undesired behavior occurs (contingent), states the observed behavior, and tells the student exactly what they should do in the future in a brief, concise manner. These statements also are referred to as "explicit reprimands."
2. *Performance feedback* is similar to error correction. Students are provided with data (e.g., charts, graphs, reports) regarding their engagement in target behaviors. Teachers assist students in visually analyzing changes in their performance. Teachers specify a certain target behavioral criterion for students to meet (e.g., transitions under 2 minutes for 3 days or less than 3 office referrals in a month) and a reward if the criterion is met. Performance feedback can also be used to track positive behaviors (e.g., oral reading fluency rates or positive school-wide acknowledgements).
3. *Differential reinforcement* is contingent reinforcement when a student engages in (a) low rates of an undesired behavior, (b) behaviors other than undesired behaviors (i.e., zero occurrences of undesired behavior), (c) an alternative behavior (a specific behavior chosen to replace the undesired behavior), or (d) an incompatible behavior (a behavior that is physically impossible to emit at the same time as the undesired behavior). These procedures consist of varied adaptations of positive reinforcement

strategies, focusing on increasing desired behavior to decrease the likelihood that undesired behavior will occur in the future.

4. *Planned ignoring* occurs when a teacher systematically withholds attention from (ignores) a student when she or he exhibits undesired behavior. The effectiveness of planned ignoring is directly related to the degree to which teacher attention is a positive reinforcer maintaining undesired behavior.

5. *Response cost* is a procedure employed when a stimulus (e.g., token) is removed, contingent upon a student engaging in undesired behavior. The effectiveness of response cost is related to (a) the reinforcement value of the tokens and the back-up reinforcers and (b) the degree (rate and schedule) to which the student can earn and accumulate contingent tokens.

6. *Time out from reinforcement* is a procedure employed when a student is removed from a reinforcing environment (e.g., play structure with peers) to a less reinforcing environment (e.g., empty classroom), contingent upon an undesired behavior (e.g., hitting a peer).

Evidence base. An extensive empirical literature base supports the use of a variety of specific strategies to respond to inappropriate behavior.

Delivering *error correction* is an important strategy used in response to academic and social behavior errors. From an academic perspective, error corrections that were direct, immediate, and ended with the student emitting the correct response were most effective in increasing future success rates (i.e., decreasing errors; Barbetta, Heward, Bradley, & Miller, 1994). Providing corrective feedback during oral reading activities improved word recognition and reading comprehension (Baker, 1992; Singh, 1990; Singh & Singh, 1986). With regard to social behavior, providing direct, brief, and explicit error corrections or reprimands following undesired behavior decreased such behavior (McAllister, Stachowiak, Baer, & Conderman, 1969). Error corrections or reprimands that were loud in tone were less effective than quiet or discreet corrections (O'Leary & Becker, 1968). Further, error corrections that were brief (i.e., 1 to 2 words) were more effective than longer error corrections (i.e., 2 or more phrases; Abramowitz, O'Leary, & Futtersak, 1988), and corrections that were delivered consistently were superior to those delivered inconsistently (Acker & O'Leary, 1988)

Providing systematic *performance feedback* regarding target social behaviors for a classroom of students led to an increase in appropriate behavior of all students, as compared to a control classroom (Winett &

Vachon, 1974). Publicly posting feedback, in addition to other strategies, has been shown to (a) decrease the frequency of target behaviors (Brantley & Webster, 1993); (b) decrease classroom transition times (Yarbrough, Skinner, Lee, & Lemmons, 2004); and (c) increase prosocial and academic behaviors such as on-task behavior, self-esteem, reading, spelling, (Kastelen, Nickel, & McLaughlin, 1984) and writing (Van Houten & McKillop, 1977).

In addition to providing performance feedback, evidence exists to support slightly more intrusive procedures. *Differential reinforcement* procedures can improve overall appropriate behavior while reducing inappropriate behavior (Deitz, Repp, & Deitz, 1976; Repp, Deitz, & Deitz, 1976; Didden, de Moor, & Bruyns, 1997; Zwald, & Gresham, 1982). Similarly, *planned ignoring,* in combination with other strategies (e.g., establishing rules and praising appropriate behavior) was associated with increases in appropriate social (Madsen, Becker, & Thomas, 1968; Yawkey, 1971) and study behavior (Hall, Lund, and Jackson, & 1968).

Finally, research exists to support even more intrusive procedures. *Response cost* procedures have been demonstrated to result in a decrease in swearing (Trice & Parker, 1983), aggressive behavior (Forman, 1980) and inappropriate behavior (Greene & Pratt, 1972). *Time out from reinforcement* also has been demonstrated to decrease inappropriate behavior (Barton, Brulle, & Repp, 1987; Foxx & Shapiro, 1978; Ritschl, Mongrella, & Presbie, 1972).

Research to Practice

Classroom management begins long before the students come into the classroom. Effective teachers plan their classroom management before the school year begins, and know what tasks they will need to undertake at the beginning and throughout the year. In Table 2, we present a *guide to implementation,* which has been designed to articulate systems and practices to be designed and implemented before, at the beginning of, and throughout the school year.

Assessment of Critical Features of Classroom Management

To facilitate the implementation of the critical features and considerations of classroom management, we developed the Classroom Management Assessment (see Figure 1), which can be used by both (a) teachers to evaluate their own progress or (b) observers to provide specific and contingent feedback to guide a teacher's implementation of the critical features.

As a general guide, if a teacher or observer responds "yes" to 80% of the items (10 or more items), classroom management is con-

Table 2

A Guide to Implementing Classroom Management Practices throughout the School Year

	Things To Do...		
	...Before the School Year	...At the Beginning of the School Year	...Throughout the School Year
Structure, Physical Lay-out, and Teaching of Expectations	1. Design the layout of your classroom 2. Identify and define staff and student routines 3. Determine classroom expectations	1. Evaluate the physical layout of the classroom and identify unexpected roadblocks or distractions 2. Systematically and explicitly teach what each classroom expectation looks like in the context of each classroom and non-classroom routine	1. Continue to evaluate the physical lay-out and structure of the classroom 2. Build in opportunities for student choice and independent work. 3. Re-teach and review expectations for routines
Responding to Appropriate and Inappropriate Behavior	1. Develop systems for acknowledging (e.g., praise and behavior contracts) and correcting (e.g., differential reinforcement of low rates of behavior) behavior	1. Implement and teach students the systems for acknowledging (e.g.., group contingency) and correcting (e.g., error correction) behavior	1. Monitor and track rates of appropriate and inappropriate classroom behavior and adjust systems as needed. 2. Ensure teacher corrections do not outnumber acknowledgments

sidered "effective." If a teacher or observer responds "yes" to 60-80% of items (7-10 items), classroom management is considered "somewhat effective." Finally, if a teacher or observer responds "yes" to fewer than 60% of items (fewer than 7 items), classroom management is considered to "need improvement." Regardless of the number of "yes" responses, teachers should evaluate the degree to which they are implementing each practice and develop a detailed action plan to maintain or enhance their implementation of each critical feature and related practice.

Conclusion and Implications for Future Research

Empirical evidence exists for many procedures identified in standard classroom management texts. Specifically, we identified 20 evidence-based practices that were grouped into five critical features of classroom management (i.e., maximize *structure*; post, teach, review, monitor, and reinforce *expectations*; *actively engage* students in observable ways; use a continuum of strategies to *acknowledge appropriate behavior*; and use a continuum of strategies to *respond to inappropriate behavior*). Each of the critical features can be implemented by teachers with careful planning before (e.g., designing systems), at the beginning of (e.g., establishing structure, expectations, and systems), and throughout (e.g., teaching and reviewing expectations, providing high rates of opportunities to respond, delivering contingent and specific praise) the school year. To assist teachers with monitoring implementation, the Classroom Management Assessment tool can be used to identify current levels of performance and develop a plan for improvement.

Although we are confident that the five critical features of classroom management are applicable to classrooms today, approximately half of the studies included in this review were conducted twenty or more years ago (~ 48% of studies listed in Table 1 were published prior to 1987). To address this gap in the literature, we recommend that researchers take the following steps to update, validate, and expand upon past research.

First, researchers should focus on empirically (a) evaluating new or under-researched classroom management strategies, (b) establishing quantitative or qualitative standards for implementing classroom management strategies (e.g., experimentally identifying the optimal ratio of positive to corrective consequences), and (c) specifying decision rules that guide implementation of the continuum of consequences and instructional strategies (e.g., when to move to more intrusive strategies).

Second, researchers should identify the parameters under which

Classroom Management Assessment		
Practice	Rating	
1. I **maximized structure and predictability** in my classroom.		
a. *I explicitly taught and followed predictable **routines**.*	Yes	No
b. *I arranged my room to **minimize crowding and distraction**.*	Yes	No
2. I posted, taught, reviewed, monitored, and reinforced a small number of **positively stated expectations**.		
a. *I operationally defined and **posted** a small number of expectations (i.e., school wide rules) for all routines and settings in my classroom.*	Yes	No
b. *I explicitly **taught** and **reviewed** these expectations in the context of routines.*	Yes	No
c. *I **prompted** or **pre-corrected** students to increase the likelihood that they will follow the expectations.*	Yes	No
d. *I **actively supervised** my students.*	Yes	No
3. I **actively engaged** students in observable ways.		
a. *I provided a high rate of **opportunities to respond** during my instruction.*	Yes	No
b. *I **engaged** my students in **observable ways** during teacher directed instruction (i.e., I use response cards, choral responding, and other methods).*	Yes	No
c. *I used evidence-based methods to **deliver** my instruction (e.g., Direct Instruction).*	Yes	No
4. I used a **continuum of strategies** to acknowledge **appropriate behavior**.		
a. *I provided **specific and contingent praise** for academic and social behaviors (e.g., following expectations).*	Yes	No
b. *I also used **other systems** to acknowledge appropriate behavior (group contingencies, behavior contracts, or token economies).*	Yes	No
5. I used a **continuum of strategies** to respond to **inappropriate behavior**.		
a. *I provided specific, contingent, and brief **error corrections** for academic and social errors.*	Yes	No
b. *In addition, I used the **least restrictive procedure** to discourage inappropriate behavior (differential reinforcement, planned ignoring, response cost, time out)*	Yes	No

Figure 1. Classroom Management Assessment (CMA)

each of the above procedures is optimized; for example, school level (elementary, middle, high), ability level of students (general education, gifted education, special education), and other contextual (school size, SES) and cultural (location, ethnicity) variables that may be important to the application of these practices.

Third, researchers should focus on efforts to evaluate methods to train pre-service, induction, and in-service teachers to maximize their use of evidence-based practices.

Finally, researchers should identify the most effective strategies for transferring research into practice to ensure that selected interventions are evidence-based, contextually relevant, implemented with high fidelity across time (i.e., durable), and continuously monitored and enhanced. We must increase our systematic study and understanding of factors that affect adoption of these practices (e.g., educator skill fluency, school/community demographics, administrator commitment). Clearly, giving educators simple access and exposure to these practices through readings, lectures, and one-time professional development events are unlikely to change existing practice. It may be as or more important to consider what organizational supports are needed to maximize the likelihood that classroom management practices will be (a) given priority for adoption, (b) adapted to be contextually and culturally relevant, and (c) implemented with fidelity and durability. Drawing on our experience with School-Wide Positive Behavior Support, we anticipate that these supports may include systems level data-based decision making, school and district team led implementation, local coaching or facilitation structures, ongoing and expert training capacity, and active and overt leadership participation (Sugai & Horner, 2006).

Notes

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2 List of textbooks available upon request.

References

Abramowitz, A.J., O'Leary, S.G., Futtersak, M.W. (1988). The relative impact of long and short reprimands on children's off-task behavior in the classroom. *Behavior Therapy, 19*(2), 243-247.

Abt Associates. (1977). Education as experimentation: A planned variation model (Vol. IV). Cambridge, MA: Author.

Acker, M.M. & O'Leary, S.G. (1988). Effects of consistent and inconsistent feedback on inappropriate child behavior. *Behavior Therapy, 19*(4), 619-624.

Ahrentzen, S., & Evans, G. W. (1984). Distraction, privacy, and classroom design. *Environment and Behavior, 16*(4), 437-454.

Alberto, P. A., & Troutman, A. C. (2006). *Applied Behavior Analysis for Teachers* (7th ed.). Upper Saddle River, NJ: Pearson.

Armendariz, F., & Umbreit, J. (1999). Using active responding to reduce disruptive behavior in a general education classroom. *Journal of Positive Behavior Interventions, 1*, 152-158.

Austin, J.L., Lee, M.G., Thibeault, M.D., Carr, J.E., & Bailey, J.S. (2002). Effects of guided notes on university students' responding and recall of information. *Journal of Behavioral Education, 11*, 243-254.

Baker, J.D. (1992). Correcting the oral reading errors of a beginning reader. *Journal of Behavioral Education, 4*, 337-343.

Barbetta, P.M., Heward,W L, Bradley, D M, & Miller, A D. (1994). Effects of immediate and delayed error correction on the acquisition and maintenance of sight words by students with developmental disabilities. *Journal of Applied Behavior Analysis, 27*, 177-178.

Barrish, H.H., Saunders, M. & Wolf, M.M. (1969). Good behavior game: Effects of individual contingencies for group consequences on disruptive behavior in a classroom. *Journal of Applied Behavior Analysis, 2*(2), 119-124.

Barton, L.E., Brulle, A.R., Repp, A.C. (1987). Effects of differential scheduling of timeout to reduce maladaptive responding. *Exceptional Children, 53*(4), 351-356.

Becker, W.C., & Gersten, R. (1982). A follow-up of Follow Through: The later effects of the Direct Instruction Model on children in fifth and sixth grades. *American Educational Research Journal* 19(1), 75-92.

Becker, W.C. Madsen, C.H. Arnold, C. (1967). The contingent use of teacher attention and praise in reducing classroom behavior problems. *Journal of Special Education, 1*(3), 287-307.

Brantley, D.C., Webster, R.E. (1993).Use of an independent group contingency management system in a regular classroom setting. *Psychology in the Schools, 30*(1), 60-66.

Broden, M., Bruce, C., Mitchell, M., Carter, V., & Hall, R.H. (1970). Effects of teacher attention on attending behavior of two boys at adjacent desks. *Journal of Applied Behavior Analysis, 3*, 205-211.

Brophy, J. E. (1983). Classroom organization and management. *The Elementary School Journal, 83*, 264-285.

Burgess, J. W., & Fordyce, W. K. (1989). Effects of preschool environments on nonverbal social behavior: toddlers'' interpersonal distances to teachers and classmates change with environmental density, classroom design, and parent-child interactions. *Journal of Child Psychology and Psychiatry, 30*(2), 261-276.

Carnine, D.W. (1976). Effects of two teacher-presentation rates on off-task behavior, answering correctly, and participation. *Journal of Applied Behavior Analysis, 9*, 199-206.

Carnine, D. W., Silbert, J., Kame'enui, E. J., & Tarver, S. G. (2004). *Direct Instruction Reading.* (4th ed.). Upper Saddle River, NJ: Merrill Prentice Hall.

Christle, C.A., & Schuster, J.W. (2003). The effects of using response cards on student participation, academic achievement, and on-task behavior during whole-class, math instruction. *Journal of Behavioral Education, 12*, 147-165.

Clarfield, J., & Stoner, G. (2005). The effects of computerized reading instruction on the academic performance of students identified with ADHD. *School Psychology Review, 34*, 246-254.

Colvin, G., Sugai, G., Good, R.H., III, & Lee, Y-Y. (1997). Using active supervision and precorrection to improve transition behaviors in an elementary school. *School Psychology Quarterly, 12*, 344-361.

Cooper, J. O., Heron, T. E., & Heward, W. L. (2006). *Applied behavior analysis* (2nd edl.). Upper Saddle River, NJ: Prentice Hall.

Craft, M.A., Alber, S.R. Heward, W.L. (1998). Teaching elementary students with developmental disabilities to recruit teacher attention in a general education classroom: Effects on teacher praise and academic productivity. *Journal of Applied Behavior Analysis, 31*(3), 399-415.

Darch, C.B., & Kame'enui, E.J. (1995). *Instructional Classroom Mangement: A Proactive Approach to Behavior Management.* Upper Saddle River, NJ: Pearson Education.

Davies, S., & Witte, R. (2000). Self-management and peer-monitoring within a group contingency to decrease uncontrolled verbalizations of children with Attention-Deficit/Hyperactivity Disorder. *Psychology in the Schools, 37*(2), 135-147.

Delquadri, J. (1986). Classwide peer tutoring. *Exceptional Children, 52,* 535-561.

Deitz, S. M., Repp, A. C., & Deitz, D.E. (1976). Reducing inappropriate classroom behaviour of retarded students through three procedures of differential reinforcement. *Journal of Mental Deficiency Research, 20*(3), 155-170.

De Pry, R.L., & Sugai, G. (2002). The effect of active supervision and pre-correction on minor behavioral incidents in a sixth grade general education classroom. *Journal of Behavioral* Education, 11, 255-264.

Didden, R., de Moor, J., & Bruyns, W. (1997). Effectiveness of DRO tokens in decreasing disruptive behavior in the classroom with five multiply handicapped children. *Behavioral Interventions, 12*(2), 65-75.

DiPerna, J.C. (2005). Academic enablers and student achievement: Implications for assessment and intervention services in the schools, *Psychology in the Schools, 43,* 7-17.

Drabman, R.S., Spitalnik, R., & O'Leary, K.D. (1973). Teaching self-control to disruptive children. *Journal of Abnormal Psychology, 82*(1), 10-16.

DuPaul, G. J., Ervin, R. A., Hook, C. L., & McGoey, K. E. (1998). Peer tutoring for children with attention deficit hyperactivity disorder: Effects on classroom behavior and academic performance. *Journal of Applied Behavior Analysis, 31,* 579-592.

Edwards, D., Hunt, D., & Meyers, M. H., Grogg, K. R., & Jarrett, O. (2005). Acceptability and student outcomes of a violence prevention curriculum. *Journal of Primary Prevention, 26*(5), 401-418.

Emmer, E. T., & Stough, L. M. (2001). Classroom management: A critical part of educational psychology, with implications for teacher education. *Educational Psychologist, 36*(2), 102-112.

Engelmann, S. & Bruner, E. C. (1974). DISTAR I, II. Chicago Science Research Associates: Chicago.

Evertson, C. M., Emmer, E. T., & Worsham, M. E. (2003). *Classroom Management for Elementary Teachers.* Boston: Pearson Education.

Ferguson, E. & Houghton, S. (1992). The effects of contingent teacher praise, as specified by Canter's Assertive Discipline programme, on children's on-task behaviour. *Educational Studies, 18*(1), 83-93.

Forman, S.G. (1980). A comparison of cognitive training and response cost procedures in modifying aggressive behavior of elementary school children. *Behavior Therapy,11*(4), 594-600.

Foxx, R.M., & Shapiro, S.T.(1978). The timeout ribbon: A nonexclusionary timeout procedure. *Journal of Applied Behavior Analysis, 11(1),* 125-136.

Gersten, R., Keating, T., & Becker, W. (1988). The continued impact of the Direct Instruction model: Longitudinal studies of Follow Through students. *Education and Treatment of Children, 11*(4), 318-327.

Glasgow, N.A., & Hicks, C.D. (2003). *What Successful Teachers Do: 91 Research-Based Classroom Strategies for New and Veteran Teachers.* Thousand Oaks, CA: Corwin Press, Inc.

Godfrey, S.A., Grisham-Brown, J., & Schuster, J.W. (2003). The effects of three techniques on student participation with preschool children with attending problems. *Education & Treatment of Children, 26,* 255-272.

Good, C.E. Eller, B.F. Spangler, R.S. Stone, J.E. (1981). The effect of an operant intervention program on attending and other academic behavior with emotionally disturbed children. *Journal of Instructional Psychology, 9*(1), 25-33.

Greene, R.J., Pratt, J.J. (1972) A group contingency for individual misbehaviors in the classroom. *Mental Retardation, 10*(3), 33-35.

Greenwood, C.R., Carta, J.J., Hall, R.V. (1988). The use of peer tutoring strategies in classroom management and educational instruction. *School Psychology Review, 17,* 258-275.

Greenwood, C. R., Hops, H., Delquadri, J., & Guild, J. (1974). Group contingencies for group consequences in classroom management: A further analysis. *Journal of Applied Behavior Analysis, 7*(3), 413-425.

Greenwood, C.R., Delquadri, J.C., & Hall, R.V. (1989). Longitudinal effects of classwide peer tutoring.*Journal of Educational Psychology, 81*(3), 371-383.

Greenwood, C.R., Horton, B.T., Utley, C.A. (2002). Academic Engagement: Current perspectives in research and practice. *School Psychology Review, 31,* 328-349.

Greenwood, C. R., Terry, B., Marquis, J., & Walker, D. (1994). Confirming a performance-based instructional model. *School Psychology Review, 23*(4), 652-668.

Hall, R. V., Lund, D., & Jackson, D. (1968). Effects of teacher attention on study behavior. *Journal of Applied Behavior Analysis, 1,* 1-12.

Hansen, S.D. & Lignugaris-Kraft, B. (2005). Effects of a dependent group contingency on the verbal interactions of middle school students with emotional disturbance. *Behavioral Disorders, 30*(2), 170-184.

Heward, W. L., & Orlansky, M.D. (1993). Exceptional children (4th ed.). Columbus, OH: MacMillan.

Huston-Stein, A., Friedrich-Cofer, L. & Susman, E. J. (1977). The relation of classroom structure to social behavior, imaginative plan, and self-regulation of economically disadvantaged children. *Child Development, 48,* 908-916.

Johnson, T. C., Stoner, G. & Green, S. K. (1996). Demonstrating the experimenting society model with classwide behavior management interventions. *School Psychology Review, 25*(2), 199-214.

Jones, R.T., Kazdin, A.E. (1975). Programming response maintenance after withdrawing token reinforcement *Behavior Therapy, 6(2),* 153-164.

Kastelen, L., Nickel, M., & McLaughlin, T.F. (1984) performance feedback system: Generalization of effects across tasks and time with eighth-grade English students. *Education & Treatment of Children, 7*(2), 141-155.

Kehle, T.J., Bray, M.A, & Theodore, L.A (2000). A multi-component intervention designed to reduce disruptive classroom behavior. *Psychology in the Schools, 37*(5), 475-481.

Kelley, M.L., & Stokes, T.F. (1984). Student-teacher contracting with goal setting for maintenance. *Behavior Modification, 8*(2), 223-244.

Kerr, M. M., & Nelson, C. M. (2006). *Strategies for Addressing Behavior Problems in the Classroom (5th ed). Upper Saddle River, NJ: Pearson Education.*

Kounin, J. S., Friesen, W. V., & Norton, W. V. (1966). Managing emotionally disturbed children in regular classrooms. *Educational Psychology, 57*(1), 1-13.

Kounin, J. S., & Obradovik, S. (1967). Managing emotionally disturbed children in regular classrooms: A replication and extension. *Journal of Special Education, 2*(2), 129-135.

Lane, K. L., Wehby, J., & Menzies, H. M. (2003). Social skills instruction for students at risk for antisocial behavior: The effects of small-group instruction. *Behavioral Disorders,* 28, 229-248.

Lambert, M.C., Cartledge, G., Lo, Y., &Heward, W.L. (2006). Effects of response cards on disruptive behavior and academic responding during math lessons by fourth-grade urban students. *Journal of Positive Behavior Interventions, 8,* 88-99.

Layng, T.V.J., Twyman, J.S., & Stikeleather, G. (2003), Headsprout Early Reading: Reliably Teaching Children to Read *Behavioral Technology Today, 3,* 7-20.

Lazarus, B.D. (1993). Guided notes: Effects with secondary and post-secondary students with mild disabilities. *Education and Treatment of Children, 16,* 272-289.

Lewis, T.J., & Sugai, G. (1993). Teaching communicative alternatives to socially withdrawn behavior: An investigation in maintaining treatment effects. *Journal of Behavioral Education, 3*(1), 61-75.

Lo, Y., Loe, S. A., & Cartledge, G. (2002). The effects of social skills instruction on the social behaviors of students at risk for emotional or behavioral disorders. *Behavioral Disorders,* 27, 371-385.

Lohrmann, S. Talerico, J. Dunlap, G., (2004). Anchor the Boat: A classwide intervention to reduce problem behavior. *Journal of Positive Behavior Interventions, 6*(2), 2004. 113-120.

MacArthur, C.A., Haynes, J.A., Malouf, D.B., Harris, K., & Owings, M. (1990). Computer assisted instruction with learning disabled students: Achievement, engagement, and other factors that influence achievement. *Journal of Educational Computing Research, 6,* 311-328.

Madsen, C.H. Jr., Becker, W.C. Thomas, D.R. (1968). Rules, praise, and ignoring: Elements of elementary classroom control. *Journal of Applied Behavior Analysis, 1*(2), 139-150.

Main, G.C., & Munro, B.C. (1977). A token reinforcement program in a public junior high-school. *Journal of Applied Behavior Analysis, 1*(1), 93-94.

Maxwell, L. E. (1996). Multiple effects of home and daycare crowding. *Environment and Behavior, 28*(4), 494-511.

McAllister, L.W., Stachowiak, J.G. Baer, D.M. Conderman, L. (1969). The application of operant conditioning techniques in a

secondary school classroom. *Journal of Applied Behavior Analysis, 2*(4), 277-285.

McNamara, E., Evans, M., & Hill, W. (1986). The reduction of disruptive behaviour in two secondary school classes. *British Journal of Educational Psychology, 56,* 209-215.

McCullagh, J. Vaal, J. (1975). A token economy in a junior high school special education classroom. School Applications of Learning Theory, 7(2), 1-8.

Morrison, T. L. (1979). Classroom structure, work involvement, and social climate in elementary school classrooms. *Journal of Educational Psychology, 71*(4) 471-477.

Meyer, L. A. (1984). Long-term academic effects of the Direct Instruction Project Follow Through. *Elementary School Journal, 84,* 380-394.

Nelson, J.R., Johnson, A., & Marchand-Martella, M. (1996). Effects of direct instruction, cooperative learning, and independent learning practices on the classroom behavior of students with behavioral disorders: A comparative analysis. *Journal of Emotional and Behavioral Disorders, 4,* 53-62.

Nevin, A., Johnson, D.W. & Johnson, R. (1982) Effects of group and individual contingencies on academic performance and social relations of special needs students. *Journal of Social Psychology, 116*(1), 41-59.

O'Leary, K.D., Becker, W.C. (1968). The effects of the intensity of a teacher's reprimands on children's behavior. *Journal of School Psychology,* 7(1), 8-11.

Ota, K., & DuPaul, G.J. (2002). Task engagement and mathematics performance in children with Attention-Deficit Hyperactivity Disorder: Effects of supplemental computer instruction. *School Psychology Quarterly, 17,* 242-257.

Phillips, R.H., (1984). Increasing positive self-referent statements to improve self-esteem in low-income elementary school children. *Journal of School Psychology, 22*(2), 155-163.

Repp, A.C, Deitz, S. M, & Deitz, D.E. (1976). Reducing inappropriate behaviors in classrooms and in individual sessions through DRO schedules of reinforcement. *Mental Retardation, 14*(1), 11-15.

Rieth, H.J., Polsgrove, L., Semmel, M.I. (1981). Instructional variables that make a difference: Attention to task and beyond. *Exceptional Education Quarterly,* 2(3), 61-71.

Ritschl, C., Mongrella, J., & Presbie, R.J. (1972). Group time-out from rock and roll music and out-of-seat behavior of handicapped children while riding a school bus. *Psychological Reports, 31*(3), 967-973.

Repp, A. C, Deitz, S. M, & Deitz, D. E. (1976). Reducing inappropriate behaviors in classrooms and in individual sessions through DRO schedules of reinforcement. *Mental Retardation, 14*(1), 11-15.

Roca, J.V., Gross, A.M. (1996). Report-do-report: Promoting setting and setting-time generalization. *Education & Treatment of Children, 19*(4), 408-424.

Rosenberg, M. S. (1986). Maximizing the effectiveness of structured classroom management programs: Implementing rule-review procedures with disruptive and distractible students. *Behavior Disorders, 11*(4), 239-248.

Schuldheisz, J.M., & van der Mars, H. (2001). Active supervision and students' physical activity in middle school physical education. *Journal of Teaching in Physical Education, 21*, 75-90.

Serbin, L.A., Tonick, I.J. Sternglanz, S.H. (1977). Shaping cooperative cross-sex play. *Child Development, 48*(3), 924-929.

Sharpe, T., Brown, M., & Crider, K. (1995). The effects of a sportsmanship curriculum intervention on generalized positive social behavior or urban elementary school students. *Journal of Applied Behavior Analysis, 28*(4), 401-416.

Simmons, D.C., Fuchs, L.S., & Fuchs, D. (1995). Effects of explicit teaching and peer tutoring on the reading achievement of learning-disabled and low-performing students in regular classrooms. *Elementary School Journal, 95*(5),. 387-408.

Sindelar, P.T., Bursuck, W.D., Halle, J.W. (1986). The effects of two variations of teacher questioning on student performance. *Education & Treatment of Children, 9*, 56-66.

Singh, J., & Singh, N.N. (1986). Increasing oral reading proficiency. *Behavior Modification, 10*, 115-130.

Singh, N.N. (1990). Effects of two error correction procedures on oral reading errors. *Behavior Modification, 14*, 188-199

Solomon, R., & Tyne, T.F. (1979). A comparison of individual and group contingency systems in a first-grade class. *Psychology in the Schools, 16*(2), 193-200.

Sugai, G., & Horner, R. H. (2002). The evolution of discipline practices: School-wide positive behavior supports. *Child and Family Behavior Therapy, 24*, 23-50.

Sugai, G., & Horner, R. (2006) (invited paper). A promising approach for expanding and sustaining the implementation of school-wide positive behavior support. *School Psychology Review, 35*, 245-259.

Susman, E. J., Huston-Stein, A., & Friedrich-Cofer, L. (1980). Relation of conceptual tempo to social behaviors of head start children. *The Journal of Genetic Psychology, 137*, 17-20.

Sutherland, K.S., Alder, N., & Gunter, P.L. (2003). The effect of varying rates of opportunities to respond to academic requests on the behavior of students with EBD. *Journal of Emotional and Behavioral Disorders, 11*, 239-248.

Sutherland, K.S., & Wehby, J.H., (2001). The effect of self-evaluation on teaching behavior in classrooms for students with emotional and behavioral disorders. *Journal of Special Education, 35*(3), 2-8.

Sutherland, K. S., Wehby, J. H., & Copeland, S. R. (2000). Effect of varying rates of behavior-specific praise on the on-task behavior of students with EBD. *Journal of Emotional and Behavior Disorders, 8*, 2-8.

Sweeney, W.J., Ehrhardt, A.M., Gardner, R., Jones, L., Greenfield, R., & Fribley, S. (1999). Using guided notes with academically at-risk high school students during a remedial summer social studies class. *Psychology in the Schools, 36*, 305-318.

Trice, A.D. & Parker, F.C.. (1983). Decreasing adolescent swearing in an instructional setting. *Education & Treatment of Children, 6*(1), 29-35.

Van Houten, R., & McKillop, C.(1977). An extension of the effects of the performance feedback system with secondary school students. *Psychology in the Schools, 14*(4), 480-484.

Weinstein, C. S. (1977). Modifying student behavior in an open classroom through changes in the physical design. *American Educational Research Journal, 14*(3), 249-262.

West, R. P., & Sloane, H. N. (1986). Teacher presentation rate and point delivery rate: Effects on classroom disruption, performance, accuracy, and response rate. *Behavior Modification, 10*(3), 267-286.

White, W.A. (1988). A meta-analysis of the effects of Direct Instruction in special education. *Education and Treatment of Children, 11*, 364-374.

White-Blackburn, G., Semb, S., & Semb, G. (1977). The effects of a good-behavior contract on the classroom behaviors of sixth-

grade students. *Journal of Applied Behavior Analysis, 10*(2), 312.

Wilcox, R., Newman, V. Pitchford, N. (1988). Compliance training with nursery children. *Association of Educational Psychologists Journal, 4(2),* 105-107.

Williams, R.L..& Anandam, K. (1973). The effect of behavior contracting on grades. *Journal of Educational Research, 66*(5), 230-236.

Winett, R.A., Vachon, E.M. (1974). Group feedback and group contingencies in modifying behavior of fifth graders. *Psychological Reports, 34*(3), 1283-1292.

Wolford, P.L., Heward, W.L., & Alber, S.R. (2001). Teaching middle school students with learning disabilities to recruit peer assistance during cooperative learning group activities. *Learning Disabilities Research & Practice, 16*(3), 161-173

Yarbrough, J.L., Skinner, C.H., Lee, Y.J., & Lemmons, C., (2004). Decreasing Transition Times in a Second Grade Classroom: Scientific Support for the Timely Transitions Game. *Journal of Applied School Psychology, 20*(2), 85-107.

Yawkey, T.D., (1971). Conditioning independent work behavior in reading with seven-year-old children in a regular early childhood classroom. *Child Study Journal, 2(1),* 23-34.

Zwald, L., & Gresham, F.M. (1982). Behavioral consultation in a secondary class: Using DRL to decrease negative verbal interactions. *School Psychology Review, 11*(4), 428-432.