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EXPLORING THE EFFECTIVENESS OF SELF-MANAGEMENT PROGRAMS

FOR STUDENTS WITH DISRUPTIVE BEHAVIORS:

A COMPREHENSIVE LITERATURE REVIEW

by

Heidi Kupiec

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of the requirements for the degree

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ABSTRACT

Exploring the effectiveness of Self-management Programs for Students with Disruptive

Behaviors: A Comprehensive Literature Review

by

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Disruptive behaviors exhibited by children and youth pose a major problem for

students exhibiting the behaviors, their peers, parents, and teachers. Disruptive behaviors

including shouting, aggression, off-task behaviors, and noncompliance, correlate with

poor social skills, low peer acceptance, higher rates of academic deficiencies, and in

adulthood instability in relationships and employment. Self-management programs

employ traditional behavior management methods and with self-management

components to teach students to self-monitor or evaluate their behavior. By teaching

students to be aware of and to manage their own behavior students may be better able to

generalize appropriate behaviors to other less supervised settings, complete more work,

and experience a sense of accomplishment for controlling their behavior. Past reviews of

self-management literature have demonstrated the effectiveness of self-management

interventions in changing disruptive behaviors and documented limitations of the research. However, the most recent review was completed over a decade ago, therefore a current review of self-management programs for disruptive behaviors was completed. The review indicated that recent literature has corrected some past limitations by studying a larger variety of age groups in different settings and by providing replicable intervention steps. Unfortunately, many variables continue to be neglected (e.g., generalization, maintenance, social validity, treatment integrity). The strengths and limitations of current self-management literature as applied to changing disruptive behaviors exhibited by youth are discussed and areas for future research recommended.

(123 pages)

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Disruptive Behaviors: A Comprehensive Literature Review

Introduction

<u>Disruptive Behaviors</u>

Disruptive behaviors in youth negatively impact the youth exhibiting the behavior and those affected by the youth's actions at home, school, and in community settings. Research has demonstrated that disruptive behaviors can lead to a variety of negative and long-lasting consequences. In addition, there is a strong link between early-onset conduct problems and later adolescent disorder (e.g., ODD and CD) and antisocial behavior (Loeber, 1990). For example, childhood disruptive behavior such as aggression can lead to later delinquency and conduct disorder, school dropout, substance use, school maladjustment, and peer rejection (Coie, Dodge, & Kupersmidt, 1990; Kazdin, 1987). Within the classroom, teachers are least tolerant of disruptive behavior problems, and children with these behaviors are at the highest risk for special education referral (Fabre & Walker, 1987; Kaufman, Lloyd & McGee, 1989). Clearly, intervention programs for students with disruptive behavior are sorely needed.

Disruptive behaviors encompass a wide range of behaviors, including shouting, aggression, destructiveness, lying, stealing, tantrums, off-task behaviors and general noncompliance. Such behaviors typically result in the categorization of students as aggressive and/ or disruptive, and may contribute to the classification of students as having an emotional disturbance (ED), Attention Deficit Hyperactivity Disorder (ADHD), or Conduct Disorder (CD).

Correlates of Disruptive Behavior

In comparison to non-disruptive peers, children who exhibit disruptive behaviors may exhibit poorer social skills (Asher & Dodge, 1986; Behar & Stewart, 1982) and experience lower rates of peer acceptance (Carlson, Lahey, & Neeper, 1984) and higher rates of academic deficiencies (Epstein, Kinder, & Bursuck, 1989; Ledingham & Schwartzman, 1984).

Students who exhibit disruptive behaviors also often struggle with social interactions. Asher and Dodge (1986) suggested that students exhibiting disruptive behaviors often incorrectly perceive and react to social situations, and that poor social problem solving and ineffective conflict resolution skills may perpetuate and increase hostility or aggression towards others. For example, research suggests that aggressive children anticipate more positive than negative consequences to aggressive solutions than non-aggressive children, increasing the probability that they will employ aggressive acts to solve problems (Asher & Dodge, 1986).

Students who demonstrate disruptive behaviors are commonly rejected by their peers. For example, a study conducted by Carlson et al. (1984) identified causes of acceptance, rejection, and neglect by peers. They developed and implemented a peer assessment method to investigate the social behavior of both second- and fifth-grade children. Results indicated that for both grades, peers viewed rejected children as exhibiting more aggressive, acting-out behaviors than accepted and neglected classmates.

Challenges faced by children with disruptive behaviors are not limited to social situations, but extend into academic areas. Research indicates that when compared to non-handicapped peers, students classified as behaviorally disordered show academic

deficiencies, especially in reading achievement (Epstein et al., 1989). For example, Ledingham and Schwartzman (1984) determined the school placement of aggressive, withdrawn, aggressive-withdrawn, and control children three years after their original selection. Data suggested that aggressive children experienced more difficulties in school than children in withdrawn or control groups. Of the children identified by peers as aggressive-withdrawn, 12% were likely to be enrolled in special education classes and below grade level, as compared to 7% of the aggressive group, 2% of the withdrawn group, and no controls.

Disruptive behaviors frustrate teachers in that they interrupt academic instruction of other students and can contribute to students' academic failure. Disruptive behaviors are the most common reasons for referrals to school mental health teams for special education services (Durlak, 1995) and teachers report the most difficulties among these behaviors in special education classrooms (W. A. Jensen, personal communication, May, 1999). Ruhl and Hughes (1985) examined special education teachers' perceptions of aggression of behaviorally disordered students. Results indicated that teachers shouldered the major responsibility for dealing with students' aggressive behaviors, as only a narrow range of school-level interventions were in place and some teachers notes indicated a total lack of administrative involvement with these students. The effects of the behaviors and teachers perceptions of the lack of support suggest the need for effective interventions for this population.

Disruptive and aggressive behaviors of youth affect their adult life and future generations. For example, Caspi et al. (1987) found that children rated as having frequent and severe temper tantrums were more likely to have an erratic adulthood. Specifically,

men with histories of frequent/severe childhood tantrums had experienced fewer promotions at work, chronic employment changes, and were likely to divorce. Women with the same histories tended to marry men of lower occupational status, became ill-tempered mothers, and were also likely to divorce. Huesmann, Eron, Lefkowitz, and Walder (1984) found that aggressive children tended to be the more aggressive adults, that aggression displayed early on predicted later antisocial behavior, and that aggressive tendencies are transmitted across generations.

The long-term effects, chronic problems, potential challenges, and the intensity of behavior difficulties exhibited by disruptive students challenge school staff and practitioners to implement effective interventions and illuminate the need for interventions that will make a lasting impact on children's lives.

Self-management

Students experiencing academic or behavioral difficulties in school frequently are least able to manage their time, schedule, homework, and behavior (Young, West, Smith & Morgan, 1996). Techniques that teach children and youth to control their behavior and at the same time to manage their time and activities appear to be advantageous. If students learn self-management tools and successfully employ them to change their behaviors, they may assume responsibility for their successes and internalize their ability to control and positively change their behaviors in both supervised and unsupervised situations. Building on the successes and basic tenets of traditional behavior management, self-management programs appear to be a viable approach to teaching students to manage their own behavior.

Self-management is defined as actions individuals undertake to change or maintain their own behavior (Shapiro & Cole, 1994). Research has demonstrated the effectiveness of using self-management techniques to reduce disruptive behavior and increase appropriate behavior (e.g., attending to task, hand raising) (Hughes et al., 1989; Fantuzzo & Polite, 1990). Most techniques fall under one of two broad self-management categories: cognitive or contingency-based approaches.

Cognitive-based Approaches

Cognitive-based approaches focus on the antecedents of appropriate behavior. Specifically, they focus on teaching children to think differently about a situation before they act. Categories under this approach include self-instruction, stress-inoculation, and problem-solving training. Briefly, self-instruction interventions teach children to engage in specific verbalizations that guide their behavior. First, a trainer demonstrates appropriate planning, behaviors that assist in concentrating to tasks, and error-correction strategies, then the student is taught to verbalize the strategies before and during the task (Christie, Hiss, Lozanoff, 1984). Social-problem-solving training teaches students "thinking" skills to help them break a problem down and to generate more appropriate alternatives to solving their social problems. Stress-inoculation uses cognitive regulation and cognitive skills training for management of behaviors. The student is exposed to a stressor gradually until the student can control his or her emotions (e.g., anger, anxiety) in the full presence of the stressor. The preceding techniques have been used to control anger of junior high school delinquents (Feindler, Marriott, & Iwata, 1984), increase attending behavior (Burgio, Whitman, & Johnson, 1980), and improve social skills of adolescents described as aggressive (Goldstein & Pentz, 1984).

Contingency-based Approaches

Contingency-based approaches focus on the consequences of appropriate/inappropriate behavior. The intervention aims at teaching children to monitor or evaluate a specific behavior (e.g., on- or off-task behavior, assignment completion) in order to increase a desirable behavior. These self-management components have been used to increase academic accuracy and productivity of students with behavior disorders (Olympia, Sheridan, Jenson, & Andrews, 1994), reduce disruptive classroom behavior (Hoff & DuPaul, 1998; Kehle, Clark, Jenson, & Wampold, 1986), and increase on-task behavior of students with hyperactivity (Christie, Hiss, & Lozanoff, 1984). Three main techniques fall under contingency-based approaches: self-monitoring, self-evaluation, and self-reinforcement. As contingency-based approaches are the main focus of this paper, they are more specifically described below.

Self-monitoring

In self-monitoring a student is taught to observe and objectively record his or her own target behavior. Research suggests that mere awareness and recording of one's own behavior may improve the behavior (Shapiro & Cole, 1992). For example, Kern, Dunlap, Childs and Clarke (1994) evaluated the effectiveness of using self-monitoring to increase on-task behavior of students served by special education for various classifications involving disruptive behaviors (e.g., ED, ADHD). Students monitored their on-task behavior and one additional target behavior (i.e., accepting feedback appropriately, appropriate peer/staff interactions) on a variable five-minute interval schedule during a 45-minute class period. The data suggested an increase of on-task behavior for all students following the implementation of the self-monitoring intervention.

<u>Self-evaluation</u>

Self-evaluation requires the comparison of one's own behavior with a self-determined or externally determined standard (e.g., class rules) (Kanfer, 1977). Due to the nature of the self-evaluation technique, it is usually included as part of an intervention package. For example, the effectiveness of self-evaluation was demonstrated in a study by Rhode, Morgan, and Young (1983), which targeted appropriate classroom behavior (i.e., classroom rules compliance) and correct academic work of six students referred for classroom behavior problems. After the researchers collected baseline data, students were trained 3 hours a week in a special education classroom. Training focused on increasing appropriate classroom behavior and teaching students to use self-evaluation procedures. During phase one, classroom rules were introduced, discussed, and modeled. At first, teachers rated students on a zero to five point rating scale with each point representing specific a level of compliance to classroom rules and accuracy of work completion. At the end of a 15-minute interval students were given feedback and points were assigned contingent upon academic work and classroom behavior. Points were later exchanged for edibles and toys at the end of each session. In the second phase, students rated their own behavior on the same scale and then compared their self-evaluations with teacher ratings at designated intervals, to ensure accurate self-evaluations. This time points were given contingent upon appropriate behavior and the accuracy of reporting behavior, as indicated by matching ratings with teachers. Specifically, matching ratings resulted in bonus points, while ratings that differed by more than one point (higher or lower) resulted in no points. Matching was at first required by all students ($n = 6$), then was faded until only "surprise" matches were administered. Next, after attaining at least 80% appropriate classroom

behavior in the resource room, students returned to their regular classrooms, where they continued rating their behavior, only they compared their ratings with teachers ratings less frequently. During this time students reported to the resource room daily to exchange their points. When behavior had improved, self-evaluation procedures were faded by extending self-rating periods and making point exchanges variable across days. Finally, point exchanges are completely eliminated with verbal feedback continuing on a random schedule.

Results of the study indicated that, as a group, student's appropriate behavior was 54% higher in the regular education classroom. When all forms of the intervention were withdrawn appropriate behavior of 4 students was significantly higher (63%) than before program implementation. The other 2 students also demonstrated higher percentages (39% and 51%) of appropriate behavior, although treatment gains had to be maintained by booster sessions of the intervention.

Self-reinforcement

Basic self-reinforcement requires a person to self-deliver a consequence they deem as having positive reinforcement qualities (Shapiro & Cole, 1994). In self-management interventions, the self-reinforcement component rarely stands on its own, rather is part of a package where one monitors one's own behavior, objectively evaluates it, and self-administers rewards for behavior that satisfies a performance criterion (Heiby & Campos, 1989). For example, Arnold and Clement (1981) included a self-reinforcement component to a self-evaluation and self-recording package. The purpose of the intervention was to increase on-task behavior of four 6th grade boys. Worksheet completion was also recorded and considered as documentation of a generalization.

Researchers compared the effects of two treatment conditions labeled as contrived self-reinforcement and natural self-reinforcement. In the contrived self-reinforcement condition subjects compared their behavior with the definition of the target behavior at the sound of a tone (self-evaluation). When their behaviors were comparable with the target behavior they marked a note pad (self-monitoring). Participants further reminded themselves of their goal, again asked themselves if behavior observations matched the goal and then rewarded themselves for matches with a penny and by reading positive self-statements (self-reinforcement). The natural self-reinforcement condition followed a similar format. This time, students' self-evaluation was cued by the completion of a math worksheet, rather than a tone, and students made a mark for worksheet completion. Again they reminded themselves of their goal, asked if they were progressing towards the goal and then self-delivered reinforcement of repeating 1 of 3 positive self-statements. Results indicated an increase in both on-task and generalization (i.e., worksheet completion) behaviors for both the contrived and natural self-reinforcement conditions.

<div align="center">Past Reviews and Critiques</div>

Past reviews and critiques have researched self-management programs, summarized overall findings, and given recommendations for future self-management studies. In 1987, Fantuzzo, Rohrbeck, and Azar developed a standardized rating procedure, the Self-Management Intervention Checklist (SMIC), to rate the 30 school-based behavioral self-management studies pooled. Researchers focused variables such as subject and setting characteristics, training and maintenance details, and the degree to which intervention components were actually student-managed. Two years later, Fantuzzo and Polite (1990), employed the SMIC to review some of the same studies, plus

others (N = 42). Along with evaluating the student management of components, in this review researchers emphasized treatment effect size, generalization, social validity, and cost-effectiveness data. Hughes, Ruhl, and Misra (1989) examined self-management procedures of eleven studies implemented with students exhibiting behavior disorders in school settings. The researchers explored variables such as subject and setting characteristics, independent and dependent variables, training, effectiveness, generalization, student accuracy and involvement, and intervention "efficiency." Finally, Nelson, Smith, Young, and Dodd (1991) reviewed the self-management outcome research conducted with students having behavioral disorders. Along with reviews of self-management literature other experts in the field have offered insights on these and other issues related to the implementation of self-management interventions in the school setting (Brigham, 1992; Cole & Bambara, 1992). These reviews and critiques provided a springboard for the current review through their descriptions of advantages and limitations of past self-management literature.

<center>Advantages of Self-Management Interventions</center>

Previous research and common sense suggest that many advantages are associated with self-managed approaches to behavior management. For example, people use self-management skills daily to complete tasks, control their temper, and react appropriately in social situations. Well-managed skills assist people in starting and building relationships with others and acquiring and keeping employment. In these ways, self-management skills can be viewed as highly valuable in our society. Students exhibiting behavior problems may benefit from self-management training in the long run on a more personal level. Research suggests that when students exhibiting behavior

problems apply self-management skills they attract less negative attention (e.g., corrections, reprimands) from teachers, behave more similarly to their peers, they can improve their self-esteem, and learn responsibility for their own behavior and academic success (Young et al., 1996). As students become proficient in managing their own behavior and feelings, teachers can shift their attention from behavior management to academic programs. Looking specifically at generalization effects, Fantuzzo, Polite, Cook, and Quinn (1988) found that nine out of ten studies indicated that student-managed interventions had greater generalization effects than teacher-managed programs. Finally, self-management interventions are also more resistant to extinction than approaches established by externally managed programs (Hughes et al., 1989).

<center>Limitations in Self-Management Literature</center>

Limitations of self-management research have also been suggested in past reviews. Criticisms indicated that although students were active in the changing their behaviors, many aspects of self-management programming do not require student participation (Hughes et al., 1989). Fantuzzo et al. (1988) found a significant positive relationship between the number of student-managed components and treatment effect size. Previously, researchers reviewing self-management literature did not agree on whether self-management strategies should target on-task behaviors or academic productivity. According to reviews, self-management studies have failed to detail student and teacher training, and have not reported adequate data on generalization and maintenance, social validity, or treatment acceptability. Finally, reviewers suggest a need for the literature to provide support for the classwide implementation of self-management programs. Almost a decade of research has contributed to our knowledge of self-

management methods since these reviews and an update on the current status of self-management literature is needed.

Summary

Research has indicated that disruptive behaviors tend to be chronic and stable over time and students having disruptive behaviors present some of the most difficult challenges for teachers and school psychologists. Teaching student to manage their own behavior appears to effectively change disruptive behaviors and provide students with tools that potentially extend to other situations and throughout their lives. Advocates view self-management methods as effective, acceptable, and time-efficient intervention strategies for youth with disruptive behaviors. Individual or classwide implementation of self-management strategies can potentially provide the structure needed to assist in mainstreaming students and to reduce special education referrals for behavior problems, as well as promote personal responsibility and control for the entire class. Unfortunately, past reviews of self-management literature indicate that gaps in research limit the application of research findings. For example, studies have been conducted almost exclusively with small groups or individual students. The extent to which children demonstrating disruptive behaviors increase appropriate behaviors in general education classes when methods are implemented to an entire regular education class remains a question. The most recent review on self-management literature was published over nine years ago suggesting a need for a current review to document progress made in self-management research and to establish areas requiring future investigation.

Description of the Literature Review

Purpose

The purpose of this paper is to provide a comprehensive, up-to-date review and evaluation of self-management literature as it has been applied with children exhibiting disruptive behaviors. This review: (1) summarizes the progress of self-management literature in the last decade; (2) compares present research with past self-management reviews and criticisms; (3) provides an overview of current strengths and weaknesses in self-management literature; and (4) suggests areas for future research.

Review Outline

This review of literature examines the application of contingency-based self-management techniques to change disruptive behaviors of students and is presented in the following format. First, the literature is organized by the setting in which the studies took place (i.e., in general education, both general and special education, and then only special education classrooms) and procedures and results have been reviewed. Next, overall strengths and weaknesses of study variables are summarized and compared to criticisms suggested by experts in the field and in prior self-management literature reviews (e.g., Brigham, 1992 Cole & Bambara, 1992; Fantuzzo & Polite, 1990; Fantuzzo et al., 1986; Hughes et al., 1989). Then, the studies are presented in table form to provide a brief overview of the studies reviewed. Finally, suggestions are given for prospective research using contingency-based self-management procedures to change disruptive behaviors.

Method

Search Procedures

A computer search of the Psychlit and Educational Resources Information Center (ERIC) databases was employed to locate relevant articles for the proposed literature review of contingency-based self-management techniques used for disruptive behaviors. Keywords for the search included such descriptors as self-management (i.e., self-recording, self-monitoring, self-evaluation, self-reinforcement), disruptive behaviors (e.g., calling out, out of seat, non-compliance), class-wide interventions, and classroom-based intervention. Additional articles were gathered from references provided within the primary sources.

Selection Criteria

The review was delimited by the following inclusion and exclusion criteria. Studies were included in this review if they employed a contingency-based self-management component (i.e., self-evaluation, self-monitoring, self-reinforcement) to increase appropriate behavior (e.g., hand-raising, working on assignment) and/or decrease disruptive behavior (e.g., calling out, being off-task, non-compliance). Due to the reviews emphasis on self-management interventions implemented to change disruptive behaviors at school, research subjects had to be enrolled in public schools, grades kindergarten through 12th grade, and be identified as generally disruptive, behaviorally disordered or having other externalizing disorders (e.g., ED, ADHD). Since the purpose of the review is to summarize the current status of self-management research as implemented with disruptive behaviors and compare the literature to past reviews and criticism, the review was limited to studies published after January of 1989, as this is the date of the most

current review, to date (May, 2000). Articles were further excluded if they focused on

target behaviors other than disruptive behaviors (e.g., academic interventions) and if

students were classified as having developmental delays (e.g., intellectually disabled,

autism).

A total of 33 articles were identified as meeting the described criterion. One study

(Harris, Graham, Reid, McElroy, & Hamby, 1994) contains two experiments and was

reported separately in this review. In both the general education setting and mixed

general and special education settings, seven studies examined contingency-based self-

management methods for disruptive behaviors. Twenty studies fulfilled selection criteria

in the special education setting.

Examination of the Studies

Articles were examined for the author(s), subject characteristics (n size, grade,

age), methodology (independent and dependent variables, study design), and training

procedures (trainer/trainer qualifications reported, time spent training students, and

training steps). Studies were further analyzed by the categories used as headings in

Tables 10, 11, and 12 (i.e., treatment fidelity, social validity, generalization, and

maintenance), as well as other categories found in the results and discussion sections.

Self-management Applied in General Education Settings

The literature search identified seven studies applying self-management

procedures in general education settings with students exhibiting excessively disruptive

behaviors. The methods were often applied as a prereferral intervention to help students

succeed in mainstream classes without special education services. Studies in the general

education setting looked at basic self-monitoring, self-monitoring plus matching, self-

monitoring/self-evaluation, and self-evaluation plus matching implemented with a small group of students (N = 3) and on a classwide basis.

Self-monitoring/Self-monitoring Plus Matching.

The method known as self-monitoring requires students to record their behavior by simple + / - or yes/no marks, as prompted by tones, teachers, or a visual prompt. To track student accuracy of self-monitoring, students' ratings are then compared with teacher ratings of students' behavior. Ratings corresponding with points that are exchanged for back-up reinforcers, based on a traditional token economy or response-cost system. These methods are employed in four studies conducted in the general education setting with different populations (e.g., students at-risk, classified LD, diagnosed ADHD) and some additional components (e.g., functional analysis, video feedback).

Storey, Lawry, Ashworth, Danko, and Strain (1994) employed a self-monitoring intervention to decrease disruptive behaviors of a kindergarten student, after a functional analysis was conducted. The study used a teacher cued self-monitoring program within an ABAB design to investigate changes in behavior. Baseline consisted of the collection of frequency data on disruptive behaviors exhibited by the student. After baseline, procedures for intervention phases one and two were conducted in the same manner. The teacher signaled the start of the session by turning on a tape recorder that played prerecorded tones, which signaled the teacher to observe and prompt Kurt, the target student. The teacher gave brief and specific feedback if the student displayed inappropriate behaviors. If Kurt engaged in appropriate behaviors, his teacher praised him and instructed him to draw a happy face on his self-monitoring chart. A third

classroom observer assessed treatment fidelity and the teacher completed a social validity questionnaire.

Outcome data indicated that the self-monitoring package successfully changed inappropriate behaviors in a general education classroom. Further, a functional analysis may assist in developing an individualized intervention by indicating the function of a student's disruptive behavior and offering a potentially more reinforcing consequence to appropriate behaviors. Data collected on treatment fidelity suggest that the teacher followed procedures with 97% accuracy, unfortunately authors did not discuss the frequency with which they collected treatment integrity data. The authors discussed two major limitations of the study. First, direct observations indicated the effectiveness of the intervention, whereas the teacher rated the student's behavior as better prior to its implementation. The authors note that such a discrepancy is rare and that additional informants may have been helpful. Second, researchers began the study near the end of the school year, therefore they did not collect generalization (across responses or settings), maintenance, or follow-up data. This lack of information impeded the assessment of the long-term effects of the intervention.

Grandy and Peck (1997) examined the effects of a self-monitoring plus matching program on reducing inappropriate behaviors (i.e., disruptions) and increasing appropriate behaviors (i.e., quietly listening and working) of a first grader. A multiple baseline across class periods design (i.e., story time, art, then during individual seatwork time) was used. The study began with a functional analysis, followed by an intervention training period and implementation phase. In the functional analysis phase authors concluded that the function of the student's disruptive behaviors was to gain adult

attention, which was given contingent upon appropriate behavior during subsequent phases. Student training consisted of a discussion of appropriate and disruptive behaviors, and practice and feedback of intervention procedures. During the intervention phase, both accurate recording and matching resulted in teachers giving reinforcers, two of which were driven by the functional analysis (i.e., continuous adult attention and an attention ribbon). For the first three intervention sessions the researcher provided the participant with feedback regarding the accuracy of his ratings and discrepancies were explained. Initially, self-monitoring was done on a 1 minute variable interval. Sessions lasted between 10-34 minutes. During fading of the intervention, interval lengths were gradually extended to a VI-5 minute schedule and the criterion required for reinforcement was increased.

Results extended findings by Storey et al., (1994) that self-monitoring, with the addition of a matching component, successfully decreased inappropriate behavior and increased appropriate behavior. Unfortunately, long-term effects and ease of implementing the intervention were inconclusive as the program was only implemented over a short time period and the experimenter implemented the program, rather than the classroom teacher. Authors employed the program only during the three most problematic times, causing them to question sustained effects of the treatment if in place over the whole day. Finally, initial use of tones elicited comments from other students and may have been disruptive. After the first two sessions and directions to ignore the tones other children did not appear to be distracted by the tones. Outcome data suggested that functional assessments may enhance self-management interventions by identifying

reinforcers that served as the function of the disruptive behaviors for non-disabled children in general education settings.

Edwards, Salant, Howard, Brougher, and McLaughlin (1995) evaluated the effectiveness of a self-management program with three elementary-aged students exhibiting symptoms of Attention Deficit Disorder (ADHD). Researchers employed an ABAB with follow-up design to determine changes in on-task behavior and comprehension of reading passages. First, teachers and teacher assistants were trained to record on-task behavior of students as prompted by tones. A one-week training period for students followed during which time teachers and students defined on- and off-task behaviors and students learned to self-monitor at the sound of the tones. After participants accurately recorded for three consecutive days matching procedures began, lasting three weeks. An accuracy criterion changed each week and determined points earned. Increasing the variable interval (VI) of tones faded the final self-monitoring plus matching phase. Finally, follow-up consisted of two probes conducted at one-month intervals. At the conclusion of the study, the researchers interviewed the three students and teacher assistants to evaluate the perceived effectiveness of the intervention and to elicit suggestions.

Results indicated that self-monitoring of on/off-task behavior within a response-cost token system increased attention to task. Although treatment effects varied among participants, on-task behavior increased an average of 37.5% from baseline to the self-monitoring plus fading phase. Data from the two follow-up probes (i.e., 30 days and 60 days after intervention termination) revealed treatment gains, with on-task behaviors ranging between 50 and 80%. Differential outcomes for the students led authors to

conclude that treatment features (e.g., length of self-management phase, reinforcement system) should be individualized to obtain optimal results. Unfortunately, social validity information was not discussed. Anecdotal comments solicited from non-targeted peers indicated that peers concentrated better when targeted students worked more quietly due to self-monitoring, suggesting that general education implementation of self-management programs could improve attention to task and productivity for the whole class.

Falk, Dunlap, and Kern (1996) replicated self-management procedures initially employed in a special education setting by Kern-Dunlap, Dunlap, Clarke, Childs, White, and Stewart (1992). The package consisted of self-monitoring via videotape feedback to facilitate appropriate peer interactions of children demonstrating internalizing (N = 4) and externalizing (N = 6) behavior problems and children evincing no behavior problems (N = 8). Screening and selection resulted in three groups of six students each. The study used a multiple baseline design across classrooms and all students participated in three experimental conditions: (A) baseline, (B) videotape feedback sessions with self-monitoring, and (C) video feedback plus self-monitoring with tangible rewards. Baseline involved the collection of frequency data on appropriate/inappropriate peer interactions during 15-minute game playing sessions. Sessions consisted of students playing games with classmates and no adult feedback. Training sessions consisted of students meeting individually with the experimenter to discuss appropriate peer interactions and to learn how to use the self-recording forms. During video feedback plus self-monitoring conditions participants viewed 10 consecutive 30-second segments of the previous activity session as a group. After each session students recorded the appropriateness of their peer interactions. In the third condition, video feedback plus self-monitoring and

rewards, the class could earn tangible rewards contingent on the appropriate behaviors and self-monitoring accuracy of a randomly chosen student.

Results indicated that self-monitoring via video feedback effectively improved peer interactions for participants, with the additional use of rewards being more effective. Overall, appropriate interactions increased to the degree that blind observers had difficulty identifying students previously labeled as having behavior problems. The study demonstrated the effectiveness of the procedures when administered to a heterogeneous group of students from inclusive classrooms. Unfortunately, time constraints did not allow for the collection of maintenance and follow-up data, which left many questions about treatment effectiveness unanswered.

Self-monitoring/Self-evaluation

Self-monitoring extends to self-evaluation when a student compares his or her behavior to a set criterion (e.g., class rules). In the general education setting, one group of researchers introduced students to self-management procedures with self-monitoring and then added a self-graphing, self-reinforcement, and self-evaluation techniques.

DiGangi, Maag, and Rutherford (1991) evaluated the effects of four self-management techniques (i.e., self-monitoring, self-graphing, self-reinforcement, and self-evaluation) on improving on-task behavior and academic performance. A multiple treatment design and a total of six experimental phases were employed to document behavior changes of the two female participants, classified as having LD. Phase one, self-monitoring only, was followed by self-monitoring and self-graphing of on-task behavior. During phase three students included a self-reinforcement statement ("I did a really good job") at the end of the session. Condition four added the final self-evaluation component

to the package, where students self-reinforced differentially depending on tally marks earned for on-task behavior. During the fading procedure students only self-evaluated and self-reinforced their behavior.

Outcome findings indicated that self-monitoring of on-task behavior resulted in increased on-task behavior and academic performance for both participants. The additional self-graphing component further increased the desired behaviors, suggesting that self-graphing may be a powerful variable to enhance the effectiveness of self-monitoring on both on-task behavior and academic performance.

Self-evaluation Plus Matching

The two remaining articles from the general education setting examined the effects of self-evaluation plus matching and programming the intervention to other settings (i.e., a playground, several other classes in a junior high school).

Hoff and DuPaul (1998) adapted the self-evaluation plus matching system from Rhode et al. (1983) in a multiple baseline across settings design, to assess its effects on decreasing the disruptive behavior of three 4th grade students. After baseline, a token reinforcement system with verbal feedback introduced the students to the rating system. In the next phase, teachers individually taught students to self-evaluate and record their own behavior during three 20-minute sessions in a general education setting. Students and teachers matched ratings less frequently after rating accuracy had been established and acceptable student behavior stabilized. Less intensive procedures were implemented in two other settings (i.e., playground and a second classroom lecture setting) to evaluate the possibility of generalizing behavior changes. At the conclusion of the study students

and teachers completed intervention-rating profiles to assess the acceptability and
viability of implementing the intervention in the general education setting

The self-evaluation plus matching package effectively maintained teacher-
mediated reductions of disruptive behaviors in a general education setting. Target
students reduced their disruptive behaviors in class and at recess to a level closer to that
of classroom peers. Although desired behaviors did not generalize to other settings
spontaneously, data indicated that the programming of less intensive procedures assisted
in improving behaviors in two additional settings. The authors discussed several
limitations that should be addressed in future research. First, teachers compromised
treatment integrity as they "sometimes forgot" to implement the intervention. Second,
time constraints limited long-term evaluation of the program. The presence of order
effects may have also affected the outcomes of the study. Specifically, the program first
controlled student behavior through an externally managed token economy system and
then transferred behavior control to the students.

Despite noted limitations, results extended self-management literature by
documenting maintained reductions of disruptive behavior across both structured and
unstructured settings. Social validity ratings indicated that students liked the intervention
and noticed improvements and that teachers felt that the program benefited the students
and was an appropriate prereferral intervention. Finally, researchers employed and
recommended this self-management treatment package as a pre-referral intervention to
help students remain in general education classes.

Peterson, Young, West, and Peterson (1999) extended the literature by
implementing a self-management intervention with an entire classroom and programming

the intervention into several other settings. First, parents, teachers, and administrators nominated participating students for placement in a Prevention Plus program. Students attended the Prevention Plus class for one period each day. The class included academic tasks in math, spelling, writing, and reading, and activities to promote social skill development and substance abuse prevention, as well as self-management training, where students self-evaluated self-evaluate their classroom behaviors compared to a class criteria.

In the first phase, the student and the teacher compared behavior ratings four times per class period. When students' ratings of "H (honorary)" or "S (satisfactory)" matched teacher ratings 75% and then 80% of the time for more for 5 consecutive days, teachers reduced student/teacher comparisons. When students matched only once daily they self-monitored additional behaviors (i. e., on time, greet teacher, on-task). Five consecutive "H" matches earned students the opportunity to generalize the program to a regular education class. In the programmed generalization phase, Prevention Plus teachers explained rationale, rating procedure, and how to discuss non-matching ratings to general education teachers. Students presented the self-evaluation forms to teachers, calculated points, and learned the different expectations of their teachers.

At the end of the program students implemented the program in 3 to 6 of their classes with 83% (24 of 29 students) generalizing self-evaluation plus matching procedures to all 6 classes. Previous research has only the generalization of self-management procedures to one or two settings; this study extended self-management literature by showing successful implementation of self-evaluation plus matching procedures in up to six different settings with six different teachers. Twenty-nine high-risk students met teacher

expectations in 96% of their classes. These results indicate promise for the implementation of such programs to improve classroom behavior of growing high-risk populations.

Summary of Self-Management Research Applied in General Education Settings

Self-management research conducted in regular education settings to decrease disruptive behaviors is relatively sparse with only seven articles fulfilling the criterion of this study. In the general education setting, a single self-management technique was most commonly employed, although supplemented by other intervention components (e.g., token economy). Storey et al. (1994) used a simple self-monitoring procedure that depended on teacher cueing. Three studies (Edwards et al., 1995; Falk, et al., 1996; Grandy & Peck, 1997) employed self-monitoring plus matching interventions and two studies (Hoff & DuPaul, 1998; Peterson et al., 1999) implemented self-evaluation plus matching procedures. DiGangi et al. (1991) implemented a complex variety of self-management procedures including self-monitoring, self-graphing, self-reinforcement, and self-evaluation. With the exception of DiGangi et al. (1991), all studies employed token reinforcement system, two of which were supported by functional assessments (Grandy & Peck, 1997; Storey et al., 1994), and one included a response-cost component (Edwards et al., 1995). Peterson et al. (1999) gave the only example of implementing self-management procedures on a classwide basis. All studies supported the use of self-management programs in general education settings to increase appropriate behavior and decrease inappropriate behavior.

Self-Management Applied Across Both Special and General Education Settings

The overall success documented with self-management techniques has influenced practitioners to apply or teach the initially time intensive procedures in the special education classrooms and then extend the intervention into general education classes to assist in mainstreaming efforts. The following seven studies implemented self-management methods in both special and general education settings. Authors applied previously discussed self-management procedures in the combined settings. Researchers studied how self-management effected self-concept, different target behaviors, and the possibility of reducing the demands on teachers by using peers to facilitate generalizing the intervention to the general education setting.

Self-monitoring

In the combined setting, authors explored the effects of adding self-instruction and peer tutoring components and targeting different behaviors. In addition to changing behavior, one study examined the impact of self-monitoring plus matching on self-concept, a relatively unexplored measure.

Prater, Hogan, and Miller (1992) examined the efficacy of a self-monitoring program in teaching a ninth grade student identified as having LD and BD to manage on-task behaviors and to generalize improved behavior to two general education classes. Researchers used observational data, academic performance data, and norm-referenced testing to evaluate the effectiveness of the technique. Observers took data on four behaviors: staying seated, eyes on work, no talking/interrupting others, and raising hand for questions. The student received training in the resource room to self-monitor his on-task behavior at the sound of tones by viewing a poster or visual prompts of the desired

behavior. As on-task behavior improved and stabilized visual prompts replaced the audible cues and the student only self-monitored when "he thought of it." The last phase of the intervention in the resource room, consisted of the elimination of the self-monitoring form and only the visual prompt poster remained. In the first general education classroom (mathematics) the student marked the self-monitoring form when he thought of it. A visual prompt poster replaced self-monitoring during fading. A second general education teacher became aware of the student's progress and requested the technique be applied his English class, procedures were identical to those implemented in the student's math class.

According to outcome data, the use of self-monitoring procedures corresponded with increased on-task behavior, academic performance, and norm-referenced test scores of the participating adolescent classified as having LD and BD. The student learned and applied the self-management procedure in the resource room and then, through less intensive methods, generalized the procedures and on-task behavior to two general education classes. Other benefits accompanied the program. For example, teachers kept the visual cue posters of appropriate behaviors for their classes and the success of the program prompted other faculty to become interested in special education services and in collaborating with special educators.

Maag, Reid, and DiGangi (1993) assessed the differential effects of self-monitoring attention, accuracy, and productivity by employing multiple baseline procedure across subjects. Fourth (N=4) and sixth grade (N=2) students were trained on self-monitoring procedures in the resource classroom during one 20-minute session immediately before the first session of each treatment phase. All treatment conditions

occurred in the general education classroom. Each self-monitoring phase was delineated by a 24-hour lapse between conditions, color-coded sheets, and variably pitched tones. During the self-monitoring of attention condition students responded to tones by recording whether they were on-task. Self-monitoring of productivity required students to mark the problem they were working on and count/record the number of problems completed since the last tone. The self-monitoring of accuracy condition consisted of students counting and recording the number of problems completed correctly since the last tone. Students circled and corrected incorrect answers during the last 10 minutes of the work session. At the conclusion of the self-monitoring phases researchers asked students which procedure they preferred and then students continued with the chosen intervention for four to five days. After the choice condition, the intervention faded with the discontinuation of tones, students self-recorded when they thought of it, and then stopped self-monitoring altogether. Authors collected follow-up data on students' on-task behavior and academic productivity and accuracy once immediately after fading and a second time 10 days later.

Results concurred with previous research (Harris, 1986; Reid & Harris, 1993) by demonstrating that the choice of behavior targeted does not effect on-task behavior, but does effect academic productivity and/or accuracy. Specifically, self-monitoring academic outcomes more effectively increases academic productivity and accuracy than did self-monitoring attention to task. Overall, these studies also found that students preferred to monitor academic outcomes (i.e., performance and accuracy). Although this study coincides with past research on preferences of self-monitoring targets, choices of fourth graders and sixth graders differed (i.e., self-monitoring of productivity and self-

monitoring of accuracy respectively). The interaction of the participants' ages and the outcomes from the different self-monitoring targets also varied. For example, when fourth graders self-monitored productivity the number of problems completed and completed correctly increased. For sixth graders self-monitoring of productivity increased the number of problems completed, whereas self-monitoring of accuracy was needed to increase the percentage of correct answers. This suggests that the effectiveness of self-monitoring may vary as a function of age by the interaction of target variables and grade levels. Future research is needed to confirm both treatment effects from different self-monitoring target behaviors and treatment preferences as a function of grade. Treatment effects decreased during fading and follow-up, the authors suggested that longer cueing periods and future research on more efficacious fading procedures may remedy this problem.

Gregory, Kehle, and McLoughlin (1997) studied the effects of a self-monitoring plus matching procedure on the on-task behaviors and self-concept of three students (mean age = 13:6) classified as having behavior disorders. After a baseline condition, subjects were trained on the self-management program in the resource room and earned points for appropriate classroom behavior (e.g., following directions, having a positive attitude). After consistent behavior improvement, students moved to the second phase, which differed from the training phase only by extending rating periods. Following a return to baseline, phase three consisted of a reduction in the frequency of matching in the resource room. Procedures were then initiated in the general education classroom at the same low frequency. In the final phases students and teachers matched less frequently.

Findings suggested that self-monitoring plus matching procedures positively effected behavioral self-control, which appeared to correspond with changes in self-concept scores, as measured by weekly progress reports and pre-post measures of the Piers-Harris Self-concept Scale (Piers, 1984). Results also illustrated the practical utilization and ease with which students can be trained to self-manage on-task behavior in a special education setting and then, with less intensive procedures, generalize procedures and appropriate behaviors to a general education classroom.

Hogan and Prater (1993) evaluated the effects of self-monitoring and self-instruction in combination with a peer tutoring program. Two high school students classified as having a behavior disorder (subject one/tutor) and a learning disability (subject two/tutee) self-monitored their on-task, academic and disruptive behaviors. A multiple baseline across settings (general and special education classes) with reversal designs was used to implement the intervention. The tutor participated in (B) peer tutoring, (C_1) self-instruction, and (C_2) self-instruction plus self-monitoring with an overall procedure sequence of $ABAC_1C_2A$. The second student, the tutee, followed an ABABCAD sequence, with B, C, and D representing peer tutoring, self-monitoring, and follow-up, respectively. Peer tutoring conditions began with the tutee reading and spelling words from a visual display, with corrections given as needed by the tutor. Next, the tutor read the word and the tutee repeated the word and spelled it. Finally, the tutor computed the percentage correct, reinforced the tutee, and recorded the data. Self-monitoring procedures differed somewhat for the two students. At first, the tutor placed a mark on a sheet for every disruptive behavior displayed. Then researchers added a sequential list of self-instructions (i.e., stop, count, and think before reacting) to assist in

decreasing problem behaviors. Self-monitoring for subject two required him to mark on- or off-task behavior as cued by an auditory tone. The interventions concluded with fading procedures adapted to each student and setting.

Findings supported past research in that both self-monitoring and peer tutoring effectively increased on-task behavior and improved spelling/vocabulary test scores of the tutee. The study demonstrated the utility of the intervention with high school students having behavioral and learning problems. The observers were not blind to the experiment and the possibility of order sequence effects limited the study.

Self-monitoring/Self-evaluation

A single study exemplified how to implement self-monitoring and self-evaluation procedures in the combined general and education settings. The intervention uniquely involved students in setting and assessing their own behavior goals.

Snyder and Bambara (1997) evaluated the effects of self-management on increasing classroom survival skills (i.e., on-time/ready to begin behaviors, having writing utensil, paper, book, and homework) of three secondary students. Researchers employed a multiple baseline across participants to assess the effectiveness of self-management procedures trained in the resource room and demonstrated in both the special education and general education classrooms. In comparison to most self-management research, the authors made exceptional efforts to involve the students in choosing behaviors and developing/modifying program components. All intervention and fading phases continued until students performed classroom survival skills at a designated criterion level. During the first intervention condition, students discussed classroom survival skills and identified individual problem areas. On a self-monitoring

form students set goals to improve skills and recorded their progress in a checklist manner. Participants used a student log to self-evaluate their performance by counting the total number of behaviors completed and answering questions (i.e., what did/didn't I do to complete my goal? and what do I need to do next time). A final component labeled as self-reinforcement, required students to rate the degree of satisfaction with their efforts to fulfill goals on a zero to five point Likert scale. Students implemented the procedures with very little verbal guidance from teachers. The second intervention phase consisted of training students to generalize the program to a mainstream class. Forms were color-coded for the two settings and students set a new goal for each of the two classes every week, as guided by self-evaluations of performance from the previous week. The teachers gradually withdrew the intervention during three fading phases that involved less frequent verbal feedback and condensed self-monitoring forms. During the maintenance condition students discussed academic and behavioral progress with the special education teacher once a week, as part of the class routine, and students chose whether they continued to self-monitoring their behaviors. Social validity data consisted of progress reports, observations of peer-comparison behavior, teacher rating scales, and student interviews.

The self-monitoring/self-evaluation intervention effectively assisted students classified as learning disabled in increasing classroom survival skills in the special education classroom (training setting) and was successfully programmed to generalize to the general education classroom. Social validity measures indicated that the behavior of target students had improved substantially (progress reports), even to levels comparable to classroom peers (direct observations). Students indicated that they liked the program

(student interviews) and teachers rated it as highly acceptable and easy to implement. Interestingly, authors reported improvement in targeted skills in the general education classroom before students had been fully instructed to generalize self-management procedures. Results add to current self-management literature by achieving cross-classroom setting generalization without post training program changes in a general education classroom. This study also extends possibilities of self-management interventions by being implemented to increase secondary classroom survival skills. Finally, the study presents a model intervention due to the authors' exceptional efforts to involve students in choosing target behaviors, and developing and modifying the self-management procedures, which may increase program ownership by students.

<u>Self-evaluation Plus Matching/Peer-mediated Facilitation of Generalization</u>

Self-management procedures place high demands on teachers in the initial stages. Two studies investigated an alternative method of generalizing self-evaluation procedures to a second setting through the use of peers, in hopes of reducing demands on general education teachers.

Smith, Nelson, Young, and West (1992) examined the efficacy of a self-evaluation plus matching in increasing on-task behavior of students, through the implementation of a multiple baseline across settings design. The resource teacher taught target students and peers self-evaluation expectations in the resource classroom. Target students matched with the resource teacher or classroom peer, in the special and general education classrooms respectively, one to three times per half-hour during a 30-minute independent seatwork session. In addition, participants learned a sequence of goal-setting procedures including labeling and sequencing tasks, dividing assignments across days,

and setting goals for accomplishing work. Reducing the frequency of rating matches and increasing the goal setting steps required to earn points faded intervention procedures

Outcome data indicated that the described procedures reduced disruptive behavior of high school students with mild handicaps. The intervention also positively impacted the quality and quantity of subjects' academic work. Findings suggested that treatment effects failed to generalize spontaneously, but did carry over to a second setting (i.e., a general education classroom) when facilitated by variant procedures and peer assistance. Unfortunately, researchers did not collect data on treatment fidelity and the reliability of peer ratings and peer social interactions with target students. Information on the demands placed on the peer facilitator and the effectiveness of the fading procedures were also lacking. Authors called for future research to examine these and other issues (e.g., effects of intervention in unstructured settings, component analysis or critical self-management features, and why off-task behaviors resumed during final intervention stages).

DuPaul, McGoey, and Yugar (1997) used classroom peers to facilitate the generalization of self-evaluation plus matching procedures for students with the desired outcome of mainstreaming special education students. A multiple baseline design across target students was employed for students having behavior disorders and an AB design was used for the two classroom peers. Observational data, pre- and post-intervention teacher, self, and sociometric ratings evaluated the effects of the program. First, in the special education classroom, students earned points depending on ratings of classroom behavior and work completion (Rhode et al., 1983). Next, a teacher- and then peer-mediated self-evaluation phase was introduced through discussion, role-play, and practice. Like the target students, peers exhibited average or below average classroom

behavior, but their behaviors allowed them to access education without special education services. Target students were mainstreamed into the general education classroom after peers demonstrated proficiency at rating the target students' behaviors. Immediately following the general education class, the target student and peer rated each other's behavior and both reported ratings to the special education teacher. Both students earned points that were exchanged for backup reinforcers. The special education and mainstream teachers communicated daily about the students' behavior.

Outcome data indicated that general education peers successfully facilitated mainstreaming students with behavior disorders by mediating self-evaluation plus matching procedures initially managed by special education teachers. During the intervention, both target students decreased negative behaviors and increased positive interactions in the resource room and in the general education classroom, with the help of peer-mediated self-evaluation procedures. Teacher and student ratings suggested increased behavior control of the target student and both reported the intervention as effective, practical, and acceptable in assisting mainstreaming efforts. Special education classmates indicated that they liked the target student more after the intervention. According to ratings, the behavior of the peer-facilitator also improved after the intervention. Unfortunately, sociometric ratings of peer helpers suggested a decline in acceptance by general education peers. Another drawback was the variability in behavior documented by observation data, suggesting that consistent behavior change may not occur with all students classified as behavioral disordered. Limitations of the study include small sample size and the lack of data in non-programmed settings or on other behaviors (i.e., academic performance) and post-intervention data. Authors emphasized

factors critical to the success of the intervention. First, both the special education and general education teachers must be invested in mainstreaming efforts and agree on what time and subject area in which the student will experience the most success in changing behaviors. Daily and consistent communication must occur between the special education and mainstream teachers. The study addressed concerns common with mainstreaming efforts. For example, the general education teacher saw the success of the intervention prior to its application in the mainstream setting. Also, the pairing of special education and general education students may foster prosocial peer interactions, although peer acceptance of the target student may have been enhanced due to the opportunity to earn backup reinforcers. Future research should address the impact of sociometric standing of peer buddies and the influence of general education transitions on special education students.

Summary of Self-management Research Applied Across Both General and Special Education Settings

As with research in the general education setting, only seven studies evaluated self-management methods in combined general and special education settings. Research conducted in both settings explored more combinations of self-management techniques when compared to studies in only general education settings. Self-monitoring alone was employed by both Maag et al. (1993) and Prater et al. (1992), whereas Gregory et al. (1997) used self-monitoring plus matching procedures. Hogan and Prater (1993) utilized self-monitoring and self-instruction procedures and provided academic tutoring by peers. Snyder and Bambara (1997) implemented self-monitoring, self-evaluation, and self-reinforcement in conjunction with problem identification and goal setting, in a method

that proved to involve the students the most in their behavior and academic plans. Finally, self-evaluation of behavior was matched with first the teacher and then a peer in studies by DuPaul et al. (1997) and Smith et al. (1992), with the later adding a goal setting component. Again, all studies documented significant treatment gains and demonstrated the effectiveness of self-management training in the special education classroom in changing behavior in general education classrooms and set an example of special education support in helping to mainstream students.

<div align="center">Self-management Applied in Special Education Settings</div>

The majority of studies (20 of 34) implemented self-management procedures to change disruptive behaviors in special education settings. These articles are organized by self-management method, researchers study of intervention components and targets, and group or classwide application of procedures.

Self-monitoring/Self-monitoring Plus Matching

In the special education setting six studies employed variations of self-monitoring and self-monitoring plus matching procedures. Researchers implemented self-reinforcement and social skill instruction as additional components combined with the basic self-monitoring methods.

Cavalier, Ferretti, and Hodges (1997) examined the efficacy of adding self-monitoring to reduce the inappropriate verbalizations of two adolescents with learning disabilities, who were not progressing in the existing classroom token economy. Researchers implemented the package within a multiple baseline across subjects design. Students learned to self-monitor their behavior. Upon meeting a performance criterion of exhibiting five fewer occurrences of the target behavior than in the previous session,

students earned a reinforcer and progressed in the classwide levels system. Teachers discontinued the intervention when students met the terminal objective of no more than three inappropriate verbalizations per session for 10 consecutive sessions.

Findings suggested that the addition of a self-management package to a token economy reduced inappropriate verbalizations from 65-100 to a near-zero rate within 19 experimental sessions. The data indicated that students self-recorded inaccurately during the early stages of the intervention, but that as accuracy improved inappropriate verbalizations decreased. Authors reported that the reduction of inappropriate verbalizations contributed to a more relaxed atmosphere with fewer threats, distractions, teacher reprimands, and increased teaching time.

Prater, Joy, Chilman, Temple and Miller (1991) examined the effects of individualizing self-monitoring methods to increase on-task behavior of five adolescents with learning disabilities. All studies involved self-monitoring training, program implementation, and fading intervention procedures. In addition, some students received reinforcement for exhibiting desired behaviors. Intervention and fading procedures (e.g., reinforcers, and VI tones) were individually adapted to the needs of each student. For example, when self-monitoring alone was not effective for a student, researchers added a reinforcer component.

Overall, results indicated that the self-monitoring procedure successfully assisted adolescents classified as having LD in increasing on-task behavior. Limitations of the study included inconsistent behavior throughout baseline conditions, program implementation almost solely by graduate students with little to no teacher involvement, and the lack of fading procedures and follow-up data due to changes in the graduates

practicum assignments. In conclusion, however, the effectiveness of the intervention was demonstrated across studies supporting the adaptability and generalizability of the procedures.

Stewart and McLaughlin (1992) employed an ABAB design to evaluate the effects of self-monitoring in reducing off-task behavior of a high school student classified as having BD and ADHD. During self-monitoring phases the classroom teacher wrote the date and starting time on a sheet for the target student. The target student and a classroom peer marked on- and off-task behaviors as they took place during five-minute intervals. Additionally, the student observer marked the severity of the off-task behavior on a scale of one to three.

Outcome data showed that the self-monitoring procedure successfully reduced off-task behavior of this student. A second goal of the study was to increase academic progress through increasing on-task behavior, however, this goal was unmet and generalization data were not discussed. Authors stated that future research should address the value and effects of praising on-task behaviors for students exhibiting ADHD symptoms, as they felt praise was an important component, the effects of which were not assessed.

Houghton (1991) evaluated the behavior change of a 1st grader, Clive, using a self-monitoring procedure. The researcher utilized simple stick figures that demonstrated the desired behaviors to cue Clive to exhibit on-task behaviors (i.e., raise hand to speak, sit nicely, and fold arms). Baseline data was collected in the special education setting only. Thereafter, Clive's behavior was observed in both special education and mainstream settings, although procedures were only in place in the special education

setting. During the intervention phase, the support teacher described the target behaviors and explained the cue card before every lesson. During the lesson, the support teacher pointed to each drawing and asked Clive if he had demonstrated it in the last five minutes. Positive responses earned Clive a sticker for his self-monitoring chart. One week after the study concluded additional observational data was collected. During this phase Clive self-monitored and self-reinforced, however the teachers' cue was reduced to telling him that five minutes had passed.

Results indicated that the self-monitoring intervention led to a decrease of inappropriate behavior in the special education classroom. Reductions of inappropriate behaviors appeared to generalize to the mainstream setting without extra programming in the second setting. The author questioned, however, whether generalization effects were enhanced as Clive may have associated the presence of the observer in the mainstream classroom with earning stickers. Generalization data may also be inaccurate as no observation data were taken in the mainstream class prior to the intervention. Although effective, this intervention appeared difficult to implement due to the high degree of teacher involvement necessary.

Hertz and McLaughlin (1990) examined the effects of a self-monitoring plus matching procedure on the on-task behavior of two adolescents receiving special education services. The procedure was implemented in a multiple baseline across individual students design and consisted of students marking their on-or off-task behavior when they thought of it, at a minimum of once every five minutes. At the end of the class period (55 minutes) students and teachers tallied and compared on-task behavior marks. The intervention phase lasted 12 and 16 days for subjects one and two, respectively.

Follow-up data were collected both nine weeks and thirteen weeks after the discontinuation of the intervention.

Findings indicated that the on-task behavior of the two students increased with the implementation of the self-recording procedures and that treatment gains were maintained four to five months after the intervention terminated. Unfortunately, interobserver agreement data was low, reportedly due to the vague definition of on-task behavior, time demanding procedures for the teacher, and possibly also the lack of practice sessions provided for teachers and teacher aides. The sparseness of rewards (i.e., monthly exchange of tokens for reinforcers) may also have insufficiently reinforced on-task behavior. Finally, students were hesitant about continuing the program after on-task behavior had improved considerably. Researchers suggested that the intervention be discontinued and used only intermittently as need after adolescents demonstrate improved behavior.

Moore, Cartledge, and Heckaman (1995) examined the effects of a self-monitoring and social skill instruction package on appropriate/inappropriate peer interactions and reactions-to-losing/winning behaviors. Researchers employed a multiple baseline design with three ninth graders identified as EBD. Social skills instruction sessions occurred for 30-minutes daily, in which teachers introduced and taught target behaviors through discussion, role-play, modeling, and homework. Following instructional periods, students participated in a 30-minute game playing session and then a 20-minute gym class, where observational data were collected. During week three researchers instructed students to self-monitor their performance of desired behaviors. After game playing sessions and gym class, students completed self-monitoring forms,

graphed the progress of behavior change, and discussed their behavior. The students continued to self-monitor daily, however, daily discussions were reduced to one to three times a week during fading.

Results demonstrated that the eight-week self-monitoring plus matching, social skills instruction intervention had a positive effect on the targeted behaviors during both the 30-minute game playing activity and the 20-minute gym class. Unfortunately the study did not explore the effects of individual package components (i.e., social skills versus self-monitoring).

Self-monitoring/Self-evaluation

Videotaping students' behaviors has proved to be a useful method of documenting behavior change. Researchers of self-management programs have extended the uses of videotaping, by providing students with an opportunity to self-monitor/self-evaluate their behavior and receive feedback regarding their behavior through post-session viewing of their behavior.

Kern-Dunlap et al. (1992) videotaped students and then viewed, self-monitored and discussed their behaviors during feedback sessions with self-monitoring to improve social interactions of students with emotional difficulties. A multiple baseline design was used with the intervention replicated across the five participants. All sessions included a 20-minute videotaped game playing activity that involved little adult interaction. After collecting baseline data, the video feedback phase commenced. This condition consisted of 10-20 minutes of individual feedback for each student on a daily basis prior to the following activity session. Students were initially trained with descriptions and examples of inappropriate and appropriate peer interactions, followed by students correctly

classifying presented scenarios. Students and teachers viewed 10-minutes of videotape, stopped at 30-second intervals, and monitored the students' appropriate and inappropriate peer interactions. Students earned points for good behavior and accurate self-monitoring. Inappropriate behavior resulted in a discussion of more positive alternatives of interacting with peers. Discussion about positive interactions and matching with the facilitator were quickly faded due to low levels of undesirable behaviors and consistently high levels of student accuracy.

Findings demonstrated that students classified as having emotional and behavioral disorders effectively increased the ratio of desirable to undesirable peer interactions through the implementation of a video feedback plus self-monitoring package. Unfortunately, however, the outcome may have been influenced by the timing of feedback procedures, which occurred less than four hours prior to the next videotaped session. Other limitations were also present in the study. First, the combination of procedures made it difficult to assess the efficacy and necessity of each component. For example, the design of the study made it unclear whether the intervention would have been as effective with videotaping plus feedback only or videotaping plus self-monitoring only. Second, the special education classroom setting may have confounded results in that students may interact differently with peers having the same difficulties than with "normal" peers. Third, social validity of the dependent variable (i.e., appropriate peer interactions) may vary as a function of the setting or context of peer interactions. These limitations were explored in other studies through modified applications of this intervention.

Addressing these limitations Kern, Wacker, Mace, Falk, Dunlap, and Kromrey (1995) took two different approaches to the video feedback plus self-monitoring package. In the first experiment, researchers added intervention components one at a time (i.e., rewards alone, discussion plus rewards, and self-monitoring plus rewards). Results suggested the necessity of the self-monitoring component, as students improved peer interactions substantially only after the self-monitoring phase. In the second experiment researchers implemented the modified intervention in a group setting and administered two measures of social validity. Classroom one followed a baseline (A), self-monitoring plus rewards (B), AB, self-monitoring only (C) plus fading procedure, whereas classrooms two and three followed a baseline (A), self-monitoring plus rewards (B), rewards only (C) design. The outcome data in the second experiment demonstrated that the implementation of a video feedback plus self-monitoring package can feasibly and effectively improve peer interactions of small groups of students classified as having emotional and behavioral disorders. The results were extended by the previously discussed study, Falk et al. (1996), which demonstrated the effectiveness of the intervention when applied in small heterogeneous groups of students that exhibited a variety of behaviors (i.e., internalizing disorders, externalizing disorders, and no identified behavior problems).

<u>Self-evaluation Plus Matching</u>

The effectiveness of self-evaluation training on improving student conduct in the absence of supervision was evaluated with some variations in three studies (Ninness, Ellis, Miller, Baker, & Rutherford, 1995; Ninness, Fuerst, & Rutherford, 1995; Ninness,

Fuerst, Rutherford, & Glenn, 1991). Procedures of the most recent study will be described in detail followed by a summary of findings from all three studies.

Ninness et al. (1995) assessed the efficacy of a self-evaluation plus matching and social skills instruction package in decreasing off-task/disruptive behaviors of two Junior High School students in unsupervised settings. A multiple baseline across settings design was used during four conditions. Baseline data was taken during 20-minute videotaping sessions of students four consecutive days. During this time teachers told students to self-manage their behavior, although no contingencies were in effect and teachers vacated the classroom. Baseline data were also taken during transition times, for a minimum of 2.7 minutes per session. Next, a five-week training period began where students learned social skills and self-evaluation plus matching procedures, as described by Rhode et al (1983). Students earned points for accurate self-assessment of on-task behaviors. The points enabled participants to move up a reinforcement pyramid, that permitted students access to tangible rewards, social privileges, and increased self-evaluation increments (e.g., three times per hour to one time per hour). In addition to supervised training sessions, students had the opportunity to rehearse skills during short (two to three minutes) unsupervised sessions and during 20-minute sessions each Friday. During unsupervised sessions teachers and teacher assistants left the classroom after telling students to use learned social skills and to self-manage their behavior. Students self-evaluated their performance upon the return of adult supervision. After students demonstrated skill acquisition and increased skill use, researchers exposed them to "red flag" trials or disturbing situations (e.g., highly demanding task, peer provocation, or unfair reprimands from teachers). Following red flag trials students were debriefed and

asked to self-evaluate their response to the event. Finally, a series of post-training experimental conditions commenced, including prompted self-evaluation in the absence of adult supervision both with and without peer distractions, unprompted and unsupervised self-evaluation conditions with and without provocation, and programmed generalization to between classes setting through condensed self-evaluation instructions. Although formal daily training was terminated, students continued to self-evaluate their behavior and earn points.

Outcome data indicated that the intervention reduced off-task/disruptive behaviors from baseline to the second experimental condition in the classroom from a mean of 89.5% to a mean of 7% for subject one and 94.6% to 6.5% for subject two. Off-task/disruptive behaviors between class reduced from a mean of 70% to 9% for subject one and 67.6% to .5% for subject two. Authors suggested that subjects may have profited from a more extensive training in self-instruction and self-evaluation of behavior to control self-initiated problem behavior.

Similar results were obtained by Ninness et al. (1995) and Ninness et al. (1991), as training in and implementation of self-evaluation procedures corresponded with desirable changes in student behavior during both unsupervised conditions and in a transition period with only abbreviated instructions to self-manage. These studies extended self-management literature by teaching students self-control skills that they then applied during class and between class periods without apparent adult supervision. Limitations across the studies were the amount of time required for training the student and that the complexity of the intervention package did not permit assessment of the effectiveness of individual components.

Examination of Intervention Components and Targets

The benefits associated with the implementation of self-management procedures are undisputed. Progression in self-management research has allowed for an exploration of self-management components. Within the special education settings a subset of studies have examined and compared intervention variables in an effort to discover which, if any contribute to more robust treatment effects. More specifically, research over the last decade has looked at the interaction of self-management components (DiGangi & Maag, 1992), and the differential effects of self-monitoring various targets (i.e., attention, performance, accuracy).

DiGangi and Maag (1992) employed an ABA design to evaluate the interaction of three self-management components (self-instruction, self-monitoring, self-evaluation/self-reinforcement) on decreasing inappropriate and increasing appropriate verbalizations of three adolescents. The components were employed in an A-B-BC-C-D-DB-DBC-DC sequence for a total of forty 15-minute observation periods. The resource teacher recommended the participants for the intervention due to students being classified as having behavior disorders and due to their inappropriate verbalizations and/or passive behaviors. Prior to recording target behavior, subjects were trained by a doctoral student during three 10-minute training sessions per training phase. The self-monitoring phase (B) required students to make a tally mark their appropriate and inappropriate verbalizations or interactions. During the self-evaluation/self-reinforcement phase (C) students contemplated answers to the questions "How is this working out? How am I doing?" as printed on a card taped to their desks. If subjects had more tallies in the appropriate versus inappropriate column they were to tell themselves "I'm doing a great

job." Finally, the self-instruction stage (D) consisted of students learning performance relevant skills by imitating steps modeled, verbalized, and then faded by a trainer.

Outcome data demonstrated that combinations [i.e., self-instruction, self-monitoring, and self-evaluation/reinforcement (DBC) or self-instruction and self-monitoring (DB)] of self-management components were most effective across all three participants. Self-monitoring alone and self-evaluation/self-reinforcement alone were the least effective, whereas self-instruction alone was more effective than self-monitoring and self-evaluation/self-reinforcement together. The techniques considered and combined were clearly not exhaustive and the effects on this small sample size will not hold for all populations. However, treatment efficacy as explored through component analysis of self-management training for youth having behavior disorders appears to be a promising avenue for future research.

Along with researchers interest in the effects of combining different self-management components, the treatment outcomes of targeting different behaviors for self-monitoring have been examined in recent literature (Maag, et al. 1993; Lloyd, Bateman, Landrum, Hallahan, 1989; Lam, Cole, Shapiro, & Bambara, 1994; Reid & Harris; 1993; Harris et al., 1994).

Lloyd et al., (1989) examined the effects of a self-monitoring attention versus self-monitoring productivity on the off-task behaviors and task completion of five elementary children served in special education under a variety of classifications. A multiple baseline with an alternating treatment across subjects design was employed. Researchers collected data on on-task behavior, teacher-student interaction, academic achievement (i.e., pre- and post-test comparison), and academic productivity (i.e., scores

on assignments). Experimental conditions consisted of baseline, self-monitoring of alternating treatments, a choice phase, fading, and maintenance. Self-monitoring of attention consisted of students recording their on- or off-task behavior, upon hearing an audible tone. Self-monitoring of productivity required students to count and record the number of problems completed since the last audible tone. During the choice condition students chose their preferred self-monitoring behavior target (i.e., attention or productivity). The intervention was faded by the gradual elimination of tones, students self-monitoring only when they thought of it, and then complete termination of self-monitoring.

Findings indicated that the self-monitoring intervention effectively increased on-task behavior, productivity and accuracy, and assignment completion across all five participants and that students maintained high levels of productivity and on-task behavior after the intervention concluded. The differential effects of self-monitoring behavior targets (i.e., attention versus productivity) were unclear and were suggested by authors as needing further examination. Treatment fidelity data indicated that students accurately followed procedures for recording their academic productivity. Interestingly, self-monitoring of attention was consistently (i.e., in 98% of the sessions) overestimated. During interviews students reported a preference for self-monitoring attention over self-monitoring of productivity, stating that the second procedure was more time consuming and confusing. Authors suggested future examination of the critical components for treatment maintenance and the differential effects of self-monitoring performance versus attention.

Lam et al., (1994) evaluated the differential effects of self-monitoring target variables by randomly assigning different sequences of experimental conditions (self-monitoring of on-task behavior, academic accuracy, and disruptive behavior) to three students receiving special education services. One to three 20-minute training sessions were provided to familiarize students with behavioral expectations and self-monitoring procedures. Students self-monitored as cued by tones (VI one-minute) during the last 10 minutes of their math period. At the tone each student attended to a different target variable as designated by the teacher and a color-coded sheet. When monitoring on-task behavior students asked themselves "Was I paying attention?" and marked the box (yes/no) corresponding with their behavior. During self-monitoring of academic accuracy, students responded to the tone by marking the problem they were working on, checking answers to problems completed since the previous cued, and recording the number of problems answered correctly in a blank found in the right margin. The third and final focus of self-monitoring was disruptive behavior. During this phase the tone cued subjects to mark "yes" or "no" to the question "Was I disruptive?"

Outcome data indicated that each treatment phase resulted in improved performance of target behaviors, but that self-monitoring of academic accuracy may have been the most beneficial intervention target for participating students who had a history of behavior problems. Self-monitoring academic accuracy increased accuracy and positively impacted on-task and disruptive behaviors. Referring to past literature, authors emphasized that on-task behavior does not necessarily require increased productivity, whereas self-monitoring academic accuracy /productivity requires an increase in on-task behavior. To better understand treatment effects on academic improvement, assessments

of actual academic performance during each condition and at a follow-up session should have been conducted. Another limitation of the study was the lack of generalization and maintenance data. Fortunately, other researchers investigating the different behavioral targets included attempts to generalize the effects of self-monitoring to other subject areas (Harris et al., 1994) and other settings and included follow-up data (Maag et al., 1993).

Two studies looked at the effects of self-monitoring of attention versus self-monitoring of performance on attention and academic performance (Reid & Harris, 1993; Harris et al., 1994). In both studies, academic strategies for learning were taught to ensure that students had requisite skills for the tasks (i.e., learning spelling words and writing stories). Self-monitoring of attention (SMA) procedures required students to mark yes or no to the question "Was I paying attention?" Self-monitoring of performance (SMP) involved participants counting, recording, and graphing the number of words correct (spelling) or the number of words written (story writing). Both studies concluded by researchers administering a measure of social validity.

Reid and Harris (1993) instructed 28 students, identified as having learning disabilities, in a strategy to learn spelling words and then taught self-monitoring procedures. Participants came from nine separate classrooms and were divided into two groups. Group one received study SMP, and then the SMA intervention, whereas group two employed SMA procedures first, followed by SMP. Students were interviewed at the conclusion of the study for an assessment of social validity.

Results showed that both SMA and SMP interventions significantly increased the level of observed on-task behavior and the average number of correct practices of

spelling words by students classified as learning disabled. Self-management of attention (SMA) and SMP were evaluated in terms of their effects on spelling practice, spelling achievement and spelling maintenance. Relatively small differences (3.07) were found between the mean number of spelling practices during SMA versus SMP conditions. When compared to the SSP condition, spelling achievement data indicated that SMP resulted in no significant increases in achievement, whereas the SMA condition resulted in a significant decrease in the number of words spelled correctly. Negative effects on students' short-term learning during the SMA procedure also effected long-term maintenance, as students' mastery of spelling words were significantly higher in both the SSP and SMP condition. Student interviews indicated favoritism for the SMP intervention and that dislike for the SMA condition was due to frequent interruptions inherent in the procedure. All students stated they would like to continue using SMA or SMP procedures, although more students preferred SMP.

In the second study, comparing SMA and SMP, Harris et al. (1994) applied the procedures in two separate experiments, with a few variations in a counterbalanced multiple baseline design. First, in the previous study SMP results were graphed, where as paying attention (SMA) was not. In the first investigation of this study, graphing of SMA was included to control for possible motivational or feedback effects produced by graphing. Second, procedures were adapted to a story writing task in the second experiment, to determine if performance-monitoring procedures used in spelling (Harris, 1986; Reid & Harris, 1993) could be implemented in other subject areas.

Both experiments demonstrated the effectiveness of using a self-monitoring intervention to improve the on-task behavior and academic performance of students

classified as having learning disabilities. The first experiment replicated Harris (1986) findings that self-monitoring can increase both attention to spelling tasks and student spelling performance. The addition of a graphing component to the SMA procedure was assumed to make SMA and SMP interventions more equivalent, however, a majority of the students still preferred the SMP technique and had more correct practices with the SMP method in place.

In the second experiment SMA and SMP procedures were applied to a story writing task. Students' stories were longer and of a higher quality during both interventions, indicating that SMA and SMP procedures can be used successfully in other subject areas. Again when given a choice, three out of four students chose the SMP intervention, although students stated a preference for SMA during the exit interview. Both SMA and SMP had positive effects on story writing behaviors without any definite or consistent advantages to either procedure. The literature still has not indicated which target variable corresponds with better treatment effects. The efficacy of a procedure appears to be dependent on the interrelationships between the student, the assignment, and the outcome variables. Because students having learning or behavior challenges often used strategies ineffectively and may become frustrated more easily, future studies need to apply self-monitoring procedures across tasks with this population to determine when the intervention can be employed both efficiently and effectively.

Classwide Implementation of Self-management

One would expect to see more classwide implementation of self-management interventions in the special education setting due to smaller class sizes and better student-teacher ratios. However, only three studies explored the classwide implementation of

self-management procedures. The first employed self-monitoring plus matching while the other two articles assessed self-evaluation plus matching procedures, with variations of reinforcement contingencies, as implemented on a classwide basis.

Kern et al. (1994) examined the efficacy of a classwide self-monitoring procedure in changing disruptive behaviors of youth identified as having emotional and/or behavioral disorders. Pairs of students were systematically exposed to conditions in a multiple baseline across students design until the entire class was engaged in the intervention. All experimental observations occurred during a 45-minute math class in the resource room (N=6). Self-monitoring procedures consisted of answering "yes" or "no" to two questions after an audible tone. The first question, "Am I on-task?" was used for self-monitoring by all students, whereas a second question was aimed at the individual needs of the students as decided by the teacher (i.e., accepting feedback, appropriate teacher interactions). Participants earned points according to their self-monitoring record.

Overall, outcome data indicated that the self-monitoring procedures implemented with pairs of students, until the entire class used the procedure, increased on-task behavior and decreased disruptive behaviors of students with emotional and behavioral disorders. This study extended self-management literature by demonstrating the applicability of individual self-monitoring procedures across a small group of students. Effects of the program on academic performance and the generalization of and long-term maintenance of behaviors were not assessed.

Salend, Whitaker, Raab, and Giek (1991) and Salend, Reeder, Katz, and Russell (1992) evaluated the efficacy of a group contingency self-evaluation system on decreasing inappropriate verbalizations of students in special education classes. Both

studies employed reversal designs and similar procedures, including baseline (conditions one and four), a pre-training phase (condition two), and two intervention phases (conditions three and five). Self-evaluation procedures were employed in a group setting (six to nine students each) in three different subject areas (language arts, spelling, and mathematics). During the intervention phases both teachers and students self-evaluated the group behavior on a zero to five point rating scale. In the first study (Salend et al., 1991), matching consisted of group ratings being averaged and compared to the teachers ratings, whereas the second study (Salend et al., 1992) involved teachers matching ratings with a randomly selected student. Points were awarded to the group depending on the proximity of teacher-group or teacher-student matching.

Findings indicated that the intervention decreased inappropriate behavior in all groups. Anecdotally, the teacher reported that the class covered more material, had fewer behavior problems, and completed more work during the procedure. Researchers suggested that the program may enhance individual awareness of attention to target behaviors and promote responsibility and a positive network of peer pressure through having a common goal. The authors warned of a possible drawback to the design of the second study. Specifically, they stated that consistently incongruent matches by the randomly selected student might bring negative peer pressure, which could be ameliorated by individual meetings to improve understanding of rating expectancies. Results were limited by the lack of academic, generalization, and follow-up data. The intervention appeared, however, to be a promising procedure for future classwide implementation of self-management techniques.

Summary of Self-Management Research Applied in Special Education Settings

Special education classrooms currently lead in the application of self-management methods to positively effect students noted as disruptive. Self-management methods were also implemented in combinations in the special education setting, although half of the twenty studies employed a single self-management technique, of which six used self-monitoring, two involved self-monitoring plus matching procedures, and two employed a self-evaluation plus matching intervention. Seven studies implemented two self-management components, whereas two articles (Ninness et al., 1995; Ninness et al., 1991) evaluated three techniques in one study. DiGangi and Maag (1992) lead in the number of self-management methods employed by evaluating combinations of self-monitoring, self-evaluation, self-instruction, and self-reinforcement. They cautioned that although combinations of two or four components appeared to have the largest behavioral impact, more components did not equate with a more effective intervention, rather that combinations were variably effective and even single component applications were differentially effective. The variability in component effectiveness and their combinations emphasized the important role educators have of collecting data on behavior change and when needed modifying programs on an individual basis to accomplish the best and most positive behavioral gains. Special education classrooms would appear as the ideal setting for classwide implementation of self-management procedures due to smaller class sizes and better teacher to student ratios. This expectation was unfulfilled as only three studies applied a classwide self-management program. Practitioners may refer to these studies (Kern et al., 1994; Salend et al., 1992; Salend et al. (1991) as examples for classwide implementation of self-management procedures. Studies in the special education setting

further substantiated the effectiveness of changing disruptive behaviors through self-management interventions.

Summary of Literature Review Results

The self-management studies examined in this literature review were assessed according to several variables. The summary of these factors have been presented and compared to findings of past self-management literature reviews. The comparison provides an overview of the trend and current status of self-management literature. The variables include: (1) subject characteristics; (2) student involvement in program development and modification; (3) independent variable or self-management procedure; (4) dependent variable; (5) student involvement; (6) training procedures for students and teachers; (7) generalization and maintenance; (8) social validity, treatment acceptability, and treatment integrity; and (9) classwide implementation

Subject Characteristics

Thirty-four studies on self-management techniques resulted in behavior changes in a total of 187 students (146 males, 41 females). Participants could not always be grouped by age due to studies overlapping students of different grades and ages, therefore, exact percentages of students served in each age or grade level is not available. Overall, self-management methods were studied throughout the range of school-aged students from kindergarten through the twelfth grade. The majority of the literature examined treatment effects on students between the ages of 9-14. Students between the years of 5-8 and 15-18 participated in the least amount of studies.

Current findings indicate that self-management methods can be implemented to effectively change disruptive behaviors of students from different age groups and in a

variety of settings than have been examined previously. Fantuzzo and Polite (1990) only examined studies with elementary school-aged students, whereas the review by Hughes et al. (1989) indicated that only four adolescents had been sampled. Hughes et al. (1989) suggested that due to the under representation of adolescents, the efficacy of self-management in secondary settings was uncertain. In the present review, self-management procedures were effective with 92 students ages eleven years and older. Articles reviewed by Hughes et al. (1989) included only one study from the combined special and general education settings and no studies that intervened in the general education setting. The current review found and included a small but existent sample of studies in both the combined settings and the general education classroom (see Table 1).

Table 1

Settings Studying Self-management Programs

	Setting		
Source	Resource	Combined	Mainstream
Past Review			
Hughes et al. (1989)	10 (N = 37)	1 (N = 6)	--
Current Review	20 (N = 105)	7 (N = 25)	7 (N = 57)

Note. The combined setting consisted of the intervention being implemented in both special and general education classrooms.

Independent Variable or Self-Management Procedure

Fifty-six percent (N = 19) of all studies employed a single self-management method, whereas the remaining 15 studies (44%) used a combination of self-management techniques. Of the self-management components employed alone and with other methods

researchers most often evaluated self-monitoring, self-evaluation plus matching, self-monitoring plus matching, and self-evaluation. The target population only received formal social skill instruction in six studies. Six other studies included behavioral objectives of improving appropriate interactions and verbalizations, which could be subsumed under the category of social skills. Social skill instruction reduces school maladjustment and peer rejection, improves the likelihood of successful mainstreaming, prevents more serious problems from occurring with youth exhibiting disruptive behaviors (McGinnis & Goldstein, 1990), and helps the student establish more meaningful relationships with peers and adults (Sheridan, Dee, Morgan, McCormick, & Walker, 1996). Often children and youth, labeled as disruptive, exhibit social skills deficits and could benefit from social skill training. Least popular among self-management methods were self-instruction and self-reinforcement. Self-graphing was also employed sparingly (Harris et al., 1994) but was presented as an up and coming method to enhance treatment effects with little extra effort. Two variations of self-management techniques appear to be at the forefront of self-management research and, having a positive influence on outcomes, and should perhaps be viewed as areas of interest for future self-management research with disruptive behaviors. The first (Falk et al., 1996), videotaped students and then had them evaluate their own behavior through post-session viewing and discussions. The second promising variation of self-management programs uses peers to assist in self-evaluation procedures (DuPaul et al., 1997; Smith et al., 1992). Peers evaluate each other and/or peers observe and rate target students followed by comparing/matching of peer and self-ratings. Peer assistance in self-managing behavior attempts to address the poor peer relations factor commonly found

among students with disruptive behaviors. The overall effects of the forced relationship must be studied further, as well as the demands on and social status changes of peer helpers.

Past reviews have criticized labeling a program as "self-management" for two main reasons. First, the outcomes attributed to self-management interventions are in fact the results of a complex "package" (e.g., self-monitoring within a token economy) that contributes to positive outcomes (Hughes et al., 1989). Second, several components of self-management procedures have been found to rely on teachers rather than the students (Fantuzzo & Polite, 1990; Fantuzzo et al., 1986). Results documented here follow past trends of complex self-management "packages" and the reliance on teachers for administering the intervention. Self-management methods may be more realistically viewed as an extension of traditional or externally administered programs. The examination of a self-management technique within token economy, for example, obviously does not demonstrate the effectiveness of a pure self-management intervention. It does however, attempt to teach students awareness and control of their own behavior. The self-management component should rather be viewed as advantageous in that they attempt to teach students to be aware of and responsible for their own behavior.

Dependent Variable

Past reviews of self-management literature inconsistently documented the trend and importance of target variables as being academically or behaviorally based. Current literature furthers our understanding of self-management variables by comparing the outcomes of different target variables and introducing a third variable (i.e., self-concept) that may be affected by self-management programs and needs to be researched further.

The selection criteria of this review required the primary target to be behavioral in nature; therefore, all 33 studies documented positive behavior changes resulting from self-management techniques (see Table 2). Six of the nine studies measuring both academic and behavior change compared the effects of self-monitoring attention versus self-monitoring academic performance on both academic performance and on-task behavior. Four of these studies (Harris et al., 1994; Lloyd et al., 1989; Reid & Harris, 1993) remained indecisive as to the superiority of targeting one variable over the other (i.e., targeting attention versus academic performance). The two remaining studies indicated that self-monitoring of academic performance was more effective than self-monitoring of on-task behavior in increasing academic performance (Lam et al., 1994; Maag et al., 1993). Research by Gregory et al. (1997) stood alone in its documentation of positive changes in self-concept during and after the intervention. The focus on changes in self-concept as a result of self-management interventions is unique and relatively unexplored. Nelson et al. (1991) suggested that researchers investigate the possible benefits of attitudinal changes (e.g., motivation, awareness to rules) that may parallel behavioral changes. Current self-management literature increased documentation of comparing the treatment effects of targeting different variables, however, the superiority of targeting attention versus productivity remains unclear. Current research also suggests that self-management interventions may positively impact other unexplored factors (i.e., self-concept).

Table 2

Dependent Variables Examined

	Targets			
Source	Academic	Behavior	Acad/Beh	Beh/SC
Past Reviews				
Hughes et al. (1989)	10 (91%)	1 (9%)	--	--
Fantuzzo and Polite (1989)	20 (48%)	18 (43%)	4 (9%)	--
Current Review	--	24 (71%)	9 (26%)	1 (3%)

Note. Acad = Academic, Beh = Behavior, SC = Self-concept

Student Involvement

The title "self-management" suggests that students are the main controlling agents of their behavior. In reality, self-management literature appears to be only at the beginning of the path leading to the ideal of having students manage their own behavior changes. Past research revealed that although subjects were active in changing their behaviors they were not involved in choosing target behaviors and developing/adapting procedures. Fantuzzo and Polite (1990) used the Student Management Intervention Checklist (SMIC; Fantuzzo, Polite, Cook, & Quinn, 1988; Fantuzzo et al., 1986) to determine the degree to which different intervention components were managed by students versus adults. They reported that student management of intervention components averaged 40% (range = 9%-73%). Specifically they found that observation and evaluation of the behavior and the delivering of reinforcers were mainly student-managed components. Adults dominated control over components such as the

identification and definition of target behaviors, performance goal selection, prompts, and monitoring.

In this review, the degree of student-management of interventions was not assessed to the extent of past reviews. Some anecdotal information, however, was apparent that supports past findings and calls for the need to increase student involvement. For example, only three studies permitted participants to choose which target behavior they preferred to monitor. The choices of target behaviors permitted were selected by the researchers and only after both choices had been implemented with students as directed by administrators (Harris et al., 1994; Lloyd et al. 1989). Inspired by reports of low student involvement, Snyder and Bambara (1997) studied the effects of teaching students to self-manage intervention components (i.e., problem identification, goal setting, self-monitoring, self-evaluation, and self-reinforcement). Results documented positive and maintained behavior gains and high treatment acceptability by both students and teachers. Teaching students to notice and successfully change their own behavior was empirically supported by this study and should be further employed and researched to reduce teacher time and energy spent on controlling individuals and to increase student responsibility to self and others.

<u>Training Procedures</u>

Hughes et al. (1989) suggested concerns regarding the documentation of training issues including specifically stating (a) who administers student training; (b) steps for training teachers; (c) procedural reliability of training teachers; (d) length of student training; and (c) details for training student. As documented in Table 3, Hughes et al. (1989) found that less than half of the studies in their review provided adequate

information in these areas. Many of these shortcomings have improved in current self-management literature (i.e., increased reports of who trained students, procedural reliability of training methods, and steps for training students). The steps needed to train teachers and training time required to teach students remains under reported and may affect the acceptability of self-management interventions.

Table 3

Training Procedures Accounted for in Self-management Literature

	Trainer Specified	Teacher steps specified	Procedural Reliability	Student steps specified	Length of Training
Source					
Past Review					
Hughes et al. (1989)	5 (45%)	--	4 (36%)	5 (45%)	6 (55%)
Current Review	31 (91%)	--	18 (53%)	34 (100%)	13 (38%)

Generalization

The success of an intervention is often measured by the degree to which it positively effects a variety of populations, behaviors, and/or settings, with or without being programmed. Kazdin (1994) discusses two primary kinds of generalization: stimulus and response generalization. Stimulus generalization refers to the extension of behavior changes across different staff, settings, and/or subjects. Researchers commonly train students to change behavior in one setting or subject and then extend the procedures to a second. Response generalization occurs when other behavioral responses not targeted

by the intervention also change. For example, changes in on-task behavior that occur along with academic performance and/or decreased disruptive behaviors.

Due to the important role played by generalization data in evaluating interventions, it is unfortunate that the studies in the current review did not expend more effort in its assessment. As demonstrated in Table 4, generalization was assessed in 50% of the studies, which falls between percentages reported in past reviews (i.e., 31% and 73%). Changes in the examination of generalization data have occurred in current literature in respect to "spontaneous" generalization. Nearly 30% of the studies reviewed here indicated that stimulus and/or response generalization occurred without students being trained to implement procedures to the second behavior or setting (see Table 4). In the future, researchers of self-management procedures may want to continue to examine whether self-management methods provide students with the tools necessary to generalize appropriate behaviors spontaneously.

Table 4

Generalization Data

Source	Spontaneous Generalization	Programmed Generalization
Past Reviews		
Hughes et al. (1989)	--	8 (73%) 2 Beh/6 Set
Fantuzzo & Polite (1990)	--	13 (31%) 10 Beh/6 Set
Current Review		
Total	10 (29%) 4 Beh/6 Set	17 (50%) 4 Beh/13 Set

Note. Beh = Behavior, Set = Setting

Maintenance

The maintenance of positive behavior gains constitutes one of the most important factors used to analyze the effectiveness of an intervention and can be enhanced by program fading prior to terminating an intervention. Fading of self-management procedures varied from increasing tone intervals that prompted self-management (Edwards et al., 1995) and criterion for reinforcement (Grandy & Peck, 1997), to decreasing teacher-student behavior rating matches (Hoff & DuPaul, 1998; Peterson et al., 1999) and self-monitoring only when students thought of it (Lloyd et al., 1989).

Overall, current findings indicate that generalization data in future self-management literature would benefit from several improvements. In the present review several studies reported difficulty in gathering maintenance data due to intervention goals and time constraints. One study limited generalization reporting to anecdotal comments. The quality or reliability of maintenance data was questionable in several other studies due to the variable range of data points collected (range = 1 to 22). However, all eight studies indicated that treatment outcomes were maintained.

In summary, 24% of the studies reviewed provided maintenance data, a percentage that is again comparable or less than findings in past reviews (see Table 5). The lack of follow-up data results in an inconclusive evaluation of the effectiveness of the programs implemented. Inconsistencies in the quality of maintenance data that plague current research suggest the need for a recommended or set standard of maintenance data. Furthermore, the effects of fading, the necessity of different fading components, and the time period required to maintain results remain unclear. The maintenance of treatment effects is essential to self-management literature and suggests the value of a program.

This past and present limitation of self-management literature MUST be remedied in future studies.

Table 5

Collection of Maintenance Data

Source	Maintenance Data
Past Reviews	
Hughes et al. (1989)	6 (55%)
Fantuzzo & Polite (1990)	10 (24%)
Current Review	
General Education Setting	1 (14%)
Combined Setting	4 (57%)
Special Education Setting	3 (15%)
Total	8 (24%)

Social Validity/Treatment Acceptability

Social validity is the degree to which a selected behavior is regarded as important to a social community and/or whether the amount of change achieved during an intervention is valued. Treatment acceptability is a measure of whether an intervention is desirable, preferred, or acceptable (Kazdin, 1984). Social validity is important in predicting the future use of interventions, affecting treatment integrity, and therefore affecting positive behavior gains and maintenance. Social validity data is collected through behavior observations including comparisons with classroom peers, and progress

reports. Rating scales, interviews, and questionnaires are also used to collect social validity data, as well as information on treatment acceptability. Often researchers collect both social validity and treatment acceptability data in the same measure; therefore, these will be reported together here.

Hoff and DuPaul (1998) provided the most thorough examination of social validity and treatment acceptability and is therefore discussed in more detail. Behavior observations and the Iowa Conners Teacher Rating Scale (IOWA; Loney & Milich, 1982) were used to determine behavior change and the teachers' perceptions of disruptive in the general education classroom. Treatment acceptability was evaluated by the completion of a standardized rating scale [Intervention Rating Profile-20 (IRP-20; Martens, 1983)], the Children's Intervention Rating Profile (Witt & Elliot, 1985), and a side-effects rating scale developed by the investigators. The self-management intervention was found to be beneficial and well liked by both teachers and students and no adverse side effects appeared to coincide with the intervention.

As in the past, the lack of social validity and treatment acceptability data collected and/or reported by researchers continued to be a weakness in self-management literature. As displayed in Table 6, social validity was evaluated in 11 (32%) of the studies, while treatment acceptability was assessed in 10 (29%) of the articles. Two other articles provided only anecdotal information about the two variables. Social validity and treatment acceptability of interventions play a role in the degree to which a program is implemented consistently and accurately, which in the long run may affect the generalization and maintenance of positive behavior changes. Therefore, it is

discouraging to find such sparse and often inadequate data collected from teachers and students.

Table 6

Social Validity and Treatment Acceptability Data

Source	Social Validity	Treatment Acceptability
Past Review		
Fantuzzo & Polite (1990)	1 (2%)	2 (5%)
Current Review		
General Education Setting	4 (57%)	2 (29%)
Combined Setting	2 (29%)	3 (43%)
Special Education Setting	5 (25%)	5 (25%)
Total	11(32%)	10 (29%)

Treatment Integrity

The fidelity (i.e., consistency/accuracy) with which an intervention is implemented is known as treatment integrity. It is largely effected by social validity, treatment acceptability, and the experience and training of those implementing the procedures. Treatment fidelity is commonly assessed by an observer marking a teacher's adherence to the intervention, as guided by a checklist detailing the program steps. Other methods involve reviewing self-monitoring recording sheets of students, comparing direct observations or permanent products (e.g., productivity and/or accuracy of assignments) with students' assessments of their behaviors or performance.

Treatment integrity was assessed in a total of eight of thirty-four studies (24%) reviewed (see Table 7). Six of the studies employed a checklist of intervention procedures to evaluate treatment integrity (DuPaul et al., 1997; Hoff & DuPaul, 1998; Lam et al., 1994; Salend et al., 1992; Salend et al., 1991; Storey et al., 1994). The remaining two studies (Lloyd et al., 1989; Reid & Harris, 1993) used more complex measures (i.e., comparisons of direct observations and self-reports of behavior) and found that although students often overestimated their attention to task, increases in on-task behavior were apparent.

Table 7

Treatment Integrity Data

Source	Studies reporting Treatment Integrity Data
Past Reviews	--
Current Review	
General Education Setting	2 (29%)
Combined Setting	1 (14%)
Special Education Setting	5 (25%)
Total	8 (24%)

Past reviewers of self-management literature did not examine treatment integrity (see Table 7). It is unclear whether treatment integrity data was absent in past literature or not of interest by reviewers of self-management research. Assessment of treatment integrity in current studies is encouraging, albeit weak. Such data can indicate when and

where modifications need to be made and could potentially support the belief that self-management procedures are practical and simple to implement. The evaluation of treatment fidelity should become an integral component of assessing the value and effects of self-management interventions.

Classwide Implementation

Finally, past critiques of self-management literature have called for classwide implementation of self-management programs (Cole & Bambara, 1992). As with treatment integrity data collection, past reviews of the research did not discuss the use a classwide self-management program and current literature has only begun to address the issue (see Table 8). Accordingly, classwide implementation of self-management methods for disruptive behaviors is largely undefined at present. Procedures for employing self-management with an entire class are therefore suggested through brief summaries of current attempts.

Table 8

Classwide Implementation of Self-management Procedures

Source	Classwide Implementation
Past Reviews	--
Current Review	
General Education Setting	1 (14%)
Combined Setting	--
Special Education Setting	3 (15%)
Total	4 (12%)

Studies implementing self-management procedures on a classwide basis will be discussed to provide an overview of implementation options. Peterson et al. (1999) provided in depth social skills and self-monitoring plus matching training to a general education class of at-risk students (N = 29). Students monitored their behavior several times during a class period and then match with the teachers' ratings at the end of class. Kern et al. (1994) also implemented self-monitoring plus matching intervention, this time on a variable interval procedure and introduced across pairs of students (N = 6) in a multiple baseline across students design. Salend et al. (1992) and Salend et al. (1991) implemented self-evaluation plus matching procedures on a classwide basis to decrease inappropriate verbalizations. In the first study, students rated the group behavior (on a 0-5 point scale) and rewards were earned based on the proximity of the group's average rating and the teacher's rating. In the second study students rated the group behavior and then one student was randomly selected to match with the teacher's ratings to earn class rewards. Data indicated the efficacy of self-management procedures in improving behaviors when administered across a special education classroom of students with mixed classifications. In addition to the common benefits of self-management interventions, researchers suggested that group implementation of procedures may increase student responsibility to the group and establish a positive network of peer pressure.

The positive effects of self-management programs employed on an individual basis suggest advantages that may benefit an entire classroom when implemented on a classwide basis. For example, positive behavior gains by students with behavior problems indicated that self-management programs assist in maintaining students in general

education settings (Hoff & DuPaul, 1998). Implementation of self-management

procedures in a small group setting with students from inclusion classes (Falk et al.,

1996) indicated the applicability of procedures with heterogeneous behavior patterns.

Classrooms that include a variety of personalities may benefit students both having and

not having behavior problems. Tones cueing self-evaluation have been reported as

distracting a class only minimally (Grandy & Peck, 1997) and self-management received

peer approval as students stated that they concentrated better when the target student self-

managed problem behaviors (Edwards et al., 1995).

Discussion and Conclusions

Past reviews have both applauded and criticized self-management literature for

various strengths and weaknesses. Some gaps in self-management literature have been

explored and corrected over the last decade, while others still plague self-management

research. Gaps in past literature have been filled by current research by increasing studies

that document the success of self-management interventions with adolescents and in

various settings rather than being limited to elementary school-aged students and/or

resource classrooms. Recent research also described who directed self-management

training and provided step-by-step instructions detailing how the students were trained.

These details should allow educators to review and use/replicate procedures, making the

interventions more accessible to those who would benefit most from their

implementation. Overall, data is still lacking regarding generalization of behaviors

(setting, response), the maintenance of behavior gains, social validity, treatment

acceptability, treatment integrity, and classwide implementation of self-management

programs. Such data is needed for researchers and educators to understand which intervention components and fading methods are most effective and/or necessary.

In spite of weaknesses found in self-management research reviewed here, each study contributed to the literature and documented potential possibilities for the application of self-management programs. For example, the work of Hoff and DuPaul (1998) suggested that self-management programs can be generalized to both structured and unstructured settings (i.e., the playground) without teacher feedback and can be used effectively as a prereferral intervention to keep students in general education settings. Falk et al., (1996) indicated the applicability of self-management programs with heterogeneous populations.

Along with the specific contributions, current research provides a direction for future inquiries in the use of self-management techniques. "Self-management" suggests that students are more active in changing their own behavior. In reality, student involvement in self-management interventions appears to be on a continuum. Recent research has documented success with a more comprehensive approach to student involvement. Specifically, Snyder and Bambara (1997) modeled how we can expand our definition of student involvement by teaching students how to choose, define, and set goals for changing problematic behaviors. Future research should continue on this path of increasing student involvement by offering alternative methods to include student in the behavior change process.

Self-management gurus have expressed interest in the effects and applicability of a classwide self-management program. As reviewed here, only minimal support exists for employing self-management techniques with an entire class. Procedures implemented in

general education (Peterson et al., 1999) and special education (Kern et al., 1994; Salend et al., 1992; Salend et al., 1991) settings should be further explored to increase our understanding of the effects of self-management interventions when employed in a group setting or as part of a curriculum.

Finally, the necessity and usefulness of components used to increase self-management effects should be researched further and then recommended as interfering, neutral, enhancing, or integral agents. Promising components in this review include self-graphing (Harris et al., 1994), functional analysis (Grandy & Peck, 1997), peer-mediated self-evaluation (Smith et al., 1992), and videotaping for self-evaluation purposes (Falk et al., 1996). The need and effectiveness of these components should be examined and documented in future research.

Disruptive behaviors negatively impact the student exhibiting the behavior, his or her classmates, faculty, and family members. The long-term and lasting effects of disruptive behaviors suggest a need for interventions that directly involve the target student. Providing students with the tools for managing their own behavior may help them increase appropriate behaviors when unsupervised and allow them to experience successful self-management when transitioning to adulthood. Self-management methods successfully increase student involvement in changing their own behavior. This review provides an overview of the current status of self-management literature by documenting past gaps in the literature, and current weaknesses, along with the strengths, progress, and areas of interest for future research. Whether implemented on an individual basis or in a classwide program, self-management methods appear to have a promising future for changing disruptive behaviors exhibited by students.

Table 9

General Education Implementation of Self-Management Interventions

Source	N size	Mean Age	Mean Grade	Subject Characteristics	Dependent Variable	Independent Variable
DiGangi et (1991)	2	10-11	NG	LD, attentional & academic performance problems	on-task behavior, academic perf	self-monitoring/evaluation self-graphing, self-reinforcement
Edwards et al., (1995)	3	8-8	3rd & 4th	ADHD, easily frustrated distractible, restless	on-task behavior	self-monitoring + matching,
Falk et al., (1996)	18	11-14	6th & 8th	externalizing, internalizing & no behavior problems	peer interactions	self-monitoring/evaluation, (video feedback, group contingency)
Grandy & Peck (1997)	1	6	1st	disruptive & inattentive behaviors	on-task behavior	self-monitoring + matching (functional analysis)

Note. + = plus, perf = performance

Table 9

General Education Implementation of Self-Management Interventions (continued)

Source	N size	Mean Age	Mean Grade	Subject Characteristics	Dependent Variable	Independent Variable
Hoff & DuPaul (1998)	3	9	4th	ADHD, ODD, verbally & physically aggressive	disruptive & aggressive beh's	self-evaluation + matching
Peterson et al., (1999)	29	12-14	7th & 8th	participation criteria: e.g., behavior problems, poor academic performance	appropriate classroom behavior	self-evaluation + matching (Prevention Plus Program)
Storey et al., (1994)	1	6	K	excessive movement, talking out, touching others inappropriately	talking-out, excessive movement	self-monitoring (functional analysis)

Note. + = plus, beh = behavior

Table 9 (continued)

General Education Implementation of Self-Management Interventions (continued)

Source	Treatment Integrity	Social Validity	Generalization Automatic/Programmed	Maintenance Data	Outcome Data
DiGangi et al., (1991)	--	--	--/--	--	• Self-monitoring on-task beh increased academic performance. • Self-graphing enhanced effects of self-monitoring on-task beh & academic performance.
Edwards et al., (1995)	--	Student/Teacher Ratings	--/--	Taken 30 & 60 days	• Intv increased on-task beh & comprehension scores after intv
Falk et al., (1996)	--	Non-handicapped peer comparisons	--/--	--	• Improved peer interactions.

Note. beh = behavior, intv = intervention

Table 9 (continued)

General Education Implementation of Self-Management Interventions (continued)

Source	Treatment Integrity	Social Validity	Generalization Automatic/Programmed	Maintenance Data	Outcome Data
Grandy & Peck (1997)	--	--	--/yes	Anecdotal comments	• Decreased inappropriate/increased appropriate beh's across different subject areas. • Functional Analysis may enhance treatment effects
Hoff & DuPaul (1998)	11-item checklist	Student/ Teacher Ratings	--/yes	--	• Reduced disruptive beh's of students diagnosed with ADD/ODD • Reduced disruptive beh's across structured & unstructured settings

Note. beh = behavior

Table 9

General Education Implementation of Self-Management Interventions (continued)

Source	Treatment Integrity	Social Validity	Generalization Automatic/Programmed	Maintenance Data	Outcome Data
Peterson et al., (1999)	--	--	--/yes	--	• High at-risk students met teachers behavioral expectations.
Storey et al., (1994)	Third observer	Teacher Ratings	--/--	--	• Substantial decrease in disruptive behaviors. • Functional analysis may enhance treatment effects

Table 10

General and Special Education Implementation of Self-Management Interventions

Source	N size	Mean Age	Mean Grade	Subject Characteristics	Dependent Variable	Independent Variable
DuPaul et al., (1997)	2	11	NG	SED, externalizing problems, teacher desired to mainstream students	on-task behavior & interactions	self-evaluation + matching (peer-mediated self-evaluation + matching)
Gregory, et al., (1997)	3	13:6	NG	BD	on-task behavior self-concept	self-monitoring + matching
Hogan & Prater (1993)	2	14-15	NG	LD, BD, aggressive, impulsive, inattentive	on-task/disruptive behaviors	self-monitoring, self-instruction, (peer tutoring)
Maag et al., (1993)	6	10:4	4th & 6th	LD, off-task, low task completion	on-task behavior academic accuracy & productivity	self-monitoring

Note. + = plus

Table 10

General and Special Education Implementation of Self-Management Interventions (continued)

Source	N size	Mean Age	Mean Grade	Subject Characteristics	Dependent Variable	Independent Variable
Prater et al., (1992)	1	14	9th	LD, BD, work refusal, out-of-seat behaviors	on-task behavior	self-monitoring
Smith et al., (1992)	8	NG	10th	LD, BD, inconsistent task completion, off-task behaviors	adherence to class rules, academic perf	self-evaluation + matching, (goal setting, peer-mediated self-evaluation + matching)
Snyder & Bambara (1997)	3	14	NG	LD, poor class readiness & inconsistent home-work completion	class preparedness skills	self-monitoring/evaluation, (problem identification, goal setting)

Note. + = plus, perf = performance

Table 10

General and Special Education Implementation of Self-Management Interventions (continued)

Source	Treatment Integrity	Social Validity	Generalization Automatic/Programmed	Maintenance Data	Outcome Data
DuPaul et al., (1997)	checklist	student/ teacher ratings	--/yes	--	• Intv decreased inappropriate beh & increased appropriate beh • Mainstreaming students classified with BD mediated by peer self-evaluation + matching procedures
Gregory, et al., (1997)	--	--	--/yes	--	• Intv decreased teacher demands & students' need for external control • Intv increased students' internal locus of control & self-concept

Note. intv = intervention, beh = behavior

Table 10

General and Special Education Implementation of Self-Management Interventions (continued)

Source	Treatment Integrity	Social Validity	Generalization Automatic/Programmed	Maintenance Data	Outcome Data
Hogan & Prater (1993)	--	--	--/yes	Taken 6-9 weeks later	• Intv increased on-task beh & acad perf classified H. S. students • Self-instruction needed to eliminate disruptive behavior
Maag et al., (1993)	--	Student preference	--/--	Taken one day & 10 days later	• Self-monitoring academic outcome more effectively increased academic accuracy & productivity than self-monitoring attention • Students preferred to monitor academic outcomes

Note. intv = intervention, beh = behavior, acad = academic, perf = performance

Table 10

General and Special Education Implementation of Self-Management Interventions (continued)

Source	Treatment Integrity	Social Validity	Generalization Automatic/Programmed	Maintenance Data	Outcome Data
Prater et al., (1992)	--	--	--/yes	Taken six & 16 weeks later	• Students classified LD/BD applied intv in special & gen ed settings • Intv increased on-task beh & academic productivity
Smith et al., (1992)	--	--	--/yes	--	• Intv reduced disruptive beh & increased academic work of students
Snyder & Bambara (1997)	--	student/ teacher	yes/yes	Taken at variable times	• Intv increased preparedness beh's • Effects generalized across classes • Students self-managed intv

Note. intv = intervention, gen ed = general education, beh = behavior

Table 11

Special Education Implementation of Self-Management Interventions

Source	N size	Mean Age	Mean Grade	Subject Characteristics	Dependent Variable	Independent Variable
Cavalier et al., (1997)	2	13	7th & 8th	LD, distractible, poor impulse control, sensitive to criticism	inappropriate verbalizations	self-monitoring,
DiGangi & Maag (1992)	3	12-13	NG	BD, inappropriate verbal-izations passive behaviors	inappropriate verbalizations	self-monitoring, self-evaluation self-instruction, self-reinforcement
Harris et al., (1994) (experiment 1)	4	9:6-11:8	4th & 5th	LD, difficulty attending completing assignments	on-task behavior academic performance	self-monitoring attention & performance (productivity & accuracy), self-graphing
Harris et al., (1994) (experiment 2)	4	10:4-12:2	5th & 6th	LD, difficulty attending completing assignments	on-task behavior academic performance	self-monitoring attention & productivity, self-graphing

Table 11

Special Education Implementation of Self-Management Interventions (continued)

Source	N size	Mean Age	Mean Grade	Subject Characteristics	Dependent Variable	Independent Variable
Hertz & McLaughlin (1990)	2	13-14	7th & 8th	LD, BD, difficulty staying on-task	on-task behavior	self-monitoring + matching,
Houghton (1991)	1	6	1st	inappropriate vocalizations, sitting, & touching beh's	appropriate speaking/sitting	self-monitoring, self-reinforcement
Kern et al., (1994)	6	11-13	5th & 6th	LD, BD, SED, ED, ADHD, inattentive, impulsive, noncompliance, self-abuse	on-task behavior disruptive behavior	self-monitoring + matching, (classwide implementation)

Note. + = plus, beh = behavior

Table 11

Special Education Implementation of Self-Management Interventions (continued)

Source	N size	Mean Age	Mean Grade	Subject Characteristics	Dependent Variable	Independent Variable
Kern et al., (1995)	3	10-12	4th & 5th	EBD, impulsive, aggressive, disruptive, inattentive	appropriate & inappropriate peer interactions	self-monitoring, self-evaluation, (video feedback)
Kern-Dunlap et al., (1992)	5	11-13	4th, 5th & 6th	SED, difficulties with peer relations	appropriate & inappropriate peer interactions	self-monitoring, self-evaluation, (video feedback)
Lam et al., (1994)	3	13:6- 14:10	NG	LD, SED, ADHD, off-task, aggressive, noncompliant, academic difficulties	on-task behavior academic accuracy disruptive behavior	self-monitoring

Table 11

Special Education Implementation of Self-Management Interventions (continued)

Source	N size	Mean Age	Mean Grade	Subject Characteristics	Dependent Variable	Independent Variable
Lloyd et al., (1989)	5	10:0- 11:6	NG	LD, SED, off-task, incomplete assignments	on-task beh, acad performance	self-monitoring
Moore et al., (1995)	3	14-15	9th	BD, aggressive, impulsive, poor peer relations	appropriate & inappropriate peer interactions	self-monitoring + matching, (social skills training)
Ninness et al., (1995)	4	14-15	NG	SED	aggressive behaviors	self-evaluation + matching, self-instruction, (anger control training)
Ninness et al., (1995)	2	13-14	NG	SED, disruptive/destructive, socially inappropriate beh's	disruptive & off-task behaviors	self-evaluation + matching, (social skill instruction)

Note. acad = academic, + = plus, beh = behavior

Table 11

Special Education Implementation of Self-Management Interventions (continued)

Source	N size	Mean Age	Mean Grade	Subject Characteristics	Dependent Variable	Independent Variable
Ninness et al., (1991)	3	14-15	NG	SED	socially in-appropriate & off-task behaviors	self-evaluation + matching self-instruction, (social skill instruction)
Prater et al., (1991)	5	12:11-17:2	NG	LD & BD, easily distracted, poor social skills, academic difficulties, non-compliant	on-task behavior	self-monitoring
Reid & Harris (1993)	28	9:3-12:9	NG	LD	on-task behavior	self-monitoring

Note. + = plus

Table 11

Special Education Implementation of Self-Management Interventions (continued)

Source	N size	Mean Age	Mean Grade	Subject Characteristics	Dependent Variable	Independent Variable
Salend et al., (1992)	9	11-13	NG	LD, Ed, high rates of inappropriate verbalizations	inappropriate verbalizations	self-evaluation + matching, (classwide implementation)
Salend et al., (1991)	12	9-11:5	NG	LD, ED, & ID	inappropriate verbalizations	self-evaluation + matching, (classwide implementation, group contingencies)
Stewart & McLaughlin (1992)	1	15	9th	BD, physically & emotionally immature, hyperactive	off-task behavior	self-monitoring

Note. + = plus

Table 11

Special Education Implementation of Self-Management Interventions (continued)

Source	Treatment Integrity	Social Validity	Generalization Automatic/Programmed	Maintenance Data	Outcome Data
Cavalier et al., (1997)	--	--	--/---	--	• Intv reduced inappropriate verbal-izations to near-zero in 19 sessions • Self-monitoring accuracy improved with behavior
DiGangi & Maag (1992)	--	--	--/--	--	• Intervention combinations effective across all subjects • Self-instruction most effective component employed in isolation. • Self-monitoring, self-evaluation/ self-reinforcement employed individually were least effective.

Table 11

Special Education Implementation of Self-Management Interventions (continued)

Source	Treatment Integrity	Social Validity	Generalization Automatic/Programmed	Maintenance Data	Outcome Data
Harris et al., (1994) (experiment 1)	--	student interview	yes/yes	--	• Both attention & performance monitoring positively impacted spelling study &on-task behaviors • Students preferred self-monitoring of performance over attention
Harris et al., (1994) (experiment 2)	--	student interview	yes/yes (generalized to a 2nd student)	--	• Both SMA & SMP positively effected students' on-task behavior & writing performance • Neither procedure clearly superior students reportedly preferred SMP

Table 11

Special Education Implementation of Self-Management Interventions (continued)

Source	Treatment Integrity	Social Validity	Generalization Automatic/Programmed	Maintenance Data	Outcome Data
Hertz & McLaughlin (1990)	--	anecdotal comments	--/--	Taken at 9 & 13 weeks	• Intervention improved on-task behavior & treatment gains were maintained 4-5 months
Houghton (1991)	--	anecdotal comments	yes (to mainstream class/ without programming)	--	• Intervention reduced inappropriate behaviors that generalized to a general education setting • Intervention utilized simple stick figures demonstrating desired behaviors to assist learning of 1st grade student

Table 11

Special Education Implementation of Self-Management Interventions (continued)

Source	Treatment Integrity	Social Validity	Generalization Automatic/Programmed	Maintenance Data	Outcome Data
Kern et al., (1994)	--	--	--/--	--	• Intv administered across a classroom increased on-task behavior • Intv more effective than system executed solely by teacher
Kern et al., (1995)	--	--	--/--	--	• Intv only became effective after adding a self-evaluation via video feedback component • Peer interactions improved only after self-evaluation was added to rewards/discussion component.

Note. intv = intervention

Table 11

Special Education Implementation of Self-Management Interventions (continued)

Source	Treatment Integrity	Social Validity	Generalization Automatic/Programmed	Maintenance Data	Outcome Data
Kern-Dunlap et al., (1992)	--	--	--/--	--	• Intv increased desirable peer inter-actions of students classified ED/BD
Lam et al., (1994)	checklist	--	academic accuracy led to increased on-task beh/ programmed thereafter	--	• Self-monitoring academic accuracy may be more beneficial as it increased academic accuracy & on-task behavior
Lloyd et al., (1989)	--	--	--/--	For 8 days over 5 weeks	• Superiority of self-recording attention over performance unclear

Note. intv = intervention, beh = behavior

Table 11

Special Education Implementation of Self-Management Interventions (continued)

Source	Treatment Integrity	Social Validity	Generalization Automatic/Programmed	Maintenance Data	Outcome Data
Moore et al., (1995)	--	--	--/programmed for 2nd setting (gym class)	--	• Intv positively impacted game playing behaviors & successfully programmed to a second setting
Ninness et al., (1995a)	--	--	--/programmed to self-evaluate upon return to class	--	• Extended research by identifying situations correlating with higher levels of off-task/disruptive beh
Ninness et al., (1995b)	--	--	--/programmed for unsupervised settings between classes	--	• Intv successfully incorporated an aggression control package with the self-management package developed

Note. intv = intervention, beh = behavior

Table 11

Special Education Implementation of Self-Management Interventions (continued)

Source	Treatment Integrity	Social Validity	Generalization Automatic/Programmed	Maintenance Data	Outcome Data
Ninness et al., (1991)	--	--	--/programmed to unsupervised settings	--	• Intv increased on-task & socially appropriate behavior • Prosocial behavior of ED classified adolescents transferred to unsupervised settings
Prater et al., (1991)	--	--	--/--	--	• Self-monitoring programs success individualized to five students • Study supported the acceptability & generalizability of the technique

Note. intv = intervention

Table 11

Special Education Implementation of Self-Management Interventions (continued)

Source	Treatment Integrity	Social Validity	Generalization Automatic/Programmed	Maintenance Data	Outcome Data
Reid & Harris (1993)	correlation of procedure	student interviews	--/--	10 days later	• Both SMA & SMP significantly increased on-task behaviors • No clear indication of differential effects from the amount of spelling practices between SMP & SMA
Salend et al., (1992)	checklist	student rating	--/--	--	• Increased material covered, student awareness of behavior change & student responsibility to group. • Facilitated student development of collaborative & independent skills

Table 11

Special Education Implementation of Self-Management Interventions (continued)

Source	Treatment Integrity	Social Validity	Generalization Automatic/Programmed	Maintenance Data	Outcome Data
Salend et al., (1991)	checklist	student rating	--/--	--	• Decreased inappropriate behavior • Group goal may promote positive peer pressure & responsibility
Stewart & McLaughlin (1992)	--	--	--/--	--	• Intervention decreased off-task behavior of high school student exhibiting hyperactive symptoms

Table 12

Summary Data of Literature Review

	Item	Frequency	%
I.	Subjects		
	A. number		
	1. small (1-5)	20	59%
	2. medium (6-24)	12	35%
	3. large (25+)	2	6%
	B. environment of intervention		
	1. regular education classroom	7	20%
	2. both general and special education classroom	7	20%
	3. special education classroom only	20	60%
II.	Methodology		
	A. independent variable		
	1. goal setting	2	6%
	2. peer-mediated self-evaluation	3	9%
	3. self-instruction	4	12%
	4. self-evaluation	5	15%
	5. self-evaluation plus matching	9	26%
	6. self-graphing	3	9%
	7. self-monitoring	17	50%
	8. self-monitoring plus matching	6	17%

Table 12

Summary Data of Literature Review (continued)

	Item	Frequency	%
III.	Methodology		
	B. independent variable (continued)		
	9. self-reinforce	3	9%
	10. combination	15	44%
	C. dependent variable		
	1. behavior change	24	71%
	2. behavior and attitude change	1	3%
	3. behavior and grade/performance change	9	26%
IV.	Training Procedures		
	A. trainer reported	31	91%
	B. examiner qualifications reported	1	3%
	C. replicable length of training given	13	38%
IV.	Treatment Fidelity, Social Validity, Generalization, and Maintenance		
	A. efforts to program generalization	17	50%
	B. maintenance data reported	8	24%
	C. social validity data reported	10	29%
	D. treatment acceptability data reported	11	32%
	E. treatment integrity checks	8	24%

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