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Self-Regulation Strategies for Students with Disruptive Behavior Disorders

Leah A. Norris
St. Cloud State University, leah_larson@hotmail.com

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Leah Norris

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Starred Paper Committee:
Mary Beth Noll, Chairperson
Jerry Wellik
Trae Downing

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Chapter 1: Introduction

Social and academic skills are required for students to function successfully in school environments. Unfortunately, students diagnosed with disruptive behavioral disorders such as Attention Deficit/Hyperactivity Disorder (ADHD), Conduct Disorder (CD), and Oppositional Defiant Disorder (ODD) may not possess the necessary self-regulation skills that contribute to success in school environments (American Psychiatric Association [APA], 2013). Students with these chronic disorders often have difficulty completing school-related tasks and interacting appropriately with peers and adults. As a result, a student's school performance is characterized by underachievement, disciplinary problems, and poor attendance (Reid, Trout, & Schartz, 2005).

According to Reid et al. (2005), self-regulation—or executive function—strategies are implemented for students to manage, monitor, record, and assess their own behavior across different settings. Self-regulation includes processes by which "the human psyche has control of functions, states, and inner processes" (Ylvisaker & Feeney, 2009, p. 371). In other words, self-regulation enables an individual to inhibit automatic responses and assess past behavior before making a response (Reid et al., 2005).

Students with ADHD, CD, and ODD manifest self-regulation deficits when they are required to complete school-related tasks and interact appropriately with peers and adults (Reid et al., 2005). As a result, their school performance is characterized by underachievement, disciplinary problems, and poor attendance. The purpose of this paper was to examine the research that investigates the effectiveness of self-regulation strategies for elementary and secondary students who are diagnosed with disruptive behavioral disorders.

Disruptive Behavior Disorders

The *Diagnostic and Statistical Manual of Mental Disorders-5* (APA, 2013) uses the umbrella term of *Disruptive Behavior Disorders* to refer to children and youth who engage in acting-out behaviors. In this section, I discuss three disruptive behavior disorders: ADHD, CD, and ODD.

Attention Deficit Hyperactivity Disorder

There is no question that ADHD is one of the most frequently diagnosed disruptive behavior disorders of childhood and youth, and it is a condition that frequently continues through adulthood (Weijer-Bergsma, Formsma, Bruin, & Bögels, 2011). There are two categories of behavioral patterns: (a) inattention and hyperactivity, and (b) impulsivity. Common behavior patterns may include difficulty with organization skills, excessive talking or fidgeting, failure to pay close attention to detail, and unable to remain seated during appropriate situations (APA, 2013). To receive a diagnosis of ADHD, individuals must display behaviors in multiple settings such as school and home environments.

Individuals diagnosed with ADHD often display comorbid disorders such as depression, anxiety, oppositional defiant disorders, and compulsive disorders (Singh et al., 2007). Recent theoretical research supports the notion that ADHD is a deficit in self-regulated behavior and emotions (Reid et al., 2005). More specifically, Reid et al. contended ADHD is "not a disorder of knowing what to do, but of doing what one knows" (p. 362). Therefore, self-regulation interventions may be beneficial for individuals who are experiencing emotional dysregulation.

Conduct Disorder

Conduct Disorder (CD) is defined as behaviors that violate the rights of others or societal norms (APA, 2013). Individuals diagnosed with CD may display aggression toward people and animals, destroy property, engage in deceitfulness and theft, and violate rules (Frick, 2012). To be diagnosed, behaviors must interfere with social, academic, or occupational functioning. Individuals diagnosed with this disorder typically do not show concern of the feelings and well-being of others. They lack empathy and frequently engage in aggressive and disruptive behaviors (Singh et al., 2007).

Oppositional Defiant Disorder

Symptoms of OD include irritable mood as well as argumentative, disobedient, and hostile behaviors that are primarily targeted toward authority figures. Specific ODD behaviors may include losing one's temper, arguing with adults, refusing to comply with requests, and being angry (APA, 2013). Individuals with this disorder often have difficulties in and outside the home resulting in difficulties establishing and maintaining peer relationships and cooperating with others (Dunsmore, Booker, & Ollendick, 2013). As with all disruptive behavior diagnoses, children and youth engage in these behaviors more frequently than same-age peers.

Summary

Characteristic behaviors of children with ADHD, CD, and ODD often result in disciplinary actions and disruptions in social, academic, and occupational functioning. To address these characteristics, it is recommended that self-regulation strategies be used to allow individuals to manage, monitor, and assess themselves and take responsibility for their actions.

Self-Regulation Strategies

Students who are able to regulate their behavior use self-management and self-evaluation skills to monitor their behavior. Self-regulation is defined as the ability to self-assess and self-evaluate one's behavior (Reid et al., 2005). The goal of self-regulation is to decrease disruptive behaviors, increase on-task behaviors, and improve social skills (Kamps, Conkling, & Wills, 2015). Reid et al. (2005) described the four most common self-regulation processes: self-monitoring, self-monitoring plus reinforcement, self-reinforcement, and self-management. These terms are often referred to collectively as self-regulation. Not all researchers have defined these processes as precisely as Reid et al. (2005).

Self-Monitoring

Self-monitoring is a process in which an individual actively observes and records one's behavior in order to change a specific target behavior (Lam & Cole, 1994). This process allows individuals to take responsibility and manage their own behaviors (Patti & Miller, 2011). Reid et al. (2005) described self-monitoring as a 2-step procedure in which the individual first decides which target behavior to record based upon the frequency and severity of a behavior that interferes with learning. Next, the individual self-records or is cued to record either on-task occurrences, task accuracy, or task completion. These self-recordings are often referred to as attention and performance tasks (Reid et al., 2005).

Self-Monitoring Plus Reinforcement

Self-monitoring plus reinforcement entails the same steps as listed in the self-monitoring section but includes an added reward that is designed to increase continued and consistent self-assessments (Reid et al., 2005). For example, a student may receive points or some sort of token

economy for preferred behaviors. An example of a preferred behavior in relation to self-monitoring may be accurately recording the target behavior. The purpose of an added incentive is to increase appropriate behaviors and decrease inappropriate behaviors (Zlomke & Zlomke, 2003).

Self-Reinforcement

Individuals must meet predetermined criteria in order to self-reward. Self-reinforcement is different from the previous section in that individuals determine if they have met the criteria in order to receive a reward. This process allows the individual to take responsibility for their behavior. As indicated in the previous section, rewards are often in the form of a token or point system that provides a continued record of progress (Reid et al., 2005). The student may be allowed to exchange tokens or points for a preferred activity or reward at a later time (Zlomke & Zlomke, 2003).

Self-Management

Self-management is used for individuals to determine if their behavior is appropriate (Kamps et al., 2015). This allows individuals to monitor and rate their behavior according to a specific criterion. Individuals self-assess their behavior and compare their evaluation to an observer, such as a teacher or paraprofessional (Reid et al., 2005). If both evaluations match and are accurate, according to a pre-set criterion, the student is rewarded. Accuracy is dependent upon the criteria and determinants related to the target behavior and preferred behavior.

Self-monitoring/evaluation allows individuals to decide whether or not they have engaged in a specific behavior or not. Goal setting and reward contingencies are included in this self-regulation strategy (Reid et al., 2005). Individualized and meaningful rewards are earned for

meeting a behavioral expectation. The rewards must match the behavioral expectation, meaning that the *values* are similar. For example, a student completes five problems on a math assignment and the teacher rewards the student with a Jolly Rancher. The task completed and the reward "match." A teacher would not give the student a king size candy bar for completing only five math problems.

Summary

Behavioral self-regulation strategies consist of self-monitoring, self-monitoring plus reinforcement, self-reinforcement, and self-management. They incorporate some form of self-recording of target behaviors, and individuals may reward themselves for meeting a specific criterion. For children and adolescents who have not learned to self-regulate their behavior, these strategies have been recommended to improve appropriate behaviors and pro-social skills.

Research Question

This literature review explores one question: What self-regulation strategies are effective in treating elementary and secondary students who are diagnosed with disruptive behavior disorders?

Focus of the Paper

Included in Chapter 2, research articles must be quantitative or qualitative in nature and published between 2005 and 2015. Participants must be K-12 elementary and secondary students in educational or clinical settings who are diagnosed with disruptive behaviors (i.e., ADHD, Conduct Disorder, and ODD).

I used a variety of search terms and combination of search terms to locate information on the topic including, but not limited to *self-regulation, , adolescents, secondary, elementary,* and

ADHD, CD, and *ODD*. These search terms were entered into the Academic Search Premier and PsychINFO databases. I also examined the tables of contents of the *Journal of Emotional and Behavioral Disorders* and *Behavioral Disorders*.

Importance of the Topic

Students with emotional and behavioral disorders have difficulty controlling their emotions and impulsive behaviors, which impairs their ability to use problem-solving strategies to solve conflicts. Learned and practiced self-regulation strategies may enable them to exert more self-control and to relieve stress and anxiety. Increased self-regulation may also benefit them by allowing for greater inclusion in general education settings.

As a special education teacher and case manager for children with disruptive behaviors, this starred paper may be used as a teaching reference for effective self-regulation strategies inside and outside of the classroom. This topic is important to me because I work with children who have a diagnosis of ADHD, ODD, and/or schizophrenia. Currently, I case manage a student whose family is opposed to the use of prescription medications. Self-regulation strategies may be useful not only for this particular student, but also for students who currently use prescription medications. These strategies may improve the social skills and coping skills students need to succeed in educational and community environments.

Definitions

This section provides definitions for relevant terms used in this paper, unless the terms have already been defined in this chapter or in Chapter 2. Definitions will be added as Chapter 2 is developed.

Executive functioning: Cooper-Kahn and Dietzel (2015) defined executive functions in the ldonline website as, "a set of processes that all have to do with managing oneself and one's resources in order to achieve a goal. It is an umbrella term for the neurologically-based skills involving mental control and self-regulation."

Mindfulness: Mindfulness involves "learning to direct our attention to our experience as it unfolds, moment by moment, with open-minded curiosity and acceptance. Rather than worrying about what has happened or might happen, it trains us to respond skillfully to whatever is happening right now" (Mindfulness in Schools Project, 2015).

Chapter 2: Review of the Literature

The purpose of this paper was to examine the current research that identifies effective strategies for students who demonstrate disruptive behaviors in educational and clinical settings. This chapter includes two sections: paper-pencil self-management recording strategies and self-management strategies with the use of technology devices.

Paper-Pencil Self-Management Studies

Peterson, Young, Salzberg, West, and Hill (2006) evaluated whether students could use self-management strategies to generalize appropriate social skills. One Hispanic female and four White males in grades 7-8 from a large urban school district in Utah participated in the *Prevention Plus* program, which was designed to prevent or reduce antisocial behavior. A special education teacher and a trained assistant implemented the program in the classroom during one period each day with the entire class. The program combined direct and corrective teaching with the use of modeling, role playing, and performance feedback.

Dependent variables included on-task and off-task behaviors and four classroom social skills (following instructions, accepting "No" for an answer, accepting teacher feedback, and appropriately getting teacher attention). The students were observed in four general education classrooms at least twice per week for 40-min class periods. Both partial- and whole-interval recordings for 10s were used to collect data. The mean interobserver reliability percentages ranged from 95-100%.

A multiple baseline design was used. Pre-baseline included *Prevention Plus* training. Baseline data consisted of observation of targeted social skills in general education classrooms for 5 consecutive days. The self-management condition in the general education setting included

self-management forms completed by students. The students rated their behaviors, which were compared with teacher recordings. Points were awarded to students if both recordings matched.

Results showed that self-management strategies implemented in the general education setting improved substantially for four out of the five students for appropriate social skills and on-task behaviors. Bill had similar results with improvements, but demonstrated variability and less substantial results. According to the data, Angela, Robert, and Joe demonstrated appropriate social skills 100% of the time for the last five data points. These three students also demonstrated off-task behaviors from 0% to 25% of the time. Across all participants, the mean percentage for appropriate social skills was 96%.

Overall, all participants increased in the target behavior areas. Behaviors changed positively after the self-management intervention was implemented, indicating other factors were not responsible for the changes. Behavior improvements were more dramatic after the self-rating/ teacher matching intervention was introduced.

Amato-Zech, Hoff, and Doepke (2006) used tactile self-monitoring prompts to increase on-task behaviors for three 11-year-old elementary students in a special education setting. Jack and David had been diagnosed with speech and language impairment and specific learning disabilities. Allison was identified as EBD and had a speech and language impairment. Experimental sessions were conducted in a 45-min period called Reasoning and Writing. During the intervention phase, a MotivAider was used to cue the student to self-monitor their behavior. The MotivAider looks similar to a pager and attaches to a belt or waistband and vibrates. The participants also used a paper-pencil recording system. On-task behavior was observed using a 15-sec interval recording system and using categories from the *Behavioral Observation of*

Students in Schools (BOSS; Shapiro, 1996). Direct observations were conducted for 15 min per day, 2-3 times per week for each student.

Baseline data were collected during class without the use of self-monitoring procedures. Following baseline, participants were trained to observe and record their on-task behavior during two 30-min group-training sessions and two 30-min practice sessions. Students were taught how to identify on- and off-task behaviors using the SLANT strategy (Sit up, Look at the person talking, Activate Thinking, Note key information, and Track the talker. Off-task was defined as the absence of one or more SLANT behaviors. To practice self-monitoring, the students were first presented with an overt audio cue followed by the use of the MotivAider and practiced until they could independently self-monitor their behaviors. During the intervention phase, students independently recorded their behavior by checking whether or not they were paying attention on the self-monitoring form. After each session, the students gave their forms to the teacher. The MotivAider vibrated at 1-min fixed intervals for the first week and then were set at 3 min.

Overall, on-task behaviors improved for all three participants during the intervention phases. Initial baseline data indicated low levels of on-task behaviors, with all three participants displaying on-task behaviors less than 60% of the time. During both intervention phases, students were on-task an average of 90% of the time. Table 1 provides data for the three study participants.

Table 1

Self-Monitoring Data

PARTICIPANT	BASELINE ON-TASK	INTERVENTION SELF-MONITORING	DISCONTINUED INTERVENTION	INTERVENTION REINTRODUCED
Jack	*M* = 53%; range = 47–61%	*M* = 79%; range = 65–96%	*M* = 74%; range = 65-81%	*M* = 91%; range = 85-100%
David	*M* = 55%; range = 43-62%	*M* = 79%; range = 68-93%	*M* = 76%; range = 70-80%	*M* = 93%; range = 87-97%
Allison	*M* = 56%; range = 45-67%	*M* = 89%; range = 73-98%	*M* = 84%; range = 75-91%	*M* = 96%; range = 88-98%

Amato-Zech et al. (2006) described the use of the MotivAider in schools as easy and time effective. The students independently recorded their behaviors, which placed less time demands on teachers. Although on-task behaviors for all participants began to increase once the MotivAider was removed, data did not show a complete return to baseline. Generalization data should be collected more consistently in future research.

Rafferty and Raimondo (2009) conducted a study to examine differential outcomes between self-monitoring of attention (SMA) and self-monitoring of performance (SMP) of three students identified with emotional disturbance. Target students included one female (Hispanic) and two male third graders (African American). In addition to the target students, two comparison peers participated in the study: a Hispanic third grader and an African American second grader. The setting took place in two self-contained classrooms in a public elementary school located in a large urban city in northeastern United States. Each classroom included 15 students, a special education teacher, and a paraprofessional.

Dependent variables included on-task and academic performance. Using two probes created from the *Basic Skill Builders* (Beck et al., 1995), students were asked to complete as many problems as they could on a practice worksheet for 15-min. The author observed the

students Monday through Friday during the regularly scheduled 15-min independent math practice period using a 5-s time sampling procedure. Interobserver agreement for on-task behaviors averaged 92% for all target students and comparison peers.

To examine the effects of SMA and SMP, a counterbalanced, multiple baseline across participants was used that included three conditions: Attention, Performance, and Choice. The SMA and SMP procedures were taught during individual training sessions. The students recorded their behavior every 5-min during the SMA condition with the use of cards. During the SMP condition, the students self-recorded their performance after the work period ended.

Visual inspection, descriptive statistics, and PND were used to analyze the data. Findings suggest SMP procedures were more effective in producing higher levels of on-task behaviors and performance. Student results also indicate a preference to use the SMP procedure. All three target students increased or improved their attention and performance using both SMA and SMP procedures. Table 2 presents these findings.

Table 2

Performance Results

MEAN NUMBER OF MATH PROBLEMS COMPLETED				
Participant	Baseline	SMA Condition	SMP Condition	Choice (All chose SMP)
Alexa	7.75	7.40	23.50	30.33
Wayne	6.33	9.25	22.40	31.00
Bryan	10.55	19.25	24.75	24.00
ACADEMIC PERFORMANCE RESULTS ACCURACY				
Alexa	5.00	2.80	11.75	17.50
Wayne	4.16	7.00	18.60	28.67
Bryan	7.11	15.25	19.75	18.50

Table 2 (continued)

ON-TASK BEHAVIOR RESULTS: MEAN PERCENTAGE				
Alexa	28.1	43.0	65.6	70.4
Wayne	15.0	48.8	68.5	75.8
Bryan	42.5	66.9	75.0	68.8
ON-TASK PERCENTAGE COMPARATIVE TO PEERS				
Sam's First Set	75.6	78.1	75.0	75.4
Sam's Second Set	73.2	78.8	79.5	73.8
Adam	74.0	76.2	76.5	67.5

Raffery and Raimondi (2009) discussed that SMP procedures may be more effective than SMA procedures with regard to on-task behaviors and academic accuracy. All target students demonstrated higher levels of on-task behaviors and academic performance regardless of order of intervention. However, because the primary data collector was aware of the purpose of this study, potential bias was a limitation. Another potential limitation was that SMA and SMP procedures were implemented at different times during intervention conditions. This may have affected the results because SMA was recorded during the task and SMP was recorded after the task. Researchers discussed monitoring during a task may be more intrusive and less motivating than recording after the task.

Axelrod, Zhe, Haugen, and Klein (2009) conducted a self-management intervention to increase the on-task behavior and assignment completion of adolescents in a residential treatment program. Four Caucasian males and one female ranged in age from 13 to 16 years and were diagnosed with ADHD, Conduct Disorder, or Oppositional Defiant Disorder.

To obtain on-task data, trained teachers observed students in the classroom and recorded 15-s partial interval data using a handheld personal digital assistant. Interrater reliability reached 95% or higher. Data regarding incomplete homework assignments were also recorded for each

participant. Target students typically spent 1 hour completing written assignments, studying, and reading during homework time at the treatment home.

After baseline, each participant was exposed to two conditions: 3- and 10-min self-monitoring intervals. The participants were provided with a tape recorder with a beep-tape and a self-monitoring log. Intervals were presented with a beep using a random number generator. Participants had the opportunity to receive a small reward if their observations matched the staff member's data with 80% accuracy.

Four baseline and 20 intervention sessions were completed (Ten 3-min intervals and ten 10-min intervals), for a total of 24 sessions. The average interobserver agreement value was 98% (range: 97–100%). All participants' on-task behaviors increased during both interval interventions when compared to baseline data, although differences between the 3- and 10-min intervals were small. Across all participants, on-task behaviors increased from a low of 10% to a high of 100% across all conditions. The percentage of non-overlapping data points (PND) for all five students was 100% for the 3-min interval. For the 10-min interval, four students had 100% PND. The fifth student's PND was 80%, which also suggests an effective intervention.

Table 3 includes percentages of incomplete homework assignments during baseline and intervention conditions.

Table 3

Percentage of Incomplete Assignments

		CONDITION	
Participant	Baseline	3-min Interval	10-min Interval
Martin	44.8	7.5	0
Rubin	85.7	2.5	2.6
Sarah	66.7	2.6	0
Stewart	56.3	0	5.7
Tom	57.1	2.8	6.3

Results of this study indicated an overall increase of on-task and assignment completion behaviors for adolescents with attention and behavior problems. No significant differences were observed between the time intervals, suggesting that self-monitoring interventions may be effective with longer time frames that are less intrusive and easier to implement compared to shorter intervals. On-task behaviors increased with the use of 3- and 10-min self-recording intervals. An online random number generator provided a beep-prompt for student to record whether or not they were on-task on a self-monitoring log.

Axelrod et al. (2009) recommended this approach as a quick, fast-acting intervention for students with attention needs that can be adapted for use in home and school environments. However, generalizability is limited from this study as the experiment took place in a controlled environment with concurrent interventions (i.e., token economy). Participants in this study may have also been influenced by the positive adult attention they received for accurately recording their data. Follow-up data would also have been helpful in evaluating the intervention's effectiveness.

Chafouleas, Hagermoser-Sanetti, Jaffery, and Fallon (2012) conducted a study with suburban middle school students to evaluate the effects of a group contingency and self-management component on appropriate classroom behaviors. Participants included 57 eighth-grade male and female students and two eighth-grade teachers across three classrooms (Ms. S, Period 5; Ms. B, Period 3; and Ms. S, Period 1). Target behaviors for self-monitoring using the *Direct Behavior Rating-Single Item Scale* (DBS-SIS; Chafouleas et al., 2010) that evaluated class preparedness and academic engagement. The DBS-SIS form uses an 11-point scale with three qualitative anchors (0 = *Not at all*, 5 = *Some*, and 10 = *Totally*).

During baseline, students were trained for 15 min how to self-monitor the three target behaviors using the DBS-SIS form. At the end of class, all students rated themselves on the form, and the teacher also rated each student using the same form. Each student had the opportunity to earn bonus points if his or her score matched or was within 1 point of the teacher's score. The students had the opportunity to earn 10 points for each behavior, plus 3 bonus points daily for a total of 33 possible points. Systematic direct observation (SDO) provided the academic engagement data that were collected 1-2 times per week using a 15-s interval recording procedure

Intervention consisted of another 15-min training session to explain the interdependent group contingency component. Students continued to score themselves using the DBS-SIS form, and their individual scores were combined with each student in the group (groups of three to five students) to calculate an average score. The average scores were recorded on the Team Tally Sheet, and average scores were recorded and updated on a team graph to act as a visual motivator. At the end of the week, the teams that met or exceeded the predetermined number of points earned a reward.

A multilevel reinforcer system was used to increase target behaviors based on the number of consecutive weeks an individual reached the group goal. A food item of the student's choice was earned after 1 week of meeting the goal, after 2 weeks a student earned a $5 gift card to a donut shop or attend a monthly pizza party, and after 3 consecutive weeks, the student received a food item of his or her choice as well as a $10 movie pass or $10 online music store gift card. The initial goal for points was determined during the baseline phase and based upon each class's

average number of points earned on the DBR-SIS form. A phase change for an increased points goal was added to each class dependent upon team averages from previous weeks.

Overall, the target behaviors being monitored improved with the intervention, which was shown to be implemented with high treatment fidelity. According to the DBR-SIS data, mean preparedness across conditions and participants increased from 7.8 to 9.9. DBR-SIS data for engagement increased from 6.4 to 9.6. Observational data indicated increases in mean engagement from 36.2 to 86.7 across all participants and conditions. SDO data for off-task behaviors across conditions and participants decreased from 70.4 to 16.7. Specific data for the three classrooms is presented in Table 4.

Table 4

Classroom Data

	Baseline		Phase 1		Phase 2	
	M	SD	M	SD	M	SD
Ms. S, Period 5						
DBR Mean Scores						
Preparedness	7.8	2.01	7.6	1.97	8.8	1.28
Engagement	6.4	2.80	6.8	2.31	8.0	1.72
SDO Percentage Data						
Engagement	36.2	12.51	79.0	5.08	83.1	8.34
Off-task	70.4	7.60	30.7	6.30	21.7	8.16
Ms. B, Period 3						
DBR Mean Scores						
Preparedness	9.6	1.05	9.9	0.47	9.9	0.24
Engagement	8.6	1.36	9.3	0.99	9.6	0.75
SDO Percentage Data						
Engagement	75.6	7.95	84.7	4.88	86.7	5.87
Off-task	32.2	2.60	23.7	11.22	16.7	6.41
Ms. S, Period 1						
DBR Mean Scores						
Preparedness	8.1	1.90	8.3	1.36	8.9	0.91
Engagement	7.4	2.02	7.8	1.59	8.1	1.35
SDO Percentage Data						
Engagement	57.9	7.75	71.0	13.86	80.6	14.94
Off-task	47.5	5.00	34.6	20.78	28.9	14.18

Teacher perceptions of intervention usability were moderately high. Researchers also noted that a class-wide intervention including a self-management component has positive outcomes for student behavior. Off-task behavior measured by SDO showed the most sustained effects.

Denune et al. (2015) examined the effectiveness of implementing a self-monitoring intervention to improve student engagement behaviors of sixth-graders with emotional and behavioral disorders (EBD) who attended an alternative middle school. Participants included 11 boys (three White and eight Black) and three girls (one White and two Black), for a total of 14 participants. Their ranged in age from 12 to 15 years old, and diagnoses included ADHD, ODD, and posttraumatic stress disorder (PTSD). Observations were conducted during the language arts to measure the effects of the interventions on student engagement, off-task behaviors, and disruptive behaviors 5 days per week and lasted in duration between 40 and 45 min for 15 weeks.

An ABCBC withdrawal design was employed in this study. The teacher reviewed the classroom rules at the beginning of class and informed the students of four different times during class when the teacher would check for students who were following the rules. During these checks, students could earn a total of 4 points for: (a) sitting in their seat, (b) using respectful language leading up to the check, (c) paying attention, and (d) actively completing their classroom assignment. At the end of the class period, the teacher randomly selected a percentage criterion between 75% and 95%, and if a group earned at least that percentage, they received a reward. If a group met this contingency, the teacher randomly selected a possible reward. A timer was set for 8- to 10-min intervals in which the teacher would check for points earned.

After 2 weeks, a self-monitoring component was implemented in addition to the interdependent group contingency intervention. Students were provided with data collection

sheets, which required them to answer *yes* or *no* questions with regard to the four aforementioned areas. Data were collected at four different times during the class period. After 3 weeks, the self-monitoring intervention was removed, and the teacher reintroduced the initial interdependent group contingency game procedures. The self-monitoring component was then implemented after 2 weeks. One week after interventions had been removed; data were again collected as a maintenance check. Fidelity checks ensured adherence to the intervention.

Data were analyzed through visual analysis of on-task, off-task, and disruptive behavior data. Mean baseline data for on-task behaviors were 72.34%. When the interdependent group contingency component was implemented, mean on-task were recorded at 75%. During the last intervention phase (contingency and self-monitoring), on-task behavior data were recorded as 93.54%, with one outlier. Concurrent with increases in on-task behavior were corresponding decreases in disruptive behaviors. During the maintenance phase, on-task behaviors remained above the mean baseline whereas off-task behaviors below the mean baseline.

Although behaviors improved from baseline to intervention, the self-monitoring procedure did not increase the effectiveness of the interdependent group contingency intervention. Across phases of the study, data did not support differential effects of the interventions for disruptive behaviors. In conclusion, the group contingency component provided evidence for improved behaviors, non-contingent of the self-monitoring component.

Kamps et al. (2015) conducted a study to determine whether a self-management component added to an existing class-wide program would improve on-task behaviors and decrease disruptive behaviors. Classroom teachers identified two first-graders and two-fourth graders who displayed chronic disruptive behaviors and ranked in the above-average range on

the *Social Skills Rating System* (SSRS; Gresham & Elliot, 1990). The three males and one female attended an urban midwest school. Three students were African-American and one student was Caucasian. In addition to the four target students, all students in one first-grade class and all students in one fourth-grade class participated in the study. Two target students were included in each classroom.

The classrooms were divided into teams of two to five. The researchers implemented Class-wide Function-related Intervention Teams (CW-FIT), a behavioral intervention designed to teach and reinforce appropriate social skills through a game format. Three skills are taught as a part of CW-FIT: how to gain the teacher's attention, how to follow directions, and how to ignore inappropriate behaviors. Direct instruction is incorporated into the model and includes defining, modeling, role playing, feedback, and practice.

In this study, a single case withdrawal design was employed and consisted of baseline, CW-FIT, and CW-FIT plus self-management. Baseline consisted of large-group instruction, use of manipulatives to complete math problems, and occasional tests to assess the students. Colored card systems were displayed for misbehaviors. If students were given a warning, the teacher changed the card from green to yellow and from yellow to red. Each change in cards facilitated a consequence in the following order: reprimand, loss of 5 min from recess, and a phone call home to parents. Baseline data were collected two-three times per week for 2 weeks.

The intervention was implemented during the first 30-40 min of math class for a 6-week period. During intervention, the teacher set the timer to ring every 2-3 min. At the beep, teams with all members who demonstrated appropriate behaviors were rewarded a point on the team chart. Data were collected for a 4-month period.

Because all four participants continued to display inappropriate behaviors at the end of the 4 months, a self-management component was added to CW-FIT as an enhancement condition. The self-management component included two group booster sessions and the use of a mini chart on the students' desks that served as a self-management tool. The booster sessions included two target students and two peers from the classroom and focused on staying seated at their assigned desks, staying on task, raising their hands, and following directions. During the 30-min booster sessions coaches reviewed rules, students role played specific skills, and coaches provided feedback. The coaches modeled the self-management chart and when the timer went off, the students marked their charts according to their behavior. After the booster sessions, the students practiced the self-management component in the classroom. The students were verbally reminded to score their charts appropriately at the sound of the timer. The students awarded themselves a point on their chart if they followed directions, stayed seated, ignored inappropriate behavior, and obtained the teacher's attention by raising their hand.

Results showed all four participants increased their on-task behaviors and decreased disruptive behavior when the self-management component was implemented. Table 5 provides mean data for all participants.

Table 5

Self-Management On-Task Data

PHASE	TAMARA	PAUL	JEROME	ZACHARY
Baseline	59.9%; *SD* = 33	41%; *SD* = 29.9	44.7%; *SD* = 10.3	*No mean provided. Range = 22.8–100%; *SD* = 38.9
CW-FIT	78.6%; *SD* = 18	80.4%; *SD* = 7.9	58%; *SD* = 18.2	72%; *SD* = 13.9
CW-FIT + Self-management	96.1%; *SD* = 2.6	93.8%; *SD* = 3.8	96%; *SD* = 3.5	94.4%; *SD* = 6.2

This study demonstrated that a class-wide program may not be sufficient to address the on-task and disruptive behaviors of some students. Results revealed that the addition of a self-management component to the class-wide program produced positive results. The self-management component in this study allowed more time and practice during the booster sessions for the students to practice the appropriate skills and the self-management chart. All participants improved their on-task behaviors and responded more appropriately to gain the teachers' attention. Authors suggested that future research incorporate experimental designs and add a tiers or levels for students who need additional supports.

Self-Management Strategies with Devices

Gulchak (2008) investigated whether a student could learn to self-monitor his on-task behavior using a handheld computer. Jay was a third-grader of European-American descent who was identified with EBD since kindergarten. The study was conducted in a self-contained public school classroom for students with EBD in a large southwestern metropolitan city. Nine students, the EBD teacher, and two paraprofessionals were in the class with Jay. Jay's on-task behavior was recorded with a handheld computer using a 30-s whole interval recording method. Data were collected 4 days per week during a 30-min reading period. Mean interobserver agreement was 92%. An ABAB withdrawal design was used in this study. During baseline phases reading instruction was delivered in its usual way. During the two intervention phases, the student operated the handheld computer that monitored his behavior.

The student self-monitored his behavior during intervention 100% of the days with 100% fidelity. Mean on-task behavior increased from a baseline mean of 64% to a mean of 90% during the first intervention phase. During the second baseline the mean decreased to 70% and then returned to 98% when the intervention was reintroduced. Therefore, on-task behavior increased from a low of 64% to 98% at the conclusion of the study. The student expressed, "excitement in using the handheld" to monitor his behavior (Gulchak, 2008, p. 576).

One limitation of this study was the unassessed performance factor. Gulchak (2008) noted that student attention does not necessarily equate to academic performance. In addition, multiple subjects could have easily been included but was not. Including multiple subjects is recommended for future studies.

Blood, Johnson, Ridenour, Simmons, and Crouch (2011) conducted an experiment to teach self-management skills to a fifth-grader using an iPod touch. A 10-year-old male, Andy, was identified with EBD and received special education services with eight other students in a self-contained public school classroom.

The students were divided into instructional groups, and Andy participated in the math group with two to three other students. Math instruction was directed by a paraprofessional who used direct instructional strategies and praised students for behaving appropriately, following directions, and completing work. A check-in/check-out system was already put into place for Andy prior to this current study in which he earned points based on work completion and engaging in appropriate target behaviors. Andy had the opportunity up to two times per day to exchange his earned points in for a reward. This system was in effect throughout a total of 16 sessions.

The dependent variables were on-task and occurrence of disruptive behavior. On-task behavior was collected using 15-s momentary time-sampling intervals. Disruptive behavioral data were collected using 15-s partial interval recordings. The duration of each observation period lasted between 20-25 min. Average interobserver agreement was 94% for on-task and 91% for disruptive behavior.

A single-subject ABBC experimental design was used to assess the effects of video modeling and self-monitoring. During baseline, no changes were made the math instruction group. Video recordings of Andy were collected and included images of Andy engaging in on-task as well as off-task behaviors. Video modeling included two peers demonstrating appropriate behavior with narration of expectations. The final 4-min video was uploaded onto

Andy's iPod Touch. Five min prior to math instruction, the paraprofessional prompted Andy to play the video. After the video, Andy returned the iPod to the paraprofessional. This process continued throughout the intervention phases. Self-monitoring training for Andy lasted 3 separate days for 15-min sessions to differentiate between on-task and off-task behaviors.

Baseline data were collected during math instruction as usual. During the video-modeling phase training, Andy watched a 4-min peer-modeling video of two same-aged peers demonstrating on-task behaviors. The video included narration of appropriate behavioral expectations. Next, the video modeling plus self-monitoring phase was introduced and training took place for three separate 15-min sessions in which Andy was taught to distinguish between on- and off-task behaviors. Before baseline data were collected, a video recording was taken of Andy during math instruction that showed him engaging in both on- and off-task behaviors. While watching the video of himself, Andy first responded verbally to identify on- and off-task behaviors, then used a self-monitoring sheet to check the appropriate box with 30-s intervals as used with an iPod timer application. Finally, Andy independently used the self-monitoring sheet to record his behaviors with 100% accuracy. Andy continued this intervention phase with the timer set at 2-min loops.

The use of video modeling and self-monitoring was effective in increasing on-task behaviors and decreasing disruptive behaviors. Andy's mean percentage of on-task behaviors at baseline was 44% (range = 31-51%). When the video modeling component was added, Andy's on-task increased to 81% (range = 57-98%). With the addition of video modeling plus self-monitoring, Andy's mean on-task percentage reached 99% (range = 98-100). Mean percentage

of disruptive behavior was 40% in baseline (range = 36-45%), 11% with video modeling (range = 2-34%), and 0% with video modeling plus self-monitoring (range = 0%).

Video modeling using an iPod touch had a positive outcome for a student's on-task behaviors. Combined interventions with video modeling plus self-management resulted in highly effective outcomes for increasing on-task behaviors and decreasing disruptive behaviors. Teacher ratings of the intervention indicated more successful self-monitoring compared to video modeling, as the teacher noted Andy became bored after being asked to watch the video multiple times. Generalization was not accounted for in this study, and Andy displayed disruptive behaviors throughout the day when he was not in the math instruction setting.

Wills and Mason (2014) also used a technology device. They investigated the use of the I-Connect self-monitoring intervention for two high school special education students in a general education ninth-grade remedial science class. Researchers examined the effect of on-task behavior and whether the intervention generalized. The research took place in a suburban high school in the midwest where approximately one-fourth of the population was minority enrollment and low socioeconomic status. Fourteen general and special education students were in the classroom with a teacher and co-teacher for 55-min class periods. The two male participants were approximately 15 years old with a diagnosis of ADHD, inattention, and disruptive behaviors.

I-Connect is an Android application with scheduled prompts for students to self-monitor targeted behaviors. The application allowed text cues such as, "Are you on task?" to which the student responded by touching a button. Dependent variables included on-task behaviors and disruptive behaviors. Interobserver agreements were 92% for on-task behaviors and 88% for

disruptions. An ABAB withdrawal design was used. Baseline consisted of one to two 15-min observations for 5 days during basic instructional activities. Following baseline, students were trained to use I-Connect, which was followed by the first intervention sessions for eight sessions.

On-task behaviors for both students increased when the I-Connect intervention was implemented. Additionally, both students decreased the amount of classroom disruptions they exhibited when the I-Connect intervention was implemented. Table 6 presents findings regarding the percentage of on-task behavior and the number of disruptions.

Table 6

Outcome Data

PERCENTAGE OF ON-TASK				
Participant	Baseline	I-Connect Intervention	Withdrawal	Reintroduce I-Connect
Student 1	M = 51% (range 71-41%)	M = 95% (range 77-100%)	M = 41% (range 32-51%)	M = 94% (range 84-100%)
Student 2	M = 18% (range 80-0%)	M = 91% (range 100-59%)	M = 42% (range 71-16%)	M = 91% (range 97-81%)
NUMBER OF DISRUPTIONS				
Participant	Baseline	I-Connect Intervention	Withdrawal	Reintroduce I-Connect
Student 1	M = 2.2 (range 1-4)	M = 1 (range 0-5)	M = 2 (range 1-3)	M = .4 (range 0-2)
Student 2	M = 4.3 (range 0-9)	M = 1.5 (range 0-7)	M = 3.8 (range 0-9)	M = .6 (range 0-1)

Data for Student 1 indicated he was on task during baseline 51% of the time, which increased to 95% of the time during intervention. During the second baseline, on-task behavior decreased to below baseline levels at 41%. On-task behaviors increased again to 94% after the intervention was reintroduced. Student 2 attended to tasks 18% of the time during the first baseline phase, which increased to 88% during intervention (note: one session was 59%). When

I-Connect was removed, on-task behavior decreased to 30%. When I-Connect was reintroduced, on-task behavior increased to 91%.

During the first baseline, Student 1 averaged 2.2 disruptions per observation, which reduced to an average of .4 by the end of the intervention. Student 2 had a higher rate of disruptions, averaging 4.3 during baseline. During the first intervention phase, Student 2 decreased disruptions to 0, with only two out of the eight sessions with disruptions higher than 1. By the end of the intervention, Student 2 averaged .6 disruptions.

Overall, this study resulted in increased on-task behaviors for both participants with varying degrees of decreased disruptions. Generalization was not accounted for across different settings, nor was fading of the intervention.

Summary

This chapter included reviews of 10 studies that examined the effects of various interventions designed to improve students' self-monitoring skills. These studies are summarized in Table 7 and are discussed in Chapter 3.

Table 7

Summary of Chapter 2 Studies

AUTHORS	PARTICIPANTS	PROCEDURE/ PROCESS	RESULTS
PAPER-PENCIL STRATEGIES			
Peterson et al. (2006)	Five 12-14 year olds (1F; 4M) in 7th-8th grade – (Hispanic, European)	Self-management plus reinforcement/Student and teacher forms–Point system–10 min, 20 min, 45 min intervals	On-task behaviors increased; substantially for 4 out of 5 students. Social Skills increased to 100% for 3 students on last 5 data points; 96% for all participants.
Amato-Zech et al. (2006)	Three 11 year olds (1F; 2M) in 5th grade participants, EBD	Self-management/ MotivAider (pulsing vibration)–Check Yes or No –3 min intervals	On-task behaviors increased from < 60% to > 90%. Generalization results: 55% to 90% on-task.
Rafferty & Raimondi (2009)	Three 6-10 year olds (1F; 2M) in 3rd grade participants, EBD (Hispanic, African American)	Self-management plus reinforcement/ SMA:Tape-recorded tone at 5min intervals–Check Yes or No on cards SMP: Self-record end of period the number of problems accurately completed	On-task behaviors increased from 15% to 75%. Academic performance increased from 4 accurate answers to 29 accurate answers out of 36 possible. Participants chose self-monitoring of Performance (SMP) versus attention.
Axelrod et al. (2009)	Five 13-16 year olds (1F; 4M), ADHD, CD, ODD (Caucasian)	Self-management plus reinforcement/ Tape recorder with a beep at 3-min and 10-min intervals and a self-monitoring log	On-task behaviors increased approximately from 10% to 100%. Incomplete assignments decreased from 85% to 0%, across participants. Small differences between 3-min and 10-min intervals. Very effective for 4; effective for 1.
Chafouleas et al. (2012)	Fifty-seven 8th graders (27F; 32M) (White, Hispanic, Asian American, biracial)	Self-management plus reinforcement/ Group contingency with opportunity to earn individual points–self-recording forms and team tally sheet	Direct Behavior Rating (DBR) and Systematic Direct Observation (SDO) results: DBR on-task behaviors increased from 6.4 – 8. SDO on-task behaviors increased from 36.2 – 86.7.
Denune et al. (2015)	Fourteen 12-15 year olds (3F; 11M) EBD (White, Black)	Self-management plus reinforcement/ 4 points X 4 checks–Yes or No	On-task behaviors increased from 72% to 93%. Disruptive behaviors decreased from 29% to 2%.

Table 7 (continued)

AUTHORS	PARTICIPANTS	PROCEDURE/ PROCESS	RESULTS
Kamps et al. (2015)	Two 6-year-old 1st graders (1F; 1M) and two 9-year-old 4th graders (M) EBD (African American) Caucasian)	Self-management/ Group contingency game format–Self-monitoring charts–2-3-min intervals with timer to receive points	On-task behaviors increased from 22% to 100%. Disruptive behaviors decreased from 74% to 5%.
TECHNOLOGY DEVICES			
Gulchak (2008)	8-year-old male, EBD (European-American)	Handheld computer–Check Yes or No–10-min intervals–chime prompt	On-task increased from 64% - 98%.
Blood et al. (2011)	10-year-old male in 5th grade, EBD	Self-management/ iPod touch with video modeling of self and self-recording form with Yes or No	On-task behaviors increased from 44% to 99%. Disruptive behaviors decreased from 40% to 0%.
Wills & Mason (2014)	Two 15-year-old males in high school, EBD, ADHD (Native American, Caucasian	I-Connect Android Application–Check Yes or No–5-min intervals–Visual prompts	On-task increased from 18% - 95%. Disruptions decreased from 4.3 to .4.

Chapter 3: Conclusions and Recommendations

Students diagnosed with disruptive behavioral disorders typically do not possess the self-management skills they need to complete academic tasks and interact appropriately with peers. The purpose of this Starred Paper was to determine if self-regulation strategies are effective for improving behavioral, social, and academic skills among students with disruptive behavior disorders. Chapter 1 of this paper provided an overview of disruptive behavior disorders of Attention-Deficit Hyperactivity Disorder (ADHD), Conduct Disorder (CD), and Oppositional Defiant Disorder (ODD). In addition, an overview of self-regulation theory and strategies is provided. In the second chapter, I reviewed 10 studies that evaluated self-management strategies. In this chapter, I discuss the findings presented in Chapter 2, recommendations for future research, and implications of current practice.

Conclusions

All Chapter 2 studies demonstrated positive outcomes when self-management strategies were used, although studies varied in the degree of success reported. All studies used some form of self-monitoring component to measure on-task behaviors.

Although some studies included student and teacher preferences, not all did. Rafferty and Raimondi (2009) found that the students preferred to use the performance intervention compared to the attention intervention. They learned students may prefer self-monitoring procedures after task completion to be less intrusive than self-monitoring procedures during tasks.

Four studies were conducted in a general education setting (Chafouleas et al., 2012; Kamps et al., 2015; Peterson et al., 2006; Wills & Mason, 2014), whereas six studies were conducted in a special education setting (Amato-Zech et al., 2006; Axelrod et al., 2009; Blood et al., 2011; Denune et al., 2015; Gulchak, 2008; Rafferty & Raimondi, 2009).

Kamps et al. (2015) and Wills and Mason (2014) measured disruptive behaviors as well as on-task behaviors and reported positive effects on both. Amato-Zech et al. (2006) was the only study that examined generalization results for on-task behaviors, which had positive results. Axelrod et al. (2009) and Rafferty and Raimondi (2009) assessed academic components in addition to on-task behaviors and reported positive results. Only one study included comparison peers (Rafferty & Raimondi, 2009). Peterson et al. (2006) included a social skills component along with the on-task behavioral component.

Both paper-pencil and technology devices produced positive results. These findings have implications for future research, which are discussed in the next section.

Recommendations for Future Research

These studies suggest the need for future research that includes comparison peers of the same gender and ethnic background. This would enable researchers to have more confidence that the gains can be attributed to the self-monitoring intervention.

Motivation is a significant issue with student who are diagnosed with disruptive behaviors. Future studies should address motivation more specifically. It would be interesting to evaluate the role of motivation when interventions are applied.

Researchers need to be aware of when they are combining multiple variables and control for these variables (e.g., attention, rewards). Varied time intervals should be included so

students cannot predict when the prompt will occur. Follow-up maintenance and generalization data should be included for stronger results.

Future research should also fade adult feedback and accuracy checks to encourage independent and automatic responses to on-task skill sets. More research with technology devices might be helpful as a part of this research.

These studies all incorporated self-management components. As I reviewed this topic, I located several studies that discussed the role of mindfulness and its potential in reaching adolescents with disruptive behavior disorders. Future studies should attempt to connect mindfulness with previous self-management research and/or examine the difference between mindfulness and self-management. A mindfulness component may contribute to de-escalation of disruptive behaviors.

Implications for Practice

Throughout my research of self-management strategies to improve on-task behaviors and decrease disruptive behaviors, I reflected upon how these strategies could be useful in both special education and general education settings. At the school where I currently teach, general education teachers bring student concerns to a student success team. More often than not, teachers are concerned about students who pace around the room, ask irrelevant questions, impulsively blurt out comments during inappropriate times, tap pencils, and constantly ask to leave the classroom. I call these behaviors "junk" behaviors; they are annoying but they are not physically harming the student or others. I plan to bring to the team some self-monitoring ideas I have learned from my research.

I have developed my own self-monitoring form for two students with EBD whom I currently serve in a special education setting. I have used the same general concept discussed in the studies, but added individual components for each student. The intervention I began with one student is on hold due to recent poor attendance. I began using a daily self-monitoring form with another student that identified three specific behaviors: on-task, impulsive blurting out, and compliance with directives with three or fewer reminders (as recommended by the school's behavior specialist). Student 2 has used this form for the equivalent of 1.5 academic years, from grade 7 to grade 8. This student has shown the ability to independently and accurately record his own behavior, as measured by a teacher-rating form. He has acquired the skills necessary to manage his own behavior to a point where he longer requires the use of a self-monitoring form and he has exited special education services. I check in with this student and his teachers weekly to see if he continues to demonstrate on-task behaviors and appropriate social skills, and thus far he has been successful.

In my teaching experience thus far, I have students on my caseload in which the families are not in favor of medication for their child with ADHD. Instead of relying upon medication, teachers should consider implementing self-management strategies. The self-management forms are also a more accurate way of collecting data for IEP goals and objectives. Several students I case manage and provide services to have on-task goals on their IEPs, and I have been implementing a variety of self-management forms that are designed according to each student's needs. Self-management data forms also provide pertinent data to sharing information with physicians and outside service providers.

Summary

One of the goals of special education is for students to acquire the skills necessary for them to be more involved in the least restrictive environment. As I read the research on self-management interventions, I realize what a valuable tool this could be to enable students with to remain in more inclusive settings. Indeed, it would help not only students with EBD, but any student who has difficulty remaining on-task during independent seatwork.

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