

Implementation of a Self-Management System for Students with Disabilities in General
Education Settings

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A dissertation

submitted in partial fulfillment of the
requirements for the degree of

Doctor of Philosophy

University of Washington

2016

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Program Authorized to Offer Degree:

College of Education

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Abstract

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Despite the fact that self-management procedures have a robust literature base attesting to their efficacy with students with disabilities, the use of these strategies in general education settings remains limited. This mixed methods study examined the implementation of self-management procedures using both quantitative and qualitative methods. Four teachers were provided with a professional development session on how to create and implement a self-management procedure with a student in their classrooms who was diagnosed with a disability. In this triangulation design-convergence mixed methods model, behavior data were collected on student engagement using a single-subject multiple baselines across participants design. Concurrent with this, qualitative data were taken in the form of interviews with participating teachers and observations of classroom practices. Results indicate that self-management was an efficacious intervention for the student participants in this study, but there are several considerations for implementation related to context, individual characteristics, intervention characteristics, and professional development.

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ACKNOWLEDGEMENTS

A dissertation is more than just one document. It represents a culmination of experiences of an individual. However, no individual completes such a feat in a vacuum. There are systems of support and cheerleaders who help us along the way. This is one page where I can recognize the people who make up my support system.

Thank you to my advisor, Dr. Carol Davis, for your training and mentorship. I would also like to express my gratitude to Dr. Elizabeth West, Dr. Cap Peck, and Dr. Tracy J Jirikowic for serving on my committee and providing me with invaluable feedback and support.

Thank you to so many friends who encouraged me, supported me, and cheered me on, especially Abby, Bella, Denbigh, Emily, Jake, Jennifer, Tom, and Yelena.

Grandma, thank you for always being there for me. I love you.

Dad, there really are no words. I just hope you are as proud of me as I am of you.

Alan, I couldn't ask for a better partner. You have never been anything less than 100% supportive of this entire process and I couldn't have done it without you.

This dissertation is dedicated to my daughter, Stella. I want you to know you can do whatever you put your mind to and I'll be there every step of the way. I love you more than anything.

I am beyond grateful for this entire experience.

Chapter 1

Introduction

In November of 2014, National Public Radio (NPR) ran a story entitled: “*What Every School Can Learn from Preschools.*” In it, they discuss a report by Melissa Tooley and Lauren Bornfreund of the New American Foundation that underscored a need for schools to address so-called *non-cognitive* or *non-academic* skills of students. These skills include such things as attentiveness, persistence, interpersonal skills, and intrapersonal skills. The last category includes such things as the ability to self-manage and self-regulate (Tooley & Bornfreund, 2014). This set of skills is “critical for persisting on academic tasks and completing work independently,” and students who are proficient in these areas tend to demonstrate higher levels of academic achievement than their peers (Connor et al., 2010, p. 434). Anya Kamenentz, author of the story, said,

Though public schools are currently held accountable for students' scores in math and reading proficiency alone, evidence from both psychology and economics shows that a wide range of non-academic skills play a big role in determining success later in life.

Indeed, while these skills are essential for all students, those with disabilities may struggle more than their typically developing peers with mastering these skills. For example, students with Autism Spectrum Disorder (ASD), Attention Deficit and Hyperactivity Disorder (ADHD), and Emotional and Behavior Disorders (EBD) all tend to demonstrate difficulties with sustaining attention, inhibiting responses, setting and pursuing goals, planning, and completing tasks (Fitzpatrick & Knowlton, 2009; Powers, Dorminy, Luscre, & Gast, 2009; Zingerevich & LaVesser, 2009). Given the

skill deficits that often characterize ASD and other disabilities, teachers and paraprofessionals often become (warranted or not) a source of dependence for these students in order to complete tasks or engage successfully in the general education curriculum (King-Sears, 2008; Powers et al., 2009). This dependence can have long-term effects. For example, Hume, Loftin, and Lantz (2009) stated that individuals with ASD often “rely heavily on others for support in employment, living, and relationships” into adulthood (p. 1329). As such, teaching these skills to all students, particularly those with disabilities, is critical to promote their independence in school and beyond (Powers et al., 2009). As King-Sears (2008) wrote, “Instead of having adults and peers serving as external control agents, students with disabilities who are capable of assuming control over their behaviors should be taught to do so” (p. 25).

This is salient because the last decade has seen an increase in the number of students with disabilities, such as ASD, being served in general education settings (de Bruin, Deppeler, Moore, & Diamond 2013; Reynolds, Gast & Luscre, 2011). Thus, it is incumbent upon general educators to support the skill development of individuals with disabilities in their classrooms. This can be challenging given that teachers face a number of competing demands and numerous responsibilities in the classroom, including delivering instruction in numerous content areas, differentiating this instruction across a variety of student abilities, and managing the behavior of several students (Lassen, Steele & Sailor, 2006; McIntosh, Filter, Bennet, Ryan & Sugai, 2010). However, there are a number of strategies available to general educators to support the development of non-cognitive skills that support independence of all students, including those with disabilities.

Strategies to Promote Non-Academic Skill Development

Self-regulation curricula. Several curricula have been designed to promote the development of non-academic/non-cognitive skills in students. These curricula have been used in both home and school settings to teach individuals how to regulate and manage their own behaviors. *The Incredible Five Point Scale* has been used to teach students to monitor and evaluate their own emotions using a scale from 1 to 5 that is often co-created with parents and/or school personnel (Buron & Curtis, 2012). Another curriculum, the *Zones of Regulation* is a cognitive-behavioral approach to teaching students how to recognize their states of arousal and choose tools to address their emotional states at any given time (Kuypers, 2011). Last, *RULER*, out of the Yale School for Emotional Intelligence, teaches students to identify their own emotions, label them, and then regulate them. These curricula can and have been used as a class wide or tier 1 strategy with students with and without disabilities in general education settings. Tier 1 strategies are preventative and proactive supports that are afforded to all students in classroom (Simonsen, Sugai, & Negrón, 2008). For example, Seattle Public Schools uses *RULER* district-wide, and Shoreline Public Schools promotes the use of *Zones of Regulation* in general education classrooms (i.e., all students have access to these curricula). However, as Briesch and Daniels (2013) wrote,

In not all cases, however, will class wide interventions provide sufficient behavioral support for every student. As such, it is necessary to design and implement targeted intervention supports for those students who do not respond to tier 1 interventions (p. 2).

So, while these curricula support the self-regulation of all students in general education

settings, other strategies that are not curriculum-specific and more individualized can be utilized to support non-academic skill development in students with disabilities.

Self-management procedures. Self-management procedures are not a specific curriculum, but rather a set of procedures that can be used by individuals to effect behavior change (Cooper, Heron, & Heward, 2007). Self-management includes two critical components: the behavior targeted for change and the self-management behavior that will be used to change it (Cooper et al., 2007). Allowing students to manage their own behavior using these procedures reduces the time and effort required on the part of the teacher to manage the behavior of students with or at-risk for disabilities (Briesch, Briesch, & Mahoney, 2014; McDougall, 1998). Further, self-management procedures increase student independence, competence, self-reliance, and self-awareness (Briesch, et al., 2014; McDougall, 1998).

The Need for Implementation

A primary goal of education is for students to learn how to manage their own behavior rather than depend on others (Alberto & Troutman, 2006; Glynn, Thomas, & Shee, 1973; Lovitt & Curtiss, 1969; Rosenbaum & Drabman, 1979). As Alberto and Troutman (2006) wrote, “Anyone who is to function independently to any extent must learn to manage his own behavior” (p. 350). The non-academic skills described above are critical for long-term success, such as pursuing and completing college degrees, and maintaining health and safety (Cooper, Heron & Heward, 2007; Scheithauer & Kelley, 2014). According to Individuals with Disabilities Education Improvement Act (IDEIA), students with disabilities should be included and educated with their non-disabled peers to the greatest extent possible (i.e., in the general education setting). Further, both IDEIA

and the Every Student Succeeds Act (ESSA) require that teachers have the skill-set and knowledge base to provide high quality instruction that is aligned with state and federal performance standards (“Every Student Succeeds Act,” n.d.; Kushner, 2008). Given the link between social competence and academic achievement (e.g., see Welsh, Parke, Widaman & O’Neil, 2001; Wentzel, 1991), it is incumbent upon general education teachers to promote both of these skill-sets for all students in their classrooms (Carr, et al., 2014; Conderman & Johnston-Rodriguez, 2009; King-Sears, 2008; Reynolds et al., 2013; Southall & Gast, 2011). However, these teachers may not have the skill-set to teach and implement these strategies (Conderman & Johnston-Rodriguez, 2009; Schumm, Vaughn, Gordon & Rothlein, 1994).

This lack of training may be one reason why Wehmeyer, Yeager, Bolding, Agran, and Hughes (2003) identified a dearth of literature around the use of this tier 2/tier 3 or more individualized strategy in general education settings for students with disabilities. Tier 2 and tier 3 strategies focus on students who do not respond to the tier one supports and typically involves more intensive interventions (Simonsen et al., 2008). Despite the fact that “self-management is a particularly useful intervention to teach students in inclusive settings who are focusing on achieving academic and social goals alongside their grade-level peers” (King Sears, 2008, p. 25), Southall (2011) stated that the use of self-management procedures in educational settings is “not common practice” (p. 158). Self-management procedures promote independence for students with disabilities, teaching them to manage their own behavior rather than depending on adults or typically developing peers to do so. Given the efficacy of these procedures to improve the

academic and social behaviors of all students, particularly those with disabilities, it is worth exploring why this research-to-practice gap exists.

The implementation science (IS) literature may hold answers on how to support implementation of self-management procedures in the general education environment because, as Cook and Odom (2013) wrote, “Implementation is the critical link between research and practice” (p. 138). Implementation science has been defined as “the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice” (Eccles & Mittman, 2006, p.1). In addition to education, the body of IS literature spans several fields including medicine, social work, psychology and business, with the overarching goal of translating research into meaningful practice (Damschroder et al., 2009; Fixsen, Blase, Naoom & Wallace, 2009). Given the critical importance of supporting all students, particularly those with disabilities, in the development of non-cognitive skills, and the evidence attesting to the efficacy of self-management procedures in promoting these skills, it is imperative to examine the IS literature to determine how it can inform the implementation of these practices in general education settings. The IS literature indicates that several factors can contribute to the implementation process. These include knowledge and beliefs of individuals tasked with implementing the intervention, characteristics of the context where the intervention is to be implemented, the complexity of the intervention, and the type of training and/or coaching that individuals receive to implement the intervention (Damschroder et al., 2009; Durlak & DuPre, 2008; Greenhalgh, et al., 2004; Fixsen, Naoom, Blasé, & Friedman, 2005). These dimensions of implementation can be analyzed to understand the disconnect between research and practice with regard to the

use of evidence-based practices (Cook & Odom, 2013). Thus, research extending the literature base of self-management procedures into general education settings coupled with an analysis of barriers and facilitators to implementation of these procedures in these settings is both timely and warranted.

Chapter 2

Review of the Literature

Non-cognitive skill development, which includes such things as attentiveness, self-regulation, and persistence among others, is critical for all students, particularly those with disabilities who may have deficits in these areas (King-Sears, 2008; Powers et al., 2009; Tooley & Bornfreund, 2014). General education teachers can use a number of curricula to support skill development in all students, but students with disabilities may need more individualized interventions that can be tailored to support their specific needs. Self-management procedures are strategies that can promote skill development in students with disabilities and can include such things as monitoring and noting the occurrence of one's behavior, setting goals, or graphing/charting one's own behavior (Cooper et al., 2007). A student's ability to self-manage is comprised of a cluster of skills that are essential in the classroom and beyond. Terms to describe this collection of non-academic abilities include self-control, self-management, and self-regulation. These terms refer not only to a set of skills, but also to a set of procedures that a student can be taught to access these skills. Although these terms are often used interchangeably in the literature, the nuances among the terms are worth noting.

Self-Control

Skinner discussed the concept of self-control in terms of the “controlled response” and the “controlling response” (1953, p. 231). The controlled response (i.e. locking up the candy) affects the probability of the controlling response (eating too many sweets). Some authors assert that self-control means that an individual engages in a behavior without any external controlling agent (Thoresen & Mahoney, 1974), but critics point out

that this definition potentially excludes the use of external agents that the individual may put into place to facilitate behavior change (Cooper et al., 2007). In a slight departure from other definitions described, self-control has also been defined as the specific ability to delay gratification, rather than engage in more impulsive behavior that would lead to a smaller reinforcer (Dixon et al., 1998; Vollmer, Borrero, Lalli, & Daniel, 1999).

Some researchers have described self-control (as procedures) in the school context as a set of strategies in which, “pupils manage and control their own behavior in classroom settings” (McLaughlin, 1976, p. 631). Glynn et al. (1973), drawing from the work of Bandura and Perloff (1976), conceptualized self-control as being composed of four distinct components: self-assessment, self-recording, self-determination of reinforcement, and self-administration of reinforcement. Self-assessment involves having the student analyze his own behavior to determine whether or not he has performed a target behavior, while self-recording asks the student to physically mark when the target behavior occurs. A student is asked to determine if she has earned a reinforcer (and how much) in self-determination of reinforcement, and independently accesses the reinforcement contingent on the production of the target behavior in self-administration of reinforcement.

Self-Regulation

Self-regulation can be described both in terms of a set of skills and a set of strategies. Skibbe and her colleagues described self-regulation skills as “a set of behaviors that includes attention, working memory, and inhibitory control” (2011, p. 43). Behaviors related to this definition would include inhibiting responses and paying attention during instruction, as well as focusing on tasks (Ivrendi, 2011). Self-regulation

has also been explained as “the deliberate modulation of one's responses to stimuli and includes how an individual functions in the face of different types of activation (e.g., attentional, behavioral, or emotional activation)” (Connor et al., 2010, p. 435). That is, self-regulation is a term that describes how a student performs and moderates her own behavior when faced with different types of stimulation. These authors argued that self-regulation encompasses a cluster of skills that include task persistence and independence. As procedures, Bolstad and Johnson (1972) defined self-regulation as a set of strategies in which individuals manage their own behavior instead of relying on externally managed procedures.

Self-Management

Self-management procedures are defined as “the personal application of behavior change tactics that produces a desired change in behavior” (Cooper et al., 2007, p. 578). The way self-management has been defined in the literature overlaps greatly with definitions and descriptions of self-control and self-regulation procedures discussed above. The use of multiple terms to discuss the concept of self-management has not gone unnoticed by researchers. Browder and Shapiro in their 1985 review of literature related to self-management with individuals with severe disabilities discussed the multiple definitions of self-management, and how the term is often used interchangeably with self-control. These authors chose to use “self-management” as the broad umbrella term under which any procedure that an individual uses to change his or her own behavior falls. Briesch et al. (2013) also defined self-management interventions broadly, describing it as procedures wherein a student is taught specific skills with the intent of increasing the student’s independence. Thompson, Ruhr, Maynard, Pelts, and Bowen (2013) defined

self-management as procedures wherein “students are trained to assess, monitor, and evaluate their own behavioral performance” (p. 3). These authors listed several strategies that fall under this definition, including self-identifying a target behavior and target goal and observing one’s own behavior.

Clearly, there is much overlap in the general meaning of the terms self-control, self-regulation, and self-management. For example, all three refer to procedures that teach individuals skills to change their own behaviors. All three revolve around the concept of an individual having awareness of his own behavior, with the goal of changing or managing that behavior in some way. Indeed, McDougall (1998) posited that the term “self-control” was simply a precursor to the term “self-management,” and that the change in terminology stemmed from the negative connotations associated with the word “control” rather than from any major conceptual differences (p. 311). However, there are nuanced differences as well. Self-control was a term used early in the literature to describe both a set of skills and set of procedures, but was circumscribed largely to a small set of strategies (self-assessment, self-recording, self-determination of reinforcement, and self-administration of reinforcement). Self-regulation has been discussed more broadly in terms of skills targeted, including such things as emotion regulation and ability to focus/attend. “Self-management” is now the most widely used term to describe a set of procedures that teach students to change their own behaviors. Self-management includes multiple strategies such as goal setting, self-monitoring, and self-graphing among others (Menzies, Lane, & Lee, 2009). For the purposes of this study the term “self-management” will be used to refer to procedures taught to an individual to promote the ability of that individual to facilitate his or her own behavior change. Self-

monitoring, the most commonly used self-management procedure, will be discussed in greater detail.

Self-Monitoring

The term self-management encompasses several strategies, with the goal of increasing a student's ability to moderate his or her own behavior. Though several procedures fall under the self-management umbrella, self-monitoring is one of the most commonly used self-management strategies in education (e.g., see Carr, Moore, & Anderson, 2014; McDougall, 1998; Southall, 2011), and has a robust literature supporting its efficacy (e.g., Gulchak, 2008; Hansen, Wills, Kamps, & Greenwood, 2013; Morrison, Kamps, Garcia, & Parker, 2001). Self-monitoring typically encompasses two procedures: self-observation, wherein an individual evaluates whether or not a behavior has occurred, and self-recording, or noting the occurrence of the behavior (Briere III & Simonsen, 2011; Cooper et al., 2007; Harris, 1986; Wilkinson, 2008). Researchers have also paired self-monitoring with other self-management procedures (e.g., self-reinforcement, self-graphing) to promote behavior change (Ganz & Sigafos, 2005; Morrison et al., 2001). Self-monitoring is a self-management strategy that has the potential to support the development of non-cognitive skill development in students with disabilities. This self-management procedure has been demonstrated to be efficacious in effecting behavior change across several disability types and for multiple behaviors, including challenging behaviors, social behaviors and on-task or engagement behaviors.

Disability Categories. Self-monitoring has been effectively used to effect academic and social behavior change with students with a variety of disabilities across several settings. Disability categories targeted with self-monitoring procedures include

developmental disabilities (Frea & Hughes, 1997; Shapiro, McGonigle, & Ollendick, 1980), specific learning disability (Prater, Joy, Chilman, Temple & Miller, 1991; Wolfe, Heron, and Goddard, 2000), individuals with EBD (Carr & Punzo, 1993; Gulchak, 2008), and students with ASD (Shearer, Kohler, & Buchan, 1996; Stasolla, Perilli & Damiani, 2014). Indeed, Maggin, Briesch, and Chafouleas (2013) applied the *What Works Clearinghouse* single-subject design standards to a body of self-management literature and found that it could be considered an evidence-based practice for students with challenging behaviors. Further, a 2014 meta-analysis of single-subject research of self-management interventions for students with ASD by Carr et al. indicated that the robust nature of the data on self-management interventions used with students with ASD warrants that self-management be considered an evidence-based practice for this population. Self-monitoring is a procedure that has been demonstrated to be effective across several disability subtypes.

Behaviors targeted for change.

Challenging behavior. Self-monitoring has been used to address various types of challenging behavior. Challenging behavior definitions across these studies have included inappropriate language, talking at inappropriate times, motor movements that generate noise in the classroom, aggression, property destruction, and elopement. These studies examined the use of self-monitoring to address increasing prosocial replacement behaviors and to decrease disruptive or challenging behaviors (Kern, Dunlap, Charles, & Clarke, 1994). Studies targeting challenging behaviors often employed the use of functional analyses to determine these replacement behaviors (e.g., saying “Excuse me,” or, “I don’t know” rather than engaging in challenging behaviors), or to determine

rewards to link to the system (e.g., earning a tangible versus peer or adult attention) (Frea & Hughes, 1997; Hansen, Wills, Kamps, & Greenwood, 2013; Ingram, Lewis-Palmer, & Sugai, 2005). Studies that have included a function-based component, whether part of the self-monitoring strategy itself or the reward linked to the strategy, found larger decreases in challenging behavior and commensurate increases in prosocial, replacement behaviors as compared to when they utilized functionally non-relevant components (Briere III & Simonsen, 2011; Kern, Ringdahl, Hilt, & Sterling-Turner, 2001).

Social behavior. Social behavior has also been effectively increased using self-monitoring systems. Social behaviors that have been targeted for improvement have included social initiations (verbal, gestural, or pictorial), engagement in social activities (e.g., playing a game, sharing), reciprocal interactions, and varied social responding (Koegel, Koegel, Hurley, & Frea, 1992; Newman, Reinecke, & Meinberg, 2000; Shearer, Kohler, & Buchan, 1996). Social interactions have been defined as verbal or gestural behavior toward a peer after an initiation (Loftin, Odom & Lantz, 2008; Newman, 2005). Strategies included having students note when they engage in the appropriate social interaction/response (e.g., by moving a bead from one side to another on a device, by using a wrist counter, or by placing an object in a container after each interaction) (Newman, Reinecke, & Meinberg, 2000; Shearer, Kohler, & Buchan, 1996; Strain, Kohler, Storey, & Danko, 1994).

On-task behavior or engagement. Several studies have examined how the use of a self-monitoring strategy can support on-task behavior or task engagement for students with disabilities (Carr & Punzo, 1993; Kern, Dunlap, Charles, and Clarke, 1994; Prater, Joy, Chilman, Temple, & Miller, 1991; Shapiro, McGonigle, & Ollendick, 1980).

Definitions of on-task behavior have included: “eyes on work or teacher, sitting in seat, using correct materials, and working quietly” (Prater, et al., 1991, p. 168), “keep hands away from face, complete work assigned, and raise hand to ask questions” (Gulchak 2008, p. 571), and “orientation by the target student(s) toward the appropriate object or person, following directions given by the teacher, paying attention to the speaker (peer or adult), and working on assigned tasks” (Sutherland, Wehby & Copeland, 2000, p. 4).

These studies typically were structured such that a student or students would evaluate whether or not they were on task during a given interval and would be alerted to the end of an interval with a tone or some other signal (Kern et al., 1994; Stasolla, Perilli & Damiani, 2014; Wolfe, Heron, & Goddard, 2000). On-task behavior or task-engagement is often targeted for increase for students with disabilities as it has been associated with academic success and positive feelings of self-efficacy for students (Klem & Connell, 2004; Rivera, et al., 2015). As Briesch and Daniels (2013) noted, “attention to task has been shown to be a significant predictor of student achievement, even when controlling for cognitive and other behavioral variables” (p. 366). Given this, on-task behavior, or engagement, of the student participants will be examined as the dependent variable in this study.

Settings.

General education and self-management. While several studies on self-management procedures have been conducted with students with disabilities in self-contained classrooms (e.g., Gulchak, 2008; Rafferty, & Raimondi, 2009), homes (e.g., Pierce & Schreibman, 1994), and other settings separate from the classroom such as empty classrooms and offices (e.g., Morrison et al., 2001; Newman, 1996), there are few

studies examining self-management strategies in general education contexts (Briesch & Daniels, 2013; King-Sears, 2008; Reynolds et al., 2013; Wehmeyer et al., 2003). The studies that have been done on self-management interventions in general education settings have been successful at effecting behavior change for the participants involved, including such positive outcomes as increasing social initiations, on-task and listening skills, and homework completion among others (e.g., see Gureasko-Moore, DuPaul, & White, 2007; Reynolds et al, 2013; Wehmeyer et al., 2003). Each of these studies, while being implemented in a general education classroom, used different but subtle methods of prompting the monitoring. These included pictorial prompts to remind the student about what the appropriate behavior was (e.g., listening ears, quiet mouth), teaching the student to check the clock to observe certain intervals, and having a tool that vibrates at certain intervals to alert the student (Dorminy et al., 2009; Ganz, Heath, Davis, & Vannest, 2013; Reynolds et al., 2013). Students had behavior charts and checklists associated with the self-monitoring systems that supported prosocial behavior in general education settings, including organizational checklists, homework completion forms, and interval-based self-monitoring forms (Dorminy et al., 2009; Ganz et al., 2013; Gureasko-Moore et al., 2007).

While Carr and colleagues (2014) noted that more studies have begun extending the self-management research into general education for students with autism, the benefit to all students with or at-risk for disabilities for more research and implementation in inclusive settings is evident. As more students with disabilities are included in the general education environment, it is crucial that evidence-based practices that promote independence and competence be employed to support access to the least restrictive environment for these students (Reynolds et al., 2013; Wehmeyer et al., 2003).

Implementation science presents several constructs that may support the utilization of evidence-based practices such as self-management in general education settings.

Implementation Science

Despite the fact that many practices have been designated as evidence-based by organizations such as the Council for Exceptional Children (CEC) and the Institute of Education Sciences (IES), there remains a significant and well-documented research to practice gap in education (Cook & Odom, 2013; Greenwood & Abbott, 2001; Odom et al., 2005). Explanations for why this gap exists have included limited interactions between researchers and practitioners and the complexity that exists in the reality of the classroom (Cook & Odom, 2013; Greenwood & Abbott, 2001; Odom et al., 2005).

Implementation science examines variables that influence how practices are supported in a given context. Several fields, such as medicine and mental health, have been examining implementation as a process and looking at various outcomes (e.g., implementation outcomes versus intervention outcomes). In this work, multiple factors that impact implementation have surfaced and have been analyzed (e.g., see Durlak & DuPre, 2008; Greenhalgh, Macfarlane, Bate, & Kyriakidou, 2004; Rogers, 2002). To summarize and communicate these factors, several fields have put forth implementation frameworks as a means to better analyze the complexity of implementation (e.g., Damschroder, et al., 2009; Rogers, 2002; Rycroft-Malone, 2004). Some of these frameworks are more oriented toward the planning and process of implementation (e.g., Fixsen's Stages of Implementation), while others are posited more as models to evaluate the implementation process. One framework, the Consolidated Framework for Implementation Research (CFIR), is a combination and consolidation of conceptual

frameworks and evidence in the field of implementation science across disciplines, and is posited as both an evaluative and process-oriented framework (or as a compliment to others) (Damschroder, et al. 2009).

Fixsen's implementation frameworks. The field of special education has largely used Dean Fixsen's various theories and frameworks to discuss implementation. Fixsen and his colleagues argued there are six functional stages to implementation (Fixsen et al., 2009). These include exploration (identifying the need for an intervention and gaining knowledge of the intervention), installation (putting structural supports in place to prepare for initial implementation), initial implementation, full implementation (the intervention is fully operational and integrated), innovation (modifications to the intervention as necessary to accommodate the context), and sustainability. Fixsen and his colleagues illustrate the implementation process as follows: A source, or core intervention practices, a communication link, which can include a coach, specific training or administration support, and a destination. The destination is the practitioner that will work with the consumer. There is a feedback loop to ensure fidelity of implementation. One entire issue of the premier journal in special education from the Council for Exceptional Children, *Exceptional Children* (Winter, 2013) was dedicated solely to implementation. In this issue, Fixsen and others discussed the importance of scaling up evidence-based practices and, in addition to revisiting the stages of implementation described above, he incorporated what he termed drivers. The three drivers are competency (e.g., staff selection, training), leadership (e.g., technical and adaptive leadership support), and organization (e.g., facilitative administration, decision support data system) (Fixsen, Blase, Metz, & Van Dyke, 2013). According to the National

Implementation Research Network (NIRN), Fixsen and his colleagues continue to build out key components of implementation, having added implementation teams and improvement cycles to the stages of implementation and implementation drivers discussed above.

Promoting Action on Research Implementation in Health Services

(PARIHS). The PARIHS framework posits that successful implementation is influenced primarily by evidence, context, and facilitation (Stetler, Damschroder, Helfrich & Hagedorn, 2011). Evidence includes several elements: research, clinical experience, patient experience, and information from the local context. Context includes the physical, social, cultural, structural and professional receptive context for implementation. Finally, facilitation includes items such as technical assistance and training. Originally developed in 1998 in the nursing field, the PARIHS framework is described by its authors as “impact or explanatory” (Stetler et al., 2011). That is, the authors of this framework contend that it can be used to evaluate the implementation process by honing in on specific critical elements that are essential to sustainable change in an organization.

Consolidated Framework for Implementation Research (CFIR).

Damschroder and colleagues examined theories across several fields and the empirical support behind them to create streamlined constructs and standardized terminology, making it one of the most expansive implementation frameworks to date. The authors of this framework created it because the numerous implementation frameworks in various fields “overlap considerably in the constructs included.” However, the authors found that when comparing the theories and frameworks, “each is missing important constructs

included in other theories” (Damschroder et al., 2009, p. 1). As such, the CFIR offers a more complete picture of the factors related to implementation than other theories or frameworks in the field of implementation science. The CFIR includes five major domains: intervention characteristics, outer setting, inner setting, characteristics of individuals, and process (see Figure 1). There are several subconstructs associated with each of the domains. Of these domains and subconstructs, the authors wrote: “ The CFIR specifies a list of constructs within general domains that are believed to influence (positively or negatively, as specified) implementation, but does not specify the interactions between those constructs” (Damschroder et al., 2009, p.3). In other words, this expansive framework indicates key factors to attend to with respect to implementation without indicating relationships among the variables or placing value on them.

The expansiveness of the CFIR is noteworthy because as Hudson and her colleagues (2015) wrote, “the problem of (non)implementation of EBP may be most usefully viewed *not simply* as a ‘deficit’ in the knowledge, skills, or ideological commitments of practitioners but as a product of the set of social, organizational, and material conditions that operate in a given human service setting” (p. 1, emphasis added). That is, multiple factors impact implementation. To evaluate these various factors, constructs drawn from the CFIR and other implementation literature will be examined. These include: characteristics of the intervention, characteristics of individuals, characteristics of dissemination, and characteristics of the implementation climate.

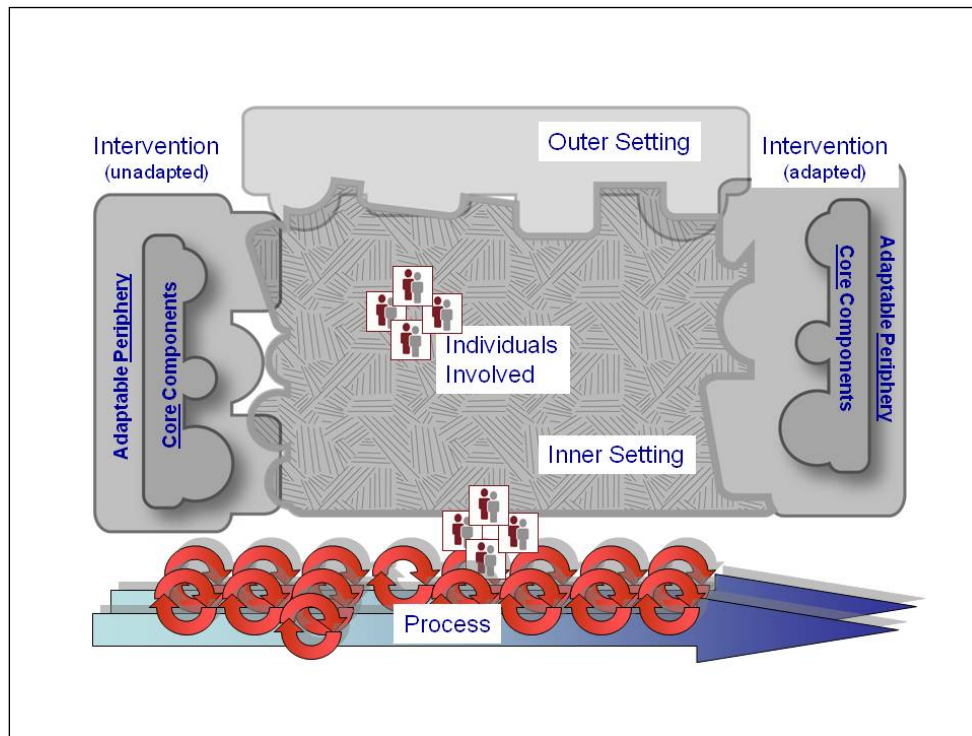


Figure 1. The Consolidated Framework for Implementation Research (CFIR).

Characteristics of the intervention. The implementation science literature base indicates that characteristics of the intervention or innovation contribute to its adoption and sustained use (Greenhalgh, et al., 2004). While there are several characteristics of the intervention cited that can influence uptake, the complexity of the intervention is a key consideration. The complexity of an intervention has been cited as a mediating factor in an individual or organizational decision to implement it (Hagermoser Sanetti & Kratochwill, 2009). Interventions that are perceived by individuals as easy to implement tend to be more readily adopted and implemented (Greenhalgh, et al., 2004; Rogers, 2002). Complexity is composed of several components according to the CFIR. These include pervasiveness, magnitude, and scope. One way to assess complexity, according to the developers of the CFIR, is to analyze the “length” of the intervention, or, “the number of sequential sub-processes or steps for using or implementing an intervention”

(Damschroder, et al., 2009, p. 7). Indeed, in a survey given to school personnel regarding the use of self-management procedures in school settings, Briesch et al. (2014), found that one of the most frequently reported barriers to implementation of self-management interventions was poor treatment integrity or fidelity. Teachers reported that they did not implement all of the steps because it was challenging to find time to implement all of the steps in the intervention, such as prompting the student and checking for accuracy of self-monitoring. Thus, reducing the number of steps or length of time it takes to deliver an intervention may influence various aspects of implementation (i.e., fidelity).

Characteristics of individuals. As Greenhalgh and colleagues (2004) succinctly wrote, “People are not passive recipients of innovation” (p. 598). Individuals have feelings about innovations, may challenge them, may modify them, and so on. It is for this reason that individual characteristics, such as knowledge and beliefs, is a construct that is cited in the IS literature as a key component to implementation success or failure (Damschroder, et al., 2009; Greenhalgh, et al., 2004).

A person’s (i.e., implementer of practice) knowledge and beliefs play a role in whether or not he or she will choose to use the intervention as planned or even at all. In the CFIR, this construct is defined as, “Individuals’ attitudes toward the intervention and familiarity with facts, truths, and principles related to the intervention” (Damschroder, et al., 2009). Research in implementation across a variety of disciplines has found that individuals who both understand an intervention and believe that it will meet a need in their contexts are more motivated (and thus more likely) to implement the intervention (Durlak & DuPre, 2008; Greenhalgh, et al., 2004; Yetton, Sharma, & Southon, 1999).

This is relevant to self-management insofar as individual characteristics, specifically teacher beliefs and attitudes toward this intervention, have been documented as a barrier to implementation. In their survey to practitioners about the use of self-management in schools, Briesch and colleagues found that one major barrier to implementation of self-management procedures were teacher beliefs that the intervention would not be effective at changing a student's behavior. As such, some teachers chose not to use this strategy in their classrooms.

Another key to promoting implementation of an intervention is for teachers to see the positive outcomes stemming from implementation of an intervention. This was demonstrated by Gersten and Dimino (2001) in their review of IS literature and in their own work implementing a reading program in school settings. These researchers found that when teachers discovered that a particular practice worked with students, they had more positive beliefs about the efficacy of it and subsequently increased their implementation of that practice. Addressing teacher attitudes, beliefs and preferences, then, may promote the use of evidence-based practices such as self-management in the classroom.

Characteristics of Dissemination. In the IS literature, dissemination is defined as “an active approach of spreading evidence-based interventions to the target audience via determined channels using planned strategies” (Rabin, Brownson, Haire-Joshu, Kreuter, & Weaver, 2008, p. 117). Dissemination research aims to determine what “planned strategies” will lead to uptake of an intervention. For example, Rogers' diffusion of innovations model lists “knowledge of the intervention” as the first step in the decision-making process of an individual to use a particular intervention (2002, p. 990). The

CFIR has a subcategory called “Access to Information and Knowledge,” which includes training, access to experts, and support in learning how to incorporate the intervention into the individual’s current work (Damschroder et al., 2009). How individuals are trained and coached in the process of dissemination is cited as one of the key pieces contributing to implementation outcomes (Fixsen et al., 2005).

The training of individuals can take many forms, but requires “planning and precision” on the part of trainers, particularly for innovations that are more complex (Fixsen et al., 2005, p. 40). It has been documented in the professional development literature that when planning trainings, it is key to include several components such as the presentation of materials, the opportunity to have new practices to be modeled or demonstrated, and the ability to practice new skills and receive feedback on that practice (Kretlow & Bartholomew, 2010; Yoon, et al., 2007). Self-management literature illustrates that the initial implementation of a self-management system requires a certain level of expertise (i.e. choosing a data collection system, teaching the student to utilize the system) (McDougall, 1998). As such, for implementation to be successful, training of school staff needs to be a considered factor for sustainable use of the intervention.

Characteristics of the Implementation Climate. The implementation climate is the context where the intervention will be implemented. The implementation climate is comprised of several qualities, including the learning climate and the compatibility of the intervention with the values, needs and norms of the environment (Damschroder et al., 2009). It refers to how “receptive” the context is to change, how easily an intervention can be assimilated, and how ready an environment is for implementation (Greenhalgh et al., 2004; Stetler et al., 2011).

Learning climate. Learning climate is a subconstruct that refers to having “time and space” to reflect on the intervention and evaluate its usefulness. In general, a learning climate is favorable to implementation of an intervention when there are structures in place to support the growth of employee skillsets in the use of that intervention and when “obstacles to innovation use” are removed (Klein & Sorra, 1996, p. 1060). These include providing enough time and space for innovation learning and use and ensuring appropriate access to the materials needed for the intervention. In addition to providing resources for training and ongoing support, leaders in an organization can remove obstacles to implementation by addressing employee concerns about the intervention as they arise (Klein & Sorra, 1996).

Compatibility. Interventions that match with both the individual’s and organizational norms and values tend to be implemented at higher rates (Greenhalgh et al., 2004). Klein and Sorras (1996) noted that, “employees who perceive innovation use to be congruent with their values are likely to be internalized—committed and enthusiastic—in their innovation use” (p. 1061). By contrast, when an intervention seems incompatible with the system, there is often resistance to implementation (Damschroder et al., 2009). For example, Briesch et al. (2014) found that a major barrier to self-management implementation was the difficulty some teachers had relinquishing control of a behavior management intervention to a student. That is, some teachers were so accustomed to managing behavior for their students that they struggled with supporting their students to manage their own behavior. As such, this mismatch between norms and the intervention in these classroom settings hindered implementation. Addressing the norms and values in classroom settings and possibly the school contexts

within which the classrooms are nested is potentially a key consideration in examining the implementation of self-management in general education classrooms.

Purpose of the Study

The purpose of this study is to examine variables that impact the implementation of a self-management system in the general education classroom. In addition, this study extends the literature on self-management into general education settings by examining the effects of a self-management system on student engagement. Given the need to support implementation of this evidence-based practice in general education setting, a mixed methods design is the most robust choice to answer the research questions posed. Berliner (2002) referred to education research as “the hardest-to-do science,” because of the contextual factors and social interactions that impact research in school settings (p. 19). In their call for more mixed methods research in education, Klingner and Boardman (2011) echoed this sentiment when they wrote,

Educational programs are implemented in real world contexts, in authentic schools, with characteristics that are both unique to a particular context and shared across contexts. Mixed-methods research can help to establish cross-context patterns of regularity and determine unique within-site variables (p. 209). Implementation issues are particularly difficult to study. Due to their complexity, issues around implementation have been described as “wicked problems” and as “moving targets that fight back” (Cook & Odom, 2013, p. 138). As such, drawing on the strengths of both quantitative and qualitative data is necessary to fully answer the research questions and to explore the multifaceted issue of implementation of self-management. Mixed methods research not only allows researchers to study the general effectiveness of

an intervention, but also allows them to analyze the contextual factors that promote or detract from that effectiveness. In this study, qualitative data collected on potential barriers and facilitators to implementation should inform the quantitative results related to any measurable changes in student and teacher behavior stemming from the self-management intervention that will be implemented.

There are two research questions for this study:

1. What are the effects of a self-management system on student task engagement in a general education setting?
2. What are the factors impacting implementation of a self-management system in a general education setting?

Chapter 3

Method

Experimental Design

A triangulation design-convergence model mixed method design (see Figure 2) was used to examine the research questions. Due to the nature of the research questions this design was chosen as it allows both quantitative and qualitative data to be collected concurrently throughout the study and for the results to be “converged during interpretation” (Creswell, 2003; Creswell & Clark, 2007, p. 84). This design was chosen over other mixed methods designs (e.g., embedded design) because it allowed for equal weighting of the quantitative and qualitative data. This study was designed not only to examine the contextual variables that impact implementation in general education, but also to investigate the effectiveness of self-management interventions in general education settings. Quantitative data captured the student behavioral response to the self-management system (engagement), while qualitative data captured contextual variables that potentially impacted implementation. These data were converged such that a complete picture of the implementation of self-management systems in general education could be analyzed.

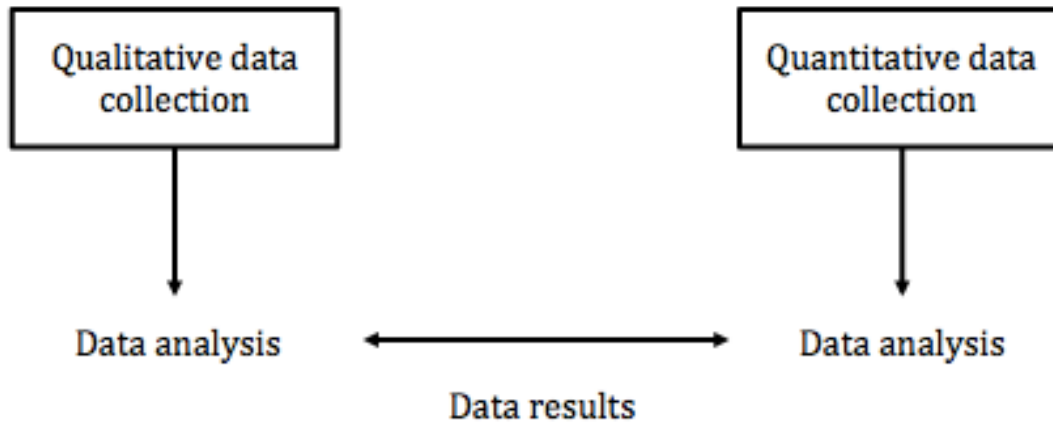


Figure 2. Triangulation Design-Convergence Model.

The quantitative piece of this study was a single-subject, multiple baseline across participants design, in which “inferences are based on examining performance across several different baselines” (Kazdin, 2011, p. 144). Baseline data were collected for all participants. Once data were stable, the intervention phase, a self-management training (Phase B), was introduced to one teacher while the others remained in baseline. To ensure any behavior change was the result of the intervention (i.e., behavior change happens when and only when the intervention is applied), this was replicated across all participants (Kazdin, 2011) in a staggered fashion. That is, once Phase B data were stable for participant one, the self-management training (i.e., intervention) was given to participant two while the remaining two participants were held in baseline and so on, until all four participants had received the training.

The qualitative component for this research consisted of multisite case studies. A case study is “an in-depth description and analysis of a bounded system” (Merriam, 2009, p. 40). In this study, the teachers who run them were the units of analysis, as well as the student participants who engaged in the self-management systems. In particular, this study was concerned with looking at these units of analysis during training and

implementation of self-management in the general education classroom. Multiple methods of data collection were used for each case study. Data collected included interviews of teacher participants prior to and following the training as well as ongoing observation throughout each phase or condition of the study. Relevant documents and artifacts related to the student participants, such as self-monitoring forms, were also collected and analyzed as part of each case study. The qualitative data describe “interacting influences that operate in any complex social setting” (Schwartz, Staub, Gallucci, & Peck, 1995, p. 96). This is critical to answering the research questions posed, as the IS literature discusses several mediating factors that influence implementation, including individual characteristics and implementation climate. The qualitative data provided a “thick description” of the setting, which, Miles and Huberman (1994) argue, can help determine why certain things happen, how they happen, and potentially even to “assess causality” (p. 10).

Participants

Teachers. Participants were four general education teachers who taught at the elementary level (K-6) in a school in the Pacific Northwest. Each teacher had a student diagnosed with a disability in her classroom. See Table 1 for demographic information on teacher participants. Given the nature of the mixed-method study a more detailed description of the participants can be found in the case studies in the Results section. Kelly, the special education teacher for the school, identified potential teacher participants. Kelly based her recommendations on the perceived need of students on her caseload who were primarily served in the general education setting and might benefit from a self-management system. Potential general education teachers of these students

were contacted by Kelly and asked to follow-up with the researcher directly if they were interested in participating in the study. The teacher participants contacted the researcher and consent was secured for their participation. Kelly and her colleague Diana, the Title I/LAP teacher at the school, were also interviewed for the qualitative portion of this study. The purpose of this was to ascertain their perspectives on providing evidence-based practices (and implementation guidance) to general education teachers to support students with or at-risk for disabilities who are situated in general education settings.

Table 1
Demographic Information for Teacher Participants

Name	Grade Taught	Years Teaching	Highest Degree	Experience with students with disabilities	Age
Holly	4	7	Masters	None	56
Jessie	3	33	Masters	Internship with students with severe disabilities	58
Wendy	2	2	Bachelors	Internship in resource room	26
Pam	4	1.75	Bachelors	None	26

Students. The student participants in this study were each members of the general education classrooms of the teachers participating in this study, were diagnosed with a disability, and needed to be primarily served in the general education setting. Student participants were chosen because both the general education teacher and special education teacher believed the student would benefit from self-management strategies. Jackie was an 8 year-old girl diagnosed with ASD. Behaviors of concern in her general education classroom as reported by both her general education and special education

teachers and supported by researcher observations included not attending to assigned tasks as she was easily distracted from both whole-group instruction and during independent work times. Jackie played with items in her desk or items she brought from home, wandered around the classroom, and left frequently to go to the restroom to escape demands. Leroy, a third-grader, also struggled with staying on-task during both whole-group instruction and independent work times. He stared off into space and played with items in his desk. Christy, a fourth-grader with ASD, drew, read, wrote notes, and talked to peers rather than focus during both whole group and independent work times. She also shouted out answers and unrelated comments when the expectation was to raise a quiet hand. Carly, a seven year old, talked to peers rather than focus on task-demand during whole-group instruction, and blurted out rather than raise a quiet hand during both individual work and whole-group instruction. She was also easily distracted from both independent and whole-group work. All four students were on grade level academically, but would often fall behind in class due to distractibility and lack of attention. All four also received pullout support for social skill instruction only. Assent for participation was gathered by the researcher from all of the students. In addition, written consent for participation was obtained from the parents or guardians of all the student participants per IRB guidelines.

Table 2
Demographic Information for Student Participants

Name	Age	Grade	Disability	Qualifying areas
Jackie	8	4	Autism	Social Emotional
Leroy	8	3	OHI	Social Emotional
Carly	7	2	DD	Social Emotional
Christy	9	4	Autism	Social Emotional

Trainer. The researcher was also the trainer who provided the self-management training. She was a 36-year-old white female enrolled in a special education doctoral program. The trainer had a master's degree in special education. She had several years of experience working with students with disabilities in a variety of settings, including a day-treatment facility, an inpatient psychiatry unit, and public school settings. She also had experience as a behavior consultant in both general and special education settings. She had consulted with the special education teacher at Hilltop, Kelly, in previous years around students with challenging behaviors.

Setting

The general education classrooms of the teacher participants served as the setting for the study. All classrooms were in one school located geographically in the Puget Sound region, Hilltop Elementary, with a student population of 500. The free and reduced lunch percentage was 14.3% and percentage of students receiving special education services was 15%. The school was predominately White (62%), followed by Asian or Pacific Islander (23%), students identified as two or more races (13%), Hispanic (8%), Black (4.4%), and American Indian or Alaskan Native (1%). Holly and

Pam taught fourth-grade general education classrooms, Jessie taught third-grade general education, and Wendy taught second grade general education. All interviews and observations occurred in the teachers' classrooms. One academic period of the day was chosen for the self-management strategy to be implemented based both on teacher report of when student target behaviors were most likely to occur as well as classroom observation by the researcher. For three students, Jackie, Carly, and Leroy, math was chosen as the time of day to implement the self-management strategy. Activities during these periods included whole group instruction wherein the teacher either walked through a short math video that illustrated the concept of the day or introduced the lesson without the video, and then independent work time. The videos required teachers to stop periodically to further discuss the particular topic and walk through examples with the students. Students in Jackie's class were asked to take notes and work problems during this process, sometimes on paper, sometimes on white boards. Carly's second grade class were asked to engage by raising a quiet hand to answer questions posed by the teacher and the video and then return to their desks to complete a math worksheet related to the concept in the video. Leroy's classroom teacher asked students to complete math problems from the textbook related to the lesson they had just learned. For Christy the most difficult time was during the Reading/Writing block in the afternoon. The activities during this block rotated daily. Some activities included "listening activities," wherein students listened to a story being read while they actively followed along in their book (teacher asked that students use their fingers for tracking) and then having a discussion about some aspect of the story (e.g., character traits) that they were expected to take notes about in their journals. At times, students were provided with explicit instructions

written on the board and were asked to work through the list of “to-do” items independently. These activities included a menu of reading and writing activities such as writing a letter, filling out a graphic organizer, or answering questions about a recently read story.

Information is provided below to detail procedures that aligned with specific research questions.

RQ 1: What are the effects of a self-management system on student engagement in a general education setting?

Dependent variable. The dependent variable for this research question was student engagement. This was defined as orienting body and eye gaze toward the task at hand, whether whole-group instruction or a work activity. Students were expected to have their body in the defined boundaries of the activity and were expected to use classroom norms to engage in the activity (e.g., raising a quiet hand).

Procedures

Baseline. During baseline, teachers delivered instruction as would typically occur on any day (i.e., either teacher-led or video-led instruction and demonstration of concepts and then independent work by the student). During baseline, the teachers did not provide any options or directions for self-management strategy, but provided the same consequences as they would typically for the student behaviors. For all four students, this included multiple teacher prompts to pay attention and asking the students to put distracting items away. For Christy, this included peer supports (e.g., peers would also prompt her to reengage as the teacher strategically placed her with stronger peers).

Carly had permission to take up to five pieces of gum per day if she needed help with focusing.

Self-management training. Prior to the beginning of the intervention, all teachers were provided instruction on how to develop and use the self-management strategy. The self-management training was 45- minute one-on-one in- person session provided by the researcher. This training was presented on a PowerPoint and provided a brief introduction to the procedure, including information on the definition of self-management, the reasons why it is a useful procedure to implement in the classroom and a brief review of the evidence to support it. Next, steps to implement a self-management system (particularly self-monitoring) was presented and explained. These steps include identifying and defining a target behavior, developing a data collection system, setting criterion, teaching the student to use the system and, finally, implementing the system (Busick & Neitzel, 2009; Briesch & Chafouleas, 2009; Gansle & McMahon, 1997). The teacher participants were provided a paper copy of the PowerPoint as well that they could keep. Table 3 outlines the components of the self-management training. The researcher and teacher then worked together through an implementation checklist (see Figure 3) to ensure each step of the process was completed. The teachers kept a copy of this checklist for reference.

Table 3

Self-Management Training

What is self-management?	5 minutes
<ul style="list-style-type: none"> • Self-management procedures described • Evidence to support it • Why is it important? 	
Defining a target behavior	7 minutes
<ul style="list-style-type: none"> • Key behaviors that can be addressed by SM systems (blurting out in class, completing work) • How do operationalize a behavior 	
Developing a data collection system and setting criterion	7 minutes
<ul style="list-style-type: none"> • Different types of data collection systems are described (interval, frequency) • How to take baseline data • How to set a reasonable criteria 	
Teaching the student to use the system	7 minutes
<ul style="list-style-type: none"> • Describe the system to the student • Provide examples and non-examples of the behavior • Role play the use of the system • Do a “test-run” to ensure the student understands the system 	
Implementing the system	7 minutes
<ul style="list-style-type: none"> • Provide the student with a self-monitoring form (show examples) • Prompt the student to begin • Collect the self-monitoring form at the end of the session • Provide feedback on student performance 	
Create timeline for implementation with identified student	3-5 minutes

Self-Management Implementation Checklist Target Implementation Date:

Teacher Name:

Student Name:

<i>Step</i>	<i>What does this look like for your student?</i>	<i>Completed?</i>
<i>Choose and define a target behavior</i>		
<i>Choose a time of day</i>		
<i>Choose a data collection system</i>		
<i>Take baseline data</i>		
<i>Create a form</i>	<i>See Form.</i>	
<i>Tie it to a reward (optional)</i>	<i>List reward here:</i>	
<i>Teach the student the system using description, modeling and role-play</i>		
<i>Do a test-run</i>		
Once the system is running :		
<i>Hand out the form to the student at the beginning of the period</i>		
<i>Prompt the student to self-manage</i>		
<i>Provide feedback to the student at the end of the period.</i>		
<i>Collect the form at the end of the period</i>		

Figure 3. Self-Management Training Implementation Checklist

The researcher supported the teacher in developing the student-specific system. All four teacher participants chose to use “on task” as the target behavior and each was operationalized according to student needs. Each teacher chose to use a MotivAider as a cueing device for the student participants. A MotivAider is a small device, about the size of a pager, which can be clipped to an individual’s clothing. The device can be set for any interval and will vibrate at the end of that interval. Once it vibrates, the tool will start over automatically (i.e., the individual does not have to reset the tool each time as he or she would with a timer).

Jackie. For Jackie, on task was operationalized as eyes on teacher or work, distractions put away (e.g., toys, items brought from home), and working on math only. This operationalized definition was written on a self-monitoring form and was supported by visuals. She used a MotivAider set for two-minute intervals with a total of 10 intervals per session. Jackie circled “yes” on her form if she was on-task during the previous interval when the tool vibrated and “no” if she was not. If she was on task for at least six of the 10 intervals, she earned five tickets that could be exchanged weekly at the classroom store.

Leroy. On task for Leroy was defined as eyes on work, pencil moving, and mouth quiet. These were written and illustrated with visuals on his self-monitoring form. Leroy also used a MotivAider to signal three-minute intervals. If he was on task when the tool buzzed, he marked a plus in the box. His sessions were approximately 20 minutes long. At the end of his session, he earned a ticket for every plus he marked. These tickets were placed in a box for a weekly drawing the teacher held.

Christy. Christy’s definition of on task was eyes on teacher or work, working on

reading or writing only, and distractions away. Her intervals were two-minutes long and she also was signaled with a MotivAider. She had a self-monitoring form with 10 boxes wherein she circled “yes” if she was on task when the tool vibrated and “no” if she was not. If she was on task seven out of 10 times, she earned five tickets toward a home-based reinforcer, which was a system her mother had set up with the general education teacher.

Carly. On task for Carly was defined as eyes on teacher or work and quiet mouth. Visual reminders of what these behaviors looked like supported these expectations on the form. She had two-minute intervals, also signaled with a MotivAider, and earned two stickers if she was on task for six of the 10 intervals.

A similar process was used by each teacher to introduce the self-management system to each student. First, the researcher introduced the critical elements of teaching the system to the student during the self-management training. Then, upon completion of the training, a plan was made for the researcher to support the teacher in introducing the system to the student and teaching how it was to be used. This entailed the researcher, teacher, and student sitting down in a quiet place. The teachers each discussed the importance of staying focused and that this system was a tool to help them. Teachers would talk through the self-monitoring form and demonstrate how the MotivAider worked. The researcher suggested doing a practice run during this discussion such that the student tried the system out and ask any questions he or she might have. The teacher also explained that the system would be used (e.g., during math, independent work time, etc.) and what reward was tied to meeting criteria. It was also suggested that the teacher discuss with the student when that reward would be delivered.

Once the system was in use, teachers developed specific habits about what actual implementation looked like. Holly kept the materials near the projector. She handed the materials to Jackie right before the math video started projecting and generally checked-in with her at the transition to independent work time. Jessie kept Leroy's materials near his desk for ease. She handed him the materials at the beginning of independent math work time and checked-in with him either right before the morning recess or directly after it. Christy's teacher kept the materials in the back of the classroom at the beginning, but then soon tasked Christy with gathering the materials herself. She started the system at the beginning of the reading/writing block in the afternoon and checked-in with her prior to afternoon recess. Finally, Carly's teacher also kept the materials in the back of the room, but Carly got into the habit quickly of gathering the materials herself at the transition to the carpet for math and handing them to the teacher for an initial check-in. Wendy did an end-of-session check-in to deliver the reinforcer during independent math work time.

Data collection

Quantitative data was collected on student behavior in person by an observer in the classroom.

Student behavior. Data were taken on engagement for all student participants in this study three to five times per week (See behavioral definition) by the researcher. A 15 second partial interval system was used to collect an estimate of percentage of time engaged (i.e., percent of intervals of engagement). In order to ensure reliability of these data, a Masters-level student from the university who was enrolled in a teacher preparation program was trained by the researcher to collect inter-observer agreement for

a portion of the sessions (Alberto & Troutman, 2006). This student had experience taking data on an interval system prior to this study. The researcher described the definition of engagement and practiced taking data on the student participants to calibrate the process and to give the observer the opportunity to clarify any questions she had.

Quantitative data analysis

Visual inspection was used to analyze research question one as outlined by Kratochwill, et al., (2012) and Kazdin (2011). Visual inspection refers to “reaching a judgment about the reliability or consistency of intervention effects by visually examining the graphed data” (Kazdin, 2011, p. 286). This method of data analysis was chosen because it is one that is used widely in the field of single-subject design (Kratochwill et al., 2012). Kratochwill et al. (2012) outline four steps of the visual analysis process. The first step of visual analysis is to observe a stable level of responding of student behavior in baseline. The second step was to look at the “within-phase” data patterns to ensure consistency and predictability (Kratochwill et al., 2012, p. 31). That is, the data within the baseline phase and phase B were analyzed for consistency of responding. The third step was to compare data to the adjacent phases, baseline to phase B, to analyze if the training had an effect on the behavior of the student. The fourth step was to examine all of the data, as there must be at least three demonstrations of effect.

Visual analysis includes looking at changes in level, trend, variability, immediacy of effect, and overlap (Kazdin, 2011; Kratochwill et al., 2012). A change in level indicates a shift in the average or mean of the measure. Trend was also analyzed which is finding the line of best fit through the data (i.e. does the data show an ascending or

descending trend?). Variability refers to the range of the data. Data that is more variable is more difficult to interpret or predict. Across phases, immediacy of effect was examined. This is meant to determine whether there was a change in level from the last data points of the baseline phase and the first data points of phase B and so on. A more immediate effect is a robust indicator that the change in level was due to the intervention (Kratochwill et al., 2012). Overlap is measured by examining the number of data points in the intervention phases that overlap with data points from baseline and other phases. Less overlap tends to indicate a stronger effect of the independent variable on the dependent variable.

RQ 2: What are the factors impacting implementation of a self-management system in a general education setting?

Data collection

The qualitative portion of this study included interviews and field notes from observations as well as a fidelity checklist to measure teacher implementation of the self-management strategy. The variables analyzed in the qualitative component of this mixed methods study were broadly defined as personal and contextual characteristics that influence implementation of self-management. According to Schwartz et al. (1995),

Rather than beginning with a set of well-defined dependent variables, qualitative data are collected in an open-ended and holistic fashion, allowing behavioral categories of interest to emerge as the data are analyzed (p. 95).

However, the IS literature indicates that certain factors have been reliably demonstrated to be linked to implementation, including individual characteristics, characteristics of the intervention, characteristics of the dissemination process and the implementation climate.

Because of the evidence cited in the IS literature regarding these factors, these constructs were explored in the qualitative component of this study through field notes and interviews.

Field Notes. All observations were conducted by the researcher and involved taking field notes in the general education classroom during the established class period for implementation of the self-management system. An observational protocol centered around the research questions and was used to streamline data collected during these periods (Creswell, 2003). This protocol was adapted from a “contact summary form” presented by Miles and Huberman (1994). This form addressed specifics around what people or events were involved, themes that emerge, how this observation related to the research questions and subsequent hunches or hypotheses stemming from it (p. 51). See Appendix A for the observation protocol.

Interviews. All interviews were conducted by the researcher and were one-on-one and in-person. Interviews were semi-structured around the topics of knowledge and beliefs of the teacher regarding self-management, factors related to the implementation climate and factors related to training (Merriam, 2009). Question types included opinion and values to discern teacher beliefs about self-management procedures, feelings questions to determine any emotions involved that could impact implementation, knowledge questions to ensure the teacher understands how to implement the procedure, and background and demographic information (Patton, 2003, p. 350-351). Questions were open-ended, as, “The truly open-ended question permits those being interviewed to take whatever direction and use whatever words they want to express what they have to say” (Patton, 2003, p. 354). All interviews were audio-recorded and transcribed. They

were then be uploaded to an online qualitative software analysis platform, Dedoose™ (<http://www.dedoose.com>) for analysis. See Appendix B for interview protocols 1 and 2. Kelly and Donna, given that they were situated in both special education and general education, were asked to give an abbreviated interview to discuss implementation themes from their perspectives. This interview was conducted with both of them at the same time (Appendix B3).

Documents. Documents collected included the students' daily self-monitoring forms.

Teacher behavior. Data were taken on the components of the self-management system implemented by the teacher to determine fidelity of implementation three to five times per week. These include the daily behaviors of handing out the self-monitoring sheet, prompting the student to keep track of the target behavior, giving feedback to the student at the end of the period and collecting the self-monitoring form. These four steps were chosen because they should occur each time the self-management system is implemented. The number of steps completed was divided by the number of steps total and multiplied by 100 to determine the percentage of components implemented during the specified class period. See Figure 4 for the fidelity checklist.

	Session #		Session #		Session #	
1. Handed out self-monitoring sheet	yes	no	yes	no	yes	no
2. Prompted student to keep track of target behavior	yes	no	yes	no	yes	no
3. Gave feedback to student	yes	no	yes	no	yes	no
4. Collected sheet at end of period	yes	no	yes	no	yes	no
Totals						

Figure 4. Fidelity checklist Form: Teacher Behavior. Adapted from Gansle & McMahon, 1997

Qualitative data analysis

Qualitative data was analyzed inductively to describe implementation processes in the classroom. Interview and observation data were broken into “chunks” of meaning and coded, or grouped and labeled such that “they reflect increasingly broader perspectives” (Creswell, 2003; Creswell & Plano, 2007, p. 132; Miles & Huberman, 1994). These data were divided or “chunked” using the “constant comparative method,” wherein pieces of data are compared to one another in order to discern similarities and differences (Merriam, 2009, p. 30). Initial codes were organized around the research questions (e.g., coding for facilitators or barriers to implementation) (Miles & Huberman, 1994, p. 61).

During this initial “open coding” process, notes in the margins of transcripts or field notes or in vivo codes were noted. Open codes were grouped into more inferential codes, a process Merriam (2009) refers to as axial coding (p. 180). Operational definitions were created for each code. These codes were combined to form larger categories that appeared to cluster together. Codes were informed by domains and

constructs within the CFIR (e.g., characteristics of the intervention, characteristics of individuals, etc.) and by the specifics of the research question (e.g., barriers and facilitators to implementation). Excerpts were pulled and visually displayed for each category and then memos were created that pulled themes from these categories. These memos were “formalized and systematized” into propositions, or “connected sets of statements, reflecting the findings and conclusions of the study” (Miles & Huberman, 1994, p. 75).

Validity or trustworthiness of the qualitative data were established by triangulating the data collected from each participant’s interview, from observations, from the documents collected, from teacher behavior, and from the quantitative data (Creswell & Clark, 2007). That is, evidence for themes were collected from multiple sources. According to Merriam (2009), there are two stages of analysis when using multiple case studies: within-case and cross-case (p. 204). Data about each individual unit of analysis were analyzed deeply to determine contextual factors and other factors related to implementation. Cross-case analysis was then used “to build abstractions across cases” (Merriam, 2009, p. 204).

Mixed method analysis

Data for research question two was analyzed using a concurrent triangulation strategy such that interpretation of the results could be informed by both the qualitative and quantitative components of the study. As Creswell (2003) wrote, “This interpretation can either note the convergence of the findings as a way to strengthen the knowledge claims of the study or explain any lack of convergence that may result” (p. 217). The qualitative and quantitative data were compared in the final phase of analysis in a multi-

stage process outlined by Creswell and Clark (2007). Stage one of this process was the separate analysis of the quantitative and qualitative data sets. Stage two involved merging the data sets such that a “complete picture is developed” of what the implementation of self-management procedures in general education looks like (p. 136).

Chapter 4

Results

This chapter contains the results this study examining the effects of a self-management system on student engagement in general education settings and the factors that impact implementation of a self-management intervention. Findings are organized by research question.

Research Question 1: What are the Effects of a Self-Management System on Student Engagement in a General Education Setting?

Interobserver agreement. Interobserver agreement (IOA) was collected by the trained independent observer for at least 21% of sessions across both phases of the study for each participant (range 21%-40%). IOA for student engagement averaged 91%, with a range of 80% to 98% for all participants. For each participant's IOA, see Table 4.

Table 4
Interobserver Agreement by Participant

Jackie		Leroy		Christy		Carly	
Condition	IOA	Condition	IOA	Condition	IOA	Condition	IOA
Baseline	97%	Baseline	98%	Baseline	88%	Baseline	92%
Baseline	88%	Baseline	88%	Baseline	97%	Baseline	92%
Intervention	92%	Baseline	95%	Baseline	88%	Baseline	90%
Intervention	85%	Intervention	80%	Baseline	95%	Baseline	93%
Intervention	87%	Intervention	88%	Intervention	92%	Baseline	93%
Intervention	88%	Intervention	97%	Intervention	92%	Intervention	92%
Intervention	85%			Intervention	92%	Intervention	98%
<i>Mean</i>	89%	<i>Mean</i>	91%	<i>Mean</i>	92%	<i>Mean</i>	93%
<i>Range</i>	82%-97%	<i>Range</i>	80%-98%	<i>Range</i>	88%-97%	<i>Range</i>	90%-98%

Baseline. Across the five baseline sessions for Jackie her percentage of intervals engaged was low and stable ($M=24\%$, range 15% to 33%). The percentage of intervals in which Leroy was engaged was variable across nine baseline sessions, with a mean of 35% and a range of 8% to 57%. Christy's engagement during 13 baseline sessions was highly variable with a mean of 30% and a range of 4% to 60%. Carly's percentage of intervals engaged was highly variable in baseline and ranged from 23% to 73% with a mean of 47%. Although the percentage of engagement was variable for three of the four participants, all participants mean engagement was below 50%. See Figure 5.

Intervention. Jackie's percentage of intervals engaged increased immediately and dramatically following the introduction of the self-management system from the last data point in baseline of 33% to 65% in intervention while baseline rates for the other participants remained the same. Her percentage of intervals remained above baseline levels for the remainder of the study with a mean of 67% and a range of 48% to 88%. Percentage of non-overlapping data for Jackie was 100%.

After the introduction of the self-monitoring system, Leroy's percentage of engaged intervals increased from a mean of 35% during baseline to a mean of 78% during intervention, with a range of 47% to 87% while the other participants' engagement remained at baseline. The first five data points of intervention were more variable than the last nine sessions of intervention. His data demonstrate a slightly increasing trend across the phase. There is a gap of two sessions in his data due to his teacher, Jessie, was absent on those days due to illness. Because teachers were tasked with implementing the self-management system, it was not implemented on those days. Leroy's percentage of non-overlapping data was 86% (sessions 10 and 14 had overlap with baseline data).

Upon the introduction of the self-management system with Christy, her percentage of engagement increased immediately from 27% to 97% and stayed above baseline levels for the remainder of the study. Her mean percentage of intervals engaged for the treatment phase was 80% with a range of 70% to 100%. There is a slightly downward trend across 12 sessions in this phase. Christy's percentage of non-overlapping data was 100%.

When examining immediacy of effect, Carly's percentage of intervals engaged increased immediately from 50% in baseline to 85% in the self-management phase. Engagement remained stable in the self-management phase with a range of 85% to 100% and a mean of 94%. The percentage of non-overlapping data for Carly was 100%.

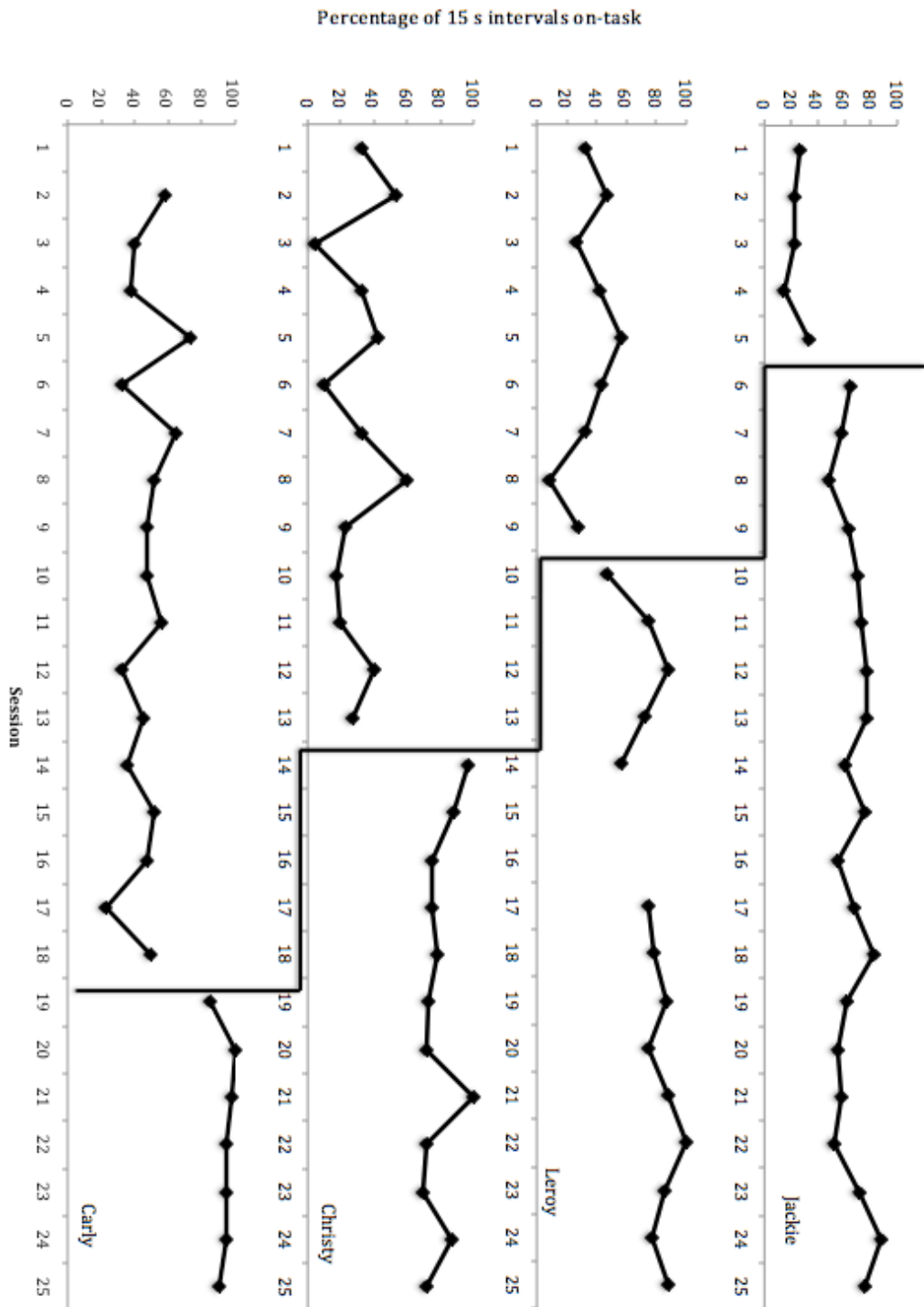


Figure 5. Percentage of intervals with engagement: All participants.

Research Question 2: What are the Factors Impacting Implementation of a Self-Management System in a General Education Setting?

Treatment fidelity, case studies and the themes that emerged from the qualitative data and analysis are presented below. Data collected from one-on-one interviews with teachers and from observations were analyzed and influenced theme development. First, treatment fidelity, a measure of daily implementation, will be described. Next, case studies for each teacher participant are provided. Finally, themes that arose across cases will be discussed.

Treatment Fidelity. Treatment fidelity data on teacher implementation of the self-management system was taken during each session by the researcher. The four steps that were noted included: handing out the self-monitoring sheet, prompting the student to keep track of the target behavior, giving feedback to the student at the end of the period and collecting the self-monitoring form. The total number of these steps occurring per session were divided by the total number of steps possible (i.e., four) and then multiplied by 100 which resulted in a percentage of treatment fidelity. Next, a mean was calculated to show the average percentage of treatment fidelity across intervention phase sessions. Results showed that three teachers (Holly, Pam, and Wendy) had 100% treatment fidelity across the intervention-phase coaching sessions. Jessie had 96% treatment fidelity (range 50%-100%). On one occasion, Jessie did not implement the final two steps of the self-management session (i.e., check-in with Leroy and collect the form) because she left early that day due to illness.

Case Studies.

Holly and Jackie. Holly, 56, taught 4th grade general education at Hilltop Elementary and had done so for seven years. She spent 25 years working in a tech company in the Puget Sound area before she began her teaching career: “I’ve always been drawn to the field of education and to teaching. I looked into it a couple of times previously in my career but financially it wasn’t viable.” She reported that after 25 years in the private sector, she felt comfortable enough to take two years off to get her teaching degree. Both her husband and her sister are teachers. When asked about her behavior management training prior to becoming a certified teacher, she said that she had “some coursework” in her pre-service program that revolved around child development and “psychology-type classes.” She noted that since it was not a special education program, her training wasn’t particularly extensive and “there wasn’t a lot of time devoted to how to address the unique needs of students with autism, for example.”

Holly discussed her approach to classroom management and also articulated some of the challenges she faced with implementation of certain strategies. In her initial interview, Holly talked about the importance of setting expectations and routines and spent time ensuring that her class is a “fairly well-oiled machine.” She listed several strategies that she employed, such as built-in movement breaks, token economies for students with disabilities, and classroom meetings. Despite her articulation of these strategies, she rarely was observed implementing these and more often resorted to punishment-based measures. For example, if students did not come to attention when she used her attention signal, she wrote individual student names on the board as a punitive measure (but even this was inconsistent). Holly later talked about her struggle with

implementing some of these systems, particularly those for students with disabilities in her classroom:

I have four students I'm giving tickets to right now and all four are students with IEPs. And so it's trying to give them positive reinforcement. Where I struggle a little bit and where I think a lot of teachers do is that it's sort of instinctual to say, 'Stop talking.' It's much harder to catch them when they're doing something good.

This was clear during multiple observations of her classroom wherein she only handed out tickets when the students started demonstrating challenging behaviors. For example, on several occurrences she said: "I'd love to give you a ticket but you need to have your notebook out."

Holly discussed that she struggles with determining when she is meeting the needs of students with disabilities versus reinforcing behaviors that "allows them to get out of work." Her husband is a middle school teacher so she knows what students can expect when they leave elementary school. She said, "We (both she and the resource room teacher) want those kids to have a full and productive a life as possible and to feel like they have their place in society and that they are valued members of society. And you know, sometimes you're just not going to be on the same page about how do we best accomplish that."

Holly spoke openly about the increase in "stress level" among general education teachers. She talked about how it was a combination of the new Smarter Balanced assessment, focus on common core, the new teacher evaluation system, and having "just

more things to attend to.” The focus on the Smarter Balanced assessment was particularly salient for this teacher:

I think it puts a lot of pressure on teachers because you know I discovered that in order to have my students ready for that Smarter Balanced assessment given when it is during the school year, I have to teach a math lesson every day of the year. So, our first day of school we did a math lesson...if we're going on a field trip, we still manage to get a math lesson in. It's fairly relentless.

Holly articulated and demonstrated an intense pressure to focus on academics rather than behavior management. It was noted on more than one occasion that Holly would continue with a math lesson no matter how disengaged students were, rather than taking time to practice appropriate behaviors or take a movement break. It appeared that Holly felt there was too much academic pressure to take time to attend to behavior or implement behavior interventions either class wide or individualized.

With regard to the self-management system, Holly appeared engaged with the system at times. For example, at one point, Holly noticed that Jackie was not on-task but marked a “yes” for that interval. Holly took a moment to give Jackie a reminder about the importance of being accurate and honest. However, Holly rarely went over the operational definitions of being on-task with Jackie (although these were taught to Jackie initially when she was introduced to the self-management system). She also was not consistent in clearing off Jackie's desk of all distractions. These included occasions where food, drinks or toys were on the student's desk and affected engagement.

Holly found the system helpful because it was largely student-managed. She said, “I didn't feel like it was a lot of additional work.” However, upon the conclusion of the

study, Holly's use of the self-management system with Jackie stopped. Over email, Holly wrote:

Jackie has been having some behavioral difficulties recently, and was absent just after Christmas break, so our use of the MotivAider has been sporadic. It has been difficult to get her to stay at her desk. We are looking to schedule a meeting for all interested parties to review her situation (per Mom's request).

She mentioned that she tried the system with another student with disabilities in her classroom, but that student used the MotivAider as a "toy" and so she discontinued it.

Jackie. Jackie, 8-years-old, was diagnosed with ASD and qualified in the area of social-emotional. Jackie was highly distractible and struggled with emotion regulation. For example, if she was told she could not do something (use the restroom at that moment, eat a snack during non-snack times) she would shut down and refuse to complete task demand, pout, or put her head on her desk. She often brought food, beverages and toys from home that was in and on her desk and was a source of distraction for her during teacher-led instruction and independent work times. Jackie appeared excited to participate in this study when the researcher asked for her assent. She was candid with Holly when she felt that she was not ready to participate on any given day and would state that. At times, Jackie used her self-monitoring form itself as a distraction and draw pictures on it. Generally, it was observed that the vibration of the MotivAider was enough to redirect her attention. Holly reported that on at least one occasion Jackie did not start her MotivAider and engage in the system because the researcher was not present. Holly noted she believed that Jackie associated the system with the researcher's presence. Jackie's engagement was very low before the system was

implemented and improved significantly with the introduction of the system. However, even with the use of the system, there were days where her engagement was only around 50%.

Jessie and Leroy. Jessie, 58, has been a general education teacher for 33 years. She had done an internship with students with severe disabilities that she found challenging: “I found myself depressed every time I had to go.” Because of this, she decided to become a general education teacher. When asked about training she had received in behavior management prior to becoming a teacher, Jessie laughed out loud and said she did not receive any. With regard to professional development in the district, she said,

We haven’t received any in the district on that. Like I said I sought it out and went to one on my own. On our evaluation of a speaker it always asks what else you would like and I put down more instruction about working with autistic children because we’ve had none and it’s very different.

Jessie’s only experience with students with disabilities had been with students included in her classroom. When describing the students she typically has in her classroom she said:

They’re average to above average usually. I might have one or...it changes from year to year...but I may have a handful of students who have IEPs in some areas or a low IQ or developmental delay or something like that. But for the most part they’re well-behaved happy learners.

Jessie’s treatment of students with disabilities was quite varied. She was observed curtly chiding students with learning difficulties on occasion (“Come on, you

should know that. That's a basic math fact."). However, on other occasions, she appeared very invested in helping students with disabilities, giving them space to think aloud when answering questions during whole-group discussion and praising their efforts. Jessie felt that when she taught in Catholic schools, she "did not need" behavior management strategies but "needed some tools" when she began teaching in public schools. She said, "I wish so much I didn't need to use it (behavior management)."

Jessie articulated behavior management strategies that she used and ways she differentiated, but actual implementation of these strategies was variable. For example, she had a class-wide system wherein students could earn tickets for following expectations and then she did a weekly drawing. During multiple observations, she was rarely observed handing out tickets. Indeed, Jessie said, "I think I could probably use it (the ticket system) more often than I do."

Jessie spent little time on establishing expectations and routines and this was obvious in multiple observations wherein transitions were messy and routines were non-existent. Jessie routinely came in to school right before the bell rang and was consistently late letting her students in after each recess. On one occasion, she hurriedly came in her classroom while her students were outside waiting to come in from recess and told me that she hadn't looked at the lesson yet. Then, after she let her students in, she struggled with getting the technology set up for roughly five minutes while the students had nothing to do. On another occasion, Jessie asked me if I could either watch her class while she made copies or make the copies myself. She pulled me aside one day and said she had had her classroom evaluation by the principal and had scored a "basic" in the area of classroom management. She said she never scored that low in 30 years of

teaching and that she cried all day when she found out. The principal had just started this year and this was her first time evaluating Jessie.

With regard to the self-management system, Jessie did not always run the system if this observer was not there. She would sometimes email on those days and report that she could not find the time to run it and would apologize. She did mention this when asked about how the system might be changed: “I think maybe to teach the student to ask for it might be a piece. So that if I forget which didn't seem to happen very often. But that way, it would be used if I didn't remember.” In general, Jessie found the system to be easy to run, and found it to be very beneficial for Leroy, stating that it improved his self-esteem and quality of work. Approximately four weeks after winter break, Jessie reported that she no longer was using the system with Leroy because he was much more independent and did not need it anymore. She was using the system with another student.

Leroy. Leroy, eight, qualified for special education services under the category of Other Health Impairment (OHI). Leroy was observed as being easily distracted by both internal and external stimuli. This included noise in the classroom, skin on his hands or lip, or internal thoughts that he would disclose to his teacher (e.g., anxiety about soccer on the playground with peers at recess). These distractions often interacted with his engagement by distracting him from his assigned tasks. During the first self-management session, Leroy appeared unnerved by the vibration of the tool and would seem startled each time it went off. He reported to the teacher that it was uncomfortable for him and he readjusted where he placed the device throughout the session. As such, his engagement for that day overlapped with his baseline engagement percentages. Jessie openly wondered to me if this tool was the appropriate one for this student. However, Leroy

quickly adjusted to the MotivAider by the second session and consistently did well with it. If he became distracted, it was observed that the vibration of the tool would alert him and he would engage again in the task at hand. Although the system worked very well for Leroy according to the quantitative data collected, there was at least one day where engagement was more of a struggle for him despite the use of the system.

Pam and Christy. Pam, 25, had the least amount of teaching experience among all of the teacher participants (1.75 years) and was new to Hilltop Elementary. She was very enthusiastic about her new position:

My school is a dream school. This is an amazing environment full of support and love and care for the art of teaching. Um, I'm new here... so I've only got to experience this for the last couple of months. But from what I've seen, this is the most amazing environment that I've ever worked in – that I've ever had the luxury of working in – and I hope to be here for a really long time.

Pam articulated that she valued independence in her students and several observations of strategies she consistently used confirmed this. These included nominating a “question-master” when she was busy teaching a small group, being clear about routines (e.g., when and how to use the restroom, when and how to get materials), and having a student leader dismiss tables to get a drink after each recess. Pam often utilized peer mentors in the classroom to support students who were off-task. She would say, “If you see a friend who is struggling, help them out.” Routines were clearly established and she used behavior-specific praise and the class wide reinforcement system often for students who were following expectations. Despite her apparent skill in behavior management, she often seemed frazzled and overwhelmed during observations,

making comments like: “I don’t know why we are so discombobulated today,” when everything appeared to be running smoothly to this observer.

This teacher was very open about her struggle with differentiation. She said:

I’m just goanna be frank with you – with the kids with disabilities that require my undivided attention almost that balancing keeping them in check with giving the rest of my students a quality education is really challenging . . . And so I try to really balance that out but it’s hard because you don’t have a million arms and you don’t have – it’s only one of you and 24 of them so you just do the best you can.

On one occasion, a peer next to the target student, Christy, said, “Ms. W, Christy is not doing what she’s supposed to and Pam said, “I understand that but I have 10 other kids that need help right now so I’m not really worried about that right now.” Pam also brought up her formal evaluation to me. She said that Christy was off-task during it and she had to stop a small group she was running to check-in with her. She said she was “glad” the principal was there to see that so she understood the competing demands she faces in the classroom.

At the beginning of the study, Pam often went over the operational definition of “on-task” prior to giving Christy the system, but stopped that practice fairly quickly. She also kept the materials for the system in the back of the classroom, which made it challenging for her to retrieve them while teaching. Christy was placed on a safety plan because she hit another student. This necessitated that she check-in with the resource room teacher prior to coming back into the classroom after each recess. Given this, she often came in late to class and Pam appeared rushed trying to get the materials to her and

get started after she had already begun her lesson. Later, Pam transitioned to having the student collect the materials. Pam let me know that upon the conclusion of this study, the resource room teacher wrote the self-management system into Christy's IEP.

Christy. Christy was diagnosed with ASD and received support for social/emotional in a pullout social skills group in the resource room. She received the majority of her instruction in her general education classroom. Christy was easily distracted by preferred activities, particularly drawing and reading. On some occasions, the self-monitoring form became another surface for her to draw on. Christy received multiple supports in the general education classroom, including preferential seating, peer mentors and frequent check-ins with Pam. Christy occasionally demonstrated larger challenging behaviors, including property destruction and aggression. During the study, she assaulted a peer while in line coming in from the recess before her reading/writing block where her self-management system was implemented. She was placed on a safety plan for several days after that which required her to check-in with the resource teacher after each recess prior to re-entering the general education classroom. Christy sometimes struggled with transitioning from the resource classroom back into Pam's classroom, which necessitated that Pam stop the lesson in order to get Christy set up with the system.

Wendy and Carly. Wendy, 26, was beginning her third year of teaching when this study began. She was dually endorsed in general education and special education and had done both of her student teaching internships at Hilltop Elementary. Wendy articulated several behavior management and differentiation strategies that she utilized in her classroom and was observed implementing them consistently. These included use of attention signals, going over rules and expectations repeatedly and reinforcing students

for following them, and using *Zones of Regulation* curriculum with her students. She utilized visuals regularly and had anchor charts with expectations for each area of the classroom and for each major activity (e.g., reading to self, carpet expectations, etc.). Wendy used behavior-specific praise consistently and took time to establish behavioral expectations at the beginning of the year and as needed throughout several observations.

Wendy articulated that one of her biggest issues with behavior management:

Just knowing what to try next. Like when something doesn't work, it's like, what do I try now? I guess it's just that bag of tricks. I don't feel like I have a big bag of tricks because I'm a pretty new teacher and I feel like I need to build that up a little bit more and have lots of different strategies, but it's hard to know what to go to next.

She also discussed how it can be challenging for general education teachers to juggle multiple systems. Wendy was open to strategies and was mindful about how and when she implemented them. For example, she talked about her whole group contingency of students earning smiles or frowns (with the goal of earning more smiles) but admitted it was not linked to a backup reinforcer as she didn't feel that students needed that piece. However, later, she noticed that students in her classroom were demonstrating more challenging behaviors so she mentioned to me that she may need to add a marble jar system and connect it to a classroom party. Within a week, she had implemented this system and was consistently referring to it.

With regard to the self-management system, Wendy consistently ran the system when I was not there and delivered the completed self-monitoring forms to me. She always went over the operational definitions of "on-task" for Carly prior to starting the

system and checked-in with her and provided her reward upon completion. In her second interview, she also mentioned that she had taken the initiative to discuss ways to adapt the plan for Carly with the resource room teacher (e.g., increasing the length of the intervals). She was also the only teacher who got into a habit of having the student collect the materials and bring them to her before each session. Wendy attributed this to Carly:

She's just really, naturally just independent and kind of responsible in that way because at first I had the, you know, the chart up front and we would just have like a little conference before she sat down, but like, like I said, it's hard for me to manage sometimes, so she kind of just if I would forget she'd come back here and get it herself and then eventually she just started coming back there every single time and getting it herself.

With regard to her feelings about the system, Wendy noted that she felt like it was simple to implement and was pleased with how it affected Carly's behavior, stating, "She just looks like a totally different kid on the carpet."

Carly. Carly was a spirited seven-year-old with a diagnosis of ADHD. She needed a lot of movement and had trouble focusing on whole-group instruction and independent work. She looked around the classroom, talked to her peers, or moved around the classroom (e.g., to sharpen a pencil or get a drink). She also blurted out at times rather than raising a quiet hand. Carly was enthusiastic about trying this intervention and, as Wendy reported, began bringing the materials for the system up to her when it was time to run it. She also returned the materials when the session was over.

Cross-Case Analysis. The following section discusses themes that surfaced across cases with regard to implementation. These themes are linked to constructs in the CFIR, particularly characteristics of the intervention, characteristics of the individual, implementation climate, and process.

Characteristics of the intervention. Characteristics of the intervention, a major domain of the CFIR, refers to “key attributes” that contribute to successful implementation of that intervention (Damschroder et al., 2009). It appears that there were components of self-management that facilitated high rates of fidelity that were observed across all classrooms.

Complexity. Perceived complexity of the intervention seemed to impact implementation. All four teacher participants implemented the self-management system with very high fidelity when the researcher was present, and all four reported that the intervention was easy to implement. Wendy said that the system, “was easy for a general ed teacher to implement in the classroom,” and referred to it as “a student-driven intervention. Jessie noted, “You know I think the beauty of it was that it was that simple.” Holly also noted that the intervention was helpful because it was primarily up to the student to use the strategy:

Now for me it was really helpful because it was very much you know, OK here it is and this is for you to manage so I didn't have to be back there every two minutes saying OK fill in this box. She had the buzzer to tell her to do that. Pam also reported that system was easy to manage in her classroom. Teachers had positive feelings toward the self-management system partially because it felt like a reasonable intervention to implement. It was simple and once taught by the teacher and

initiated during the defined academic period, the mechanisms of the intervention were the signal unit and the student.

In addition, the complexity may have been diminished by the level of support provided by the researcher, wherein the researcher supported teachers in developing some of the more complex pieces of the system (e.g., choosing and operationalizing a target behavior, developing a form, teaching the system and operational definitions to the student). Ultimately, the teachers' only *daily* task included handing out the form, prompting the student to start, collecting the form and checking in with the student at the end of the session, which appeared to be an acceptable amount of responsibility to these participants. That is, this model allowed the researcher to scaffold the teachers with support while they learned how to do the more technical pieces of self-management system creation, and removed that support for the more straightforward aspects of the intervention. When asked directly about ease of implementation, specifically in her ability to manage the system/materials/etc., Pam said, "I mean, you know the papers are pretty easy to prepare. You know, copy and cut." Indeed, each teacher participant was asked directly about the training and each reported that nothing could have been added to the training to make implementation of the intervention easier. This comprehensive training is pertinent to self-management in that successful implementation of this practice in general education settings requires "sufficient support, including *explicit training materials . . .*" for general education teachers (McDougall, 1998, p. 318, emphasis added). It is worth noting, however, that despite the fact that all teachers reported it was easy to implement, all four also referred to challenges they experienced with differentiation and there were at least two occasions where teacher participants did not

seem prepared to implement this system in particular. Pam did not have forms copied on one occasion and instead erased a used form. This is noteworthy given her statement above about materials being easy to prepare. On another occasion, Jessie did not have forms copied and instead turned a used form over.

The concept behind the self-management strategy was also powerful in reducing complexity *in the classroom*. Wendy said:

I think when students have SM strategies it makes them more independent so they are not always having to rely on me or other students for things. That's also beneficial to the classroom because it also frees up my time and I'm able to work with more kids.

So, the intervention itself was simple, but it also simplified and reduced demands on teacher time because of the importance of self-management skills in promoting independence. Holly expressed a similar sentiment: "There's only one teacher and there's numerous students.... If you can shift some of that responsibility onto the student it's going to help the teacher to be I think more effective." She went on to say,

That's what I like about this one [intervention], is that I feel like it's not unreasonable added burden. That it is really reasonable and that if anything *it's improving the situation* because you're trying to help those kids to sort of be thinking about their thinking on their own.

Flexibility. Teacher participants also seemed to understand and utilize the flexibility of the intervention. Wendy mentioned that she had already talked to Kelly, the resource teacher, about potentially changing the interval length for Carly, demonstrating her awareness that she could shift the system to better meet student needs. Holly also

discussed how she could potentially use this system with other students and talked about modifications she would make to interval length. Jessie used the system at other times of the day with Leroy and also experimented with using it with other students. Pam expressed a desire in interviews to use the system class wide and brainstormed how to use this (e.g., using a tone to notate the interval). Pam said of the intervention:

I think that she (Christy), because she knows the system already I could kind of put it where I want. You know if I wanted her to take sheet and a MotivAider to library, she could. Or I wanted her to take a sheet and a MotivAider to music, that she could. It's something that's like universal and that she could even take the fifth grade if she wanted.

Despite the diversity of the contexts within which the systems were implemented, it is appears that self-management strategies were flexible enough that they could be adapted to meet the needs of different environments. Teachers in this study recognized this fact and were able to articulate ways they would adapt and extend this intervention. This includes changing intervals, modifying the self-management materials, utilizing self-management for the whole classroom, or using a different signal to indicate each interval (e.g., chimes available on *Intervention Central*). Indeed, Pam moved the self-monitoring system to another time of day with Christy upon the conclusion of the study. Jessie reported that she implemented the system with a different student in her classroom. This flexibility is potentially a facilitator for implementation as it allows the educator to adapt the strategy as needed to suit the student or the environment. In the CFIR, adaptability is a characteristics of the intervention that can influence implementation, or “the degree to which an intervention can be adapted, tailored, refined or reinvented to

meet local needs” (Damschroder et al., 2009, p.4). As long as the “core components” of the system are present, there are flexible aspects to the intervention that can be tailored to the classroom contexts. It is critical to note, however, that despite the fact that all teachers were able to articulate how they would modify the system, only the two mentioned above (Pam and Jessie) actually did so. Wendy did not implement the system with any of her other students upon the conclusion of the study. Holly reported that she did try to implement the system with another student, but it was not effective, “Unfortunately, I think it is as much a toy/another distraction for her (like playing ‘Teacher’) as it is a helpful reminder to refocus.” Rather than use a different medium to deliver the cue (e.g., a tone from *Intervention Central*), she instead discontinued use of the system.

Characteristics of the individual: Teacher Participants. Individuals in the CFIR refer to individuals in the organization, as these constructs are, “rooted, ultimately, in the actions and behaviors of individuals” (Damschroder et al., 2009, p. 16). Given that both teachers and students interacted with the self-management system, both sets of individual characteristics will be discussed.

Knowledge and beliefs. Teacher participants expressed a positive predilection toward self-management prior to the training when asked about how they defined or thought about self-management. Pam said self-management “gives the student power. Feeling like they can manage themselves is a powerful thing.” Jessie noted that to her, self-management meant that students “are able to make choices that support their learning and those around them.” Wendy was articulate in her answer about how self-management benefits the student:

And I think for a student that's just a road for improvement. Like being able to reflect on yourself and what you need to improve on and what you did really well.

That's important for them to improve in all areas.

Holly also discussed the benefits of self-management:

And it's also, more importantly, really in the best interest of the child if they can learn that skill over time then they can carry that with them into every setting and environment not just in school.

Teacher participants, then, felt very positive about the intervention before they even received the training. This belief in the importance of the intervention to both the target student and the rest of the classroom potentially supported the high levels of fidelity observed in their classrooms. This is significant because it supports what Briesch et al. (2014) found in their survey of practitioners regarding the use of self-management interventions, "The majority of respondents found student empowerment and investment to be important advantages to self-management strategies" (p. 7)

Characteristics of individuals: Student participants. Student characteristics played a role in the efficacy of the intervention. For example, Leroy initially did not react favorably to the tools used for the intervention. The MotivAider startled him when it went off and he had trouble finding a comfortable place to wear it. He adjusted quickly by the second session, but still had at least one day when the researcher was present where he was simply too distracted to engage successfully even with the self-management system (see quantitative data). On this day, he stared off into space, talked to his peers, and became hyperfocused on the skin on his fingers. Jessie spoke to this in her interview:

You know and there were some days when he just wasn't able to work for whatever reasons, which were more personal. Might have been he was tired, might have been he was in a bad mood. And so I didn't see that it helped very much on those days. *But they were very few.*

Despite the occasional drop in engagement (reflected in the quantitative data), Jessie persevered with the use of the intervention and ultimately credited the system with supporting Leroy's independence across several areas of his day. She had noted in her interview that she valued the concept of self-management, so it's possible that this belief in the importance of the strategy helped her persevere initially (belief about the intervention). However, Jessie also quickly saw the benefits of the system (e.g., increase in Leroy's work production), which likely facilitated her continued use of the intervention despite having days where it did not appear to work as well for him (e.g., see Gersten and Dimino's 2001 study wherein teachers were more likely to implement an intervention when they saw it worked with their students).

Christy already had multiple supports in place (e.g., peer mentors, preferential seating, multiple teacher check-ins) of which the self-management system was just one component. The strategy seemed more "powerful" on some days than others, which Pam discussed:

I mean I think that there definitely were ups and downs. For her things work, like something can work really, really great one day, and then depending on how she's feeling, if she didn't get sleep, or she's hungry, like it's over. I mean all learning is over and so I need to get her what she needs. So I think that... I don't necessarily... I don't think that it was the strategy of the self-management that

made her go up and down. I think it was her going up and down, but *this [the self-management system] was just an aid to help her through that.*

On the days where Christy was “off”, she required more frequent check-ins from both Pam and the peer mentors in order to maintain engagement. These setting events (e.g., lack of sleep, hunger, conflict with a peer) affected the power of the intervention and the reinforcer associated with it (e.g., tickets). Again, Pam seemed aware of that fact and as such still utilized the intervention, even on days where it did not appear as powerful.

Carly’s individual characteristics seemed to increase implementation because her independence and initiative of retrieving the materials when it was time to run the system and then returning them at the end of the session supported Wendy’s overall implementation of the system. Wendy said of Carly:

She's actually been able to be really independent with a lot of other things like she gets five pieces of gum in the morning and she manages that throughout the day herself. She's really independent with that and so I think that [her retrieving and returning the system] kind of just evolved naturally because of whom she is.

This student independence lent itself well to implementation of the intervention as it was one less thing for Wendy to take on. This student characteristic intersected with the complexity of the intervention (e.g., less steps for the teacher to engage in and thus simplifying the intervention for the teacher), which promoted implementation.

Jackie’s tendency to become dysregulated easily in certain situations (e.g., having a toy that she brought from home taken away) became a barrier to teacher implementation. For example, Holly reported that Jackie told her on at least one occasion that she simply “wasn’t ready” to use the system and would refuse to participate. Jackie

also would use the dry erase marker meant for her self-monitoring chart to draw on her hands or other items, or draw on the chart itself. It's possible that a shift in self-management materials would have been useful for Jackie. Overall, student characteristics were impactful as barriers and facilitators of the intervention across all participants.

Implementation climate. Implementation climate is part of the inner setting of the organization and refers to the “receptive context,” or the “absorptive capacity” for change in a particular setting (Damschroder et al., 2009, p. 11). Observation and interview data taken across participants clustered under this theme with regard to how amenable different climates were to implementation both in the short-term and long-term.

Absorptive capacity for change. A teacher's repertoire of behavior management strategies and capacity for implementation of these strategies varied across contexts and interacted with student engagement. Pam and Wendy both were able to articulate behavior management and differentiation strategies and where they had learned them. In particular, Wendy had done an internship with Kelly, the resource teacher, so she was fairly adept at and saw value in implementing these strategies. Teachers who were consistent in their implementation of strategies to promote differentiation and solid classroom management seemed to “have space” to take up and consistently use an individualized system like self-management, either during the course of the study or upon it's completion. The range of teacher ability in this area was apparent.

There was a clear lack of preventative measures in Holly's classroom. Most strategies were reactive. For example, one on occasions there was a party scheduled for the end of the day and Holly was randomly correcting/redirecting students, repeating that

these individual students would lose the party if they did not follow the expectations right away (e.g., “Whoever is not writing this down right now will not be going to the party.”). She struggled with keeping students engaged and on-task. Implementation of strategies that Holly articulated in her interviews with respect to classroom management and positive reinforcement, such as ticket systems for students with disabilities, and various routines, were inconsistent or absent. This poor classroom management directly impacted engagement of all of the students in her classroom, but particularly students with disabilities who were disproportionately redirected (while simultaneously not rewarded for positive behaviors). The reward systems for students with disabilities were created by Kelly, the resource room teacher, who told me: “In meeting social emotional needs there are components that are really critical. And one is classroom management. The teacher has to have a very strong solid classroom management structure that's consistent.” Indeed, this “tier 1” support was largely absent in Holly’s classroom and appeared to impact the implementation of individualized plans that Kelly had created.

Kelly lamented about how several general education teachers did not implement these individualized plans and she speculated why:

I am talking about a philosophical shift. And I think the reason why we see so much struggle with this is, in the gen ed situation, is that special ed teachers had, this is their philosophy. I need to meet the kid where the kid is right now, move the kid along, look at the child as an individual. And general ed teachers do not necessarily have that as a philosophy. And the ones who do have either served in a place where there is a high level of urgency because the students are all below standard or they've mentored under a teacher who has that as their philosophy.

But I think it's rare for a teacher to come into teaching with that mindset.

Related to this, Holly, said very presciently in an interview:

I have tremendous respect for our resource room teacher. I don't always think we see eye to eye. And in some ways I think that's just the nature of her role and my role. I think in terms of my entire class and how I've got 23 students right now that I need to show progress for. She tends to focus on those students with the IEPs. And so sometimes I—it's kind of what's best for them can be challenging to implement while still serving the other students well.

This disconnect between general education and special education, articulated so clearly by the teachers cited above, can impact the fidelity of implementation of strategies in general education contexts

Jessie also struggled with behavior management and admitted she had very little training in that area. There were several inconsistencies in her implementation of classroom management strategies and with differentiation. This was evident with the self-management system as well. There were several occasions where she did not implement the system in the researcher's absence. She emailed the researcher to report that she "didn't have a good time to implement" or when asked directly, would say, "I don't remember if we used it or not." Jessie had an implementation climate that felt disorganized and inconsistent which made implementation of individualized strategies challenging. Although she reported that she uses the system with another student in her classroom because Leroy's engagement had improved, it is unclear how consistently it is being implemented.

By contrast, Wendy was dual-endorsed in both general education and special education and was observed on numerous occasions to consistently implement behavior management strategies both class wide and for individual students. Kelly, the resource teacher, said of Wendy:

But I believe that the teacher in particular, this is the second year I've had challenging students, a challenging child in her classroom and this particular teacher was, is dual-endorsed. And so she has training as a general education teacher and as a special education teacher so she spent, she spent quite a bit of time. I mean she did, had a whole student teaching experience in a resource room. And so I think that, that experience has was really, really valuable to her as a teacher in a general education setting so there's that piece. But then there's also this, just kind of this innate sense of knowing. I don't know how to put this but this particular teacher is very structured and very calm and very planful and consistent in her daily practice and so I think those two pieces together have really kind of, what am I trying to say, helped with success in implementing intervention plans in the classroom.

Wendy seemed to “create space” in her classroom to differentiate and individualize with students. She was observed on numerous occasions to support students individually or in small groups while the rest of the class was quietly engaged in other activities. Wendy articulated that she would practice having students work independently such that she could carve out time to differentiate as needed and, as such, it appeared effortless when she implemented whole-group, small-group, or individualized interventions.

Although it appeared effortless, Wendy talked about the challenges associated

with differentiation:

I think the biggest challenge is just trying, me trying to manage all the different like systems. I feel lucky that I don't have too many students that need individual support with behavior, but I think that's the most challenging part, is trying to manage that part of it.

Indeed, although the student no longer seemed to need the self-management system after winter break, Wendy admitted that one reason it was not being implemented is because the student had gotten out of the habit of bringing her the system before each session and that made it challenging for Wendy to remember to implement. This is salient because it is clear that even the most skilled teachers can feel overwhelmed with managing several systems, even in an implementation climate that is ripe for such interventions.

Intervention support. When asked what supports teachers feel they have to differentiate and implement behavior management strategies, all four referred to Kelly the resource teacher as a source of support, particularly with students with disabilities. Indeed, Kelly asked for a copy of the self-management training I had given the teacher participants as she was eager to learn more about the subject. She also had MotivAiders that she had purchased for her classroom that she offered to provide to the teachers after this study was concluded. This indicates that the resource teacher is potentially a support for intervention use in the implementation climate. Kelly felt so strongly about the efficacy of the self-management system that she wrote it into Christy's IEP to promote sustained use. This is critical as Briesch and Daniels (2013) wrote because "some level of classroom support may also be needed to ensure consistent implementation" of self-management strategies (p. 379). However, this theme should be interpreted in light of

other comments discussed earlier that indicate differentiation is challenging for general education teachers. Holly spoke to this: “I think we’re noticing a bit of a change in our population where we seem to be having more students with higher levels of need and there *isn’t necessarily a significant increase in support.*” She referred to the fact that the special education resource teacher has received an assistant, and that the school will be receiving a full-time counselor next year. However, she contrasted this with the general education teacher role, stating: “As a classroom teacher you do find yourself sort of on the front line of trying to serve the needs of all students, trying to make sure everybody is showing that significant growth and being challenged, but yet making sure that nobody feels like, ‘I can’t do this,’ or, ‘I don’t fit in this classroom.’”

When talking about differentiating and individualizing for student needs, Pam expressed the same issues:

Um, [differentiation is] a lot of work - a lot of time spent sitting and thinking about what would work for each kid. And not only that but a lot of time taken away from everybody else. Because if one kid is presenting a significant challenge the other kids um, it just happens to where they either wait or do something independently when I could be working with them. So that kind of . . . that’s rough. And I’m not saying that’s a bad thing - it is what it is. It’s gotta happen, you know, I can’t just let one education slip when . . . yes, there are 23 other educations on the line but you gotta find the sweet spot. And I’m not sure that every situation has a sweet spot sometimes you just kinda have to do the best you can with what you have.

So, although each teacher clearly articulated that Kelly is a source of support, it appears that some general education teachers still felt that ultimately daily intervention is on their shoulders alone and that can presents challenges with regard to implementation of individualized strategies.

Process. The process of implementation is the fifth major domain of the CFIR and includes four sub-constructs including planning, engaging, executing, and reflecting and evaluating. Components of the implementation process were evaluated throughout the study.

Planning. Planning is defined in the CFIR as “The degree to which a scheme or method of behavior and tasks for implementing an intervention are developed in advance and quality of those schemes or methods,” (Damschroder et al., 2009). The professional development session for the self-management system was carefully planned to ensure teachers were supported through the pieces of system development that require “expertise” (McDougall, 1998). These include choosing and defining a target behavior, designing the system, and teaching it to the student. This scaffolding likely contributed to the high fidelity observed in the classrooms. Wendy said the system was “self-explanatory,” and she couldn’t think of anything that would have made it easier to implement. Other teachers concurred that the system was straightforward and fairly simple to use.

Executing. During the study, all teacher participants implemented this system with fidelity. The four steps of giving the student the form, prompting them to keep track of behavior, checking in with the student and collecting the form at the end looked different among the teachers however. For example, Wendy very often went over the operational

definitions of “on task,” whereas other teachers gave a simple prompt to begin. Teachers were sometimes unprepared with materials. For example on a few occasions, two of the teacher participants, Pam and Jessie, simply erased a used form or turned a used form over rather than taking time to make copies. There was also variability in where teachers kept materials. Pam and Wendy kept the materials in the back of the classroom, which did not lend itself to implementation because of the inconvenience of needing to leave the front of the classroom (where teaching occurs) to collect the materials for the student. Both teachers eventually shifted to having the student take on responsibility for collecting the materials. These observations support the comments made by the teachers in interviews related to challenges with differentiating and individualizing (e.g., Wendy’s comment that the “biggest challenge” for her was, “trying to manage all the different like systems”). It seems that, at times, teachers struggled to keep up with certain aspects of this individualized system, such as prepping materials. These components should potentially be included in trainings and/or on-going coaching to maximize efficacy of the system.

Reflecting and evaluating. When asked to reflect and evaluate on the effects of the self-management system, all four-teacher participants were pleased with how it affected student behavior. Jessie in particular called it “fabulous.” She went on to say:

It worked really well for Leroy. His self-esteem has improved. His amount of work he's doing has improved. The quality of what he's doing has improved. He was able to share in front of the whole group a problem that he solved, the first time this year. He's happier. He's more independent in other ways like taking more responsibility. His job was recycling last week and he did it more than once

without needing to be asked. Then he wanted to help clean the sink because that person was absent. He came and sang me a song. Christmas song. The whole thing to me. He just was really feeling better and he was asking about the MotivAider and I said you know you might not need that anymore because you're so productive.

Similarly, Wendy said about her student Carly, “Just noticing her behavior is like night and day. She looks like a totally different student on the carpet.” Both Pam and Holly expressed similar sentiments about their students and were pleased with the results of the self-management system. As such, all four teachers articulated that they could see themselves continuing to use using this system with either the target student or with other students in their classrooms. These statements from the teacher participants are salient because in the CFIR, evaluation includes “non-quantitative feedback including anecdotal stories of success.” (Damschroder et al., 2009). However, it is critical to note that despite the fact that all four teachers appreciated the system upon reflection, not all have continued to use the system. Wendy no longer uses the system with Carly (due to behavior improvements) nor had she implemented the system with any of her other students at the time of her last communication with the researcher. It is possible that this is due to the fact that none of the behaviors she is seeing in he classroom warrant the use of this individualized intervention, either because to characteristics of her student population or because of her success at implementing tier 1 strategies (or both). Holly also had discontinued use of the system with Jackie within 6 weeks of the end of the study and had found the system to be unsuccessful with another student she tried it with (although the value she sees in the system may be indicated by her trial of it with another

student). Both Pam and Jessie are still utilizing the system; Pam with the target student Christy and Jessie with another student. These issues around maintenance are surfaced in more detail in the discussion.

Chapter 5

Discussion

The development of “non-cognitive” or “non-academic” skills in school settings, such as attentiveness, persistence and other self-regulation skills, are of the utmost importance for all students (Tooley & Bornfreund, 2014). This is particularly true for students with disabilities who can develop a dependence on adults in school and beyond if they are not taught how to manage and regulate their own behavior (Hume, Loftin, & Lantz 2009; King-Sears, 2008). Several curricula have been created and utilized to support the development of these skills in general education settings. These include the *Zones of Regulation* (Kuypers, 2011) and *The Ruler* (Brackett et al., 2011). However, students with disabilities may require more individualized or explicit instruction to learn and perform these skills. Self-management procedures are evidence-based strategies that can be used to promote this skill development in general education contexts and can be individualized to meet the unique needs of students with disabilities (Briesch & Daniels, 2013).

The purpose of this study was twofold: 1) to examine the effects of a self-management intervention on student engagement for four students with disabilities in general education settings; and 2) to examine the implementation process of self-management systems in these settings. This study is unique in that it is one of the first to instruct teachers on how to design the self-management strategy and implement this intervention in the context of the general education and regular school activities for students with disabilities. Results of this study indicate that all four of the student participants demonstrated increased engagement during targeted academic periods after

the introduction of the self-management system. In addition, qualitative data on the implementation process, including interviews and classroom observations, identified several themes that may influence future implementation of these strategies. These include information about individual student characteristics and classroom climates that intersected with intervention effectiveness, and issues of sustainability of intervention implementation. The discussion below, organized around the quantitative and qualitative components, provide implications for the use of self-management systems in general education settings and more broadly the use of mixed methods research in education. Limitations are also discussed.

Self-Management in General Education Settings: A Valuable and Feasible

Intervention for Students with Disabilities

Self-management procedures, and particularly self-monitoring, have been demonstrated to be effective for students with disabilities in various resource room or self-contained settings (e.g., see Briesch & Daniels, 2013; Carr et al., 2014; Southall & Gast, 2011). This study has extended the literature around self-management into general education settings for students with disabilities, a need that has been noted by several researchers in this field (e.g., see Briesch & Daniels, 2013; King-Sears, 2008). As indicated in the data displayed (see Figure 5) a functional relationship exists between the independent variable (self-management system) and the dependent variable (student engagement). That is, student engagement increased when and only when the self-management system was in use (which occurred after the teacher received the training on how to implement a self-management strategy). Engagement data stayed above baseline levels almost entirely for each participant as demonstrated in Figure 5 (Leroy was the

exception with two sessions). The percentage of non-overlapping data for three participants (Jackie, Christy and Carly) was 100%, and was 86% for Leroy (sessions 10 and 14 had overlap with baseline data). This functional relationship was replicated across all four participants, which strengthens the hypothesis that the independent variable was responsible for the behavior change (as opposed to some other event or variable). As Cooper et al. (2007) wrote, “replication demonstrates the reliability of the behavior change; it can be made to happen again” (p. 173) and the multiple-baseline design provides that replication across participants.

The qualitative data indicate that all four of the teachers saw improvements in student engagement and focus and, in some cases, in work output as well. Moreover, two of the teachers saw such dramatic improvement in student engagement that they made the choice to discontinue the intervention after the study concluded. Data from interviews and field notes indicate that the teachers believed this was an effective intervention for their students. Indeed, Jessie said it was “fabulous” and the effects for Leroy had generalized to other parts of his day (e.g., she reported he was more independent and more confident in general). Wendy said that Carly “looks like a totally different student on the carpet,” and this behavior improvement maintained upon their return from winter break even without the system. However, further quantitative probes would be needed to verify if the behavior maintained past the end of the study. If it truly does maintain, it is possible that self-management strategies may only be needed for short bursts of time (e.g., 4-10 weeks) to achieve an acceptable level of engagement (behavioral change) to be successful in the general education classroom. Several self-management studies have noted that skills attained through the use of these procedures have created sustainable

behavior change (i.e., maintenance and generalization) for students with disabilities (e.g., see Asaro-Saddler & Saddler, 2010; Loftin, Odom, & Lantz, 2008; Pierce & Schreibman, 1994). A reason for this could be that the students learned how to engage in prosocial behaviors via the system and as such the scaffolding of the system was no longer needed (e.g., see Reynolds et al., 2013). Another reason could be that students were reinforced by teacher responses to their on task behaviors. For example, Leroy's work output during the academic work session targeted for self-management increased dramatically with the use of the self-management system. Jessie was observed praising Leroy repeatedly and telling her how "proud" she was of him for this increase in work production. This praise was potentially reinforcing for him, leading to an increase in on task behavior.

Each teacher also had a positive predisposition toward self-management as a skill for students to acquire and saw the value of implementing the system in her classroom. The fact that the teachers saw tangible improvements in student performance because of the use of the self-management systems likely influenced treatment acceptability by the teachers. Treatment acceptability was defined by Kazdin in 1981 as "judgments by laypersons, clients, and others of whether treatment procedures are appropriate, fair, and reasonable" (p. 493). This is critical because teachers tend not to utilize interventions that they do not find acceptable (Witt, Martens, & Elliott, 1984). Damschroder and colleagues (2009) wrote, "Enthusiastic use of an intervention requires a positive affective response to the intervention," which is often "based on personal experience." All four of the teacher participants believed that the self-management system was a reasonable amount of work for a general education teacher to implement (as noted by Wendy who said the intervention "was easy for a general ed teacher to implement in the classroom").

This could have contributed to high levels of fidelity observed throughout the study. Words that the teachers used to describe this system include, “easy to manage,” “student-driven” and “simple.” Given the competing demands these teachers discussed with regard to differentiation and preparing all of their students academically, treatment acceptability is a key facilitator of implementation. Overall, the self-management system was implemented with high levels of fidelity throughout the study, improved student performance, and was an acceptable intervention for the teacher participants involved. Given all of these factors, self-management procedures may be excellent tools for students with disabilities in inclusive settings and these strategies can and should be utilized more often in these contexts to support students with disabilities.

The Value of Mixed Method Research to Support and Inform Implementation of EBPS in School Settings

The value of mixed method research in evaluating both the effects and implementation of EBPs cannot be overstated. This study is the first to examine the effects of a self-management intervention in a general education setting while also examining the potential variables that may contribute to our knowledge of why and how teachers take up and use this practice. In this study, the quantitative data indicated that this intervention was successful in increasing the engagement of students with disabilities in general education contexts. However, the results from the single case design tell us little about why teachers implemented and the variables associated with implementation. The nuances associated with the implementation process were captured via the qualitative data (i.e., field notes and interview). These findings can inform and enhance the implementation literature and literature for self-management.

Student involvement. The quantitative results indicate that self-management was an effective intervention for the student participants in this study. While the teachers were willing to spend the little time it took to get the interventions started, it was clear that the student's ability to continue the strategy was key to the continued implementation. For example, one reason that Wendy stopped implementing after break was because she had become reliant on Carly (student) to bring the self-monitoring form and MotivAider to the front of the classroom to her at the beginning of math time on the carpet (such that Wendy could go over the operational definitions and start the MotivAider for her). Carly forgot to do so after winter break and Wendy subsequently forgot as well. So, despite the fact that Carly's engagement improved tremendously (which Wendy attested to in her second interview), when teacher responsibility for the intervention became higher, implementation fell off. Similarly, Pam seemed flustered when she had to stop teaching to grab the materials from the back of the classroom for Christy if Christy came to class late. As such, she transferred responsibility of grabbing the materials to Christy partway through the study and it appeared that this took some of the frustration that Pam was experiencing away (at least to this observer). Finally, Jessie suggested that part of the system should include increasing student responsibility for grabbing items or asking for the items "so it [the system] would be used if I didn't remember." The role of the student in self-management procedures versus the role of the teacher has been discussed in the literature. Fantuzzo, Rohrbeck, and Azar (1987) asked the question: "How *self* is self-managed? i.e., to what extent are self-management interventions with children truly self-managed or are they managed primarily by teachers?" (p. 34). Further, Briesch and Daniels (2013) wrote:

Although self-management interventions have been advocated as a less time- and resource-intensive alternative to teacher-managed approaches, adults nevertheless need to be involved with intervention implementation and management (p.2).

Although teachers will need to be involved in the design and initial instruction on the system (i.e., implementation), self-management is a set of strategies that lends itself to placing increasing amounts of responsibility of implementation on the student. Given this, it is worth exploring expanding the student's role in the long-term implementation of the intervention to reduce the overall burden on the teacher (Briesch et al., 2014). For example, teaching the student to take over key aspects of the system can be incorporated into professional development of self-management procedures. This can include accessing the materials needed before each self-management session or teaching the student to self-reinforce when agreed-upon criteria is met. Teacher responsibility, then, would primarily revolve around setting up the system, monitoring progress to evaluate effectiveness, and fading the system when appropriate.

Individualization for students with disabilities and teacher perspectives.

Quantitative and qualitative data informed one another with regard to issues of individualization for students with disabilities in these general education settings. The qualitative component of this study (i.e., observations and interviews) confirmed that student needs and characteristics were varied across participants. Given that these self-management procedures are discussed as intensive and individualized interventions, student-specific characteristics appear to play an important role for implementation. Upon examination of the quantitative data, for three of the four student participants, the effect of the intervention was immediate. For Leroy, however, it appeared that he did not

respond favorably to the intervention for the initial session (e.g., his data did not demonstrate immediacy of effect). Qualitatively, this poor initial response may have been due to the fact that he was unnerved by the sensation of the MotivAider. He was able to adjust by the second session and his data improved for the majority of the remainder of the study. If Leroy had not been able to adjust to the tool, the qualitative data would have informed the interventionist that the signal tool (i.e., the MotivAider) was what needed modification (as opposed to simply deeming the system as altogether ineffective).

The difference in student response to the system between Carly and Christy also illustrate the value of the qualitative perspective in informing the quantitative results. The self-management system was robust enough on its own, from the first session, to improve Carly's behavior dramatically, and this sustained through the end of the study (6 sessions). By contrast, Christy had multiple supports in place (e.g., peer tutors, preferential seating, frequent teacher check-ins) of which the self-management strategy was just one component. These additional supports were effective at times for Christy (e.g., her baseline engagement data went as high as 60%), but not sufficient to raise her engagement higher. The quantitative data reflects that the addition of the self-management strategy improved her engagement levels and that these improved levels remained above baseline for each of the 12 sessions during intervention. Clearly, this strategy was a powerful component to add to other interventions that were already in place. This indicates that self-management may be presented and contextualized as just one piece of a *multi-component package* for students with more complex disabilities, a fact that was surfaced using mixed methodology.

However, teacher perspectives must be considered with regard to implementation of multi-component packages. Pam (Christy's teacher) still needed to check-in with Christy regularly throughout the use of the intervention. That is, the self-management system did not *replace* any interventions that were provided to Christy. As such, this system, while effective for Christy according to the quantitative data, was an *additional strategy* that the teacher was asked to implement (one of many for Christy). Being tasked with implementation of so many systems could potentially be taxing for a general education teacher. Pam had commented during her initial interview:

My – and I'm not, I mean I'm not – I'm just gonna be frank with you – with the kids with disabilities that require my undivided attention almost that balancing keeping them in check with giving the rest of my students a quality education is really challenging. . . And so I try to really balance that out but it's hard because you don't have a million arms and you don't have – it's only one of you and 24 of them so you just do the best you can.

Given that the self-management strategy did not supplant any other interventions, but rather supplemented them (i.e., placed more responsibility on the teacher), it is possible that a teacher may not value or see the magnitude of behavior change (as opposed to a teacher like Wendy who saw that the self-management system was robust enough on its own to change her student Carly's behavior). That is, the teacher may feel that she is working just as hard as before (if not harder because there is an additional system to implement), and, further, she may not have the quantitative perspective afforded to a researcher in the classroom taking data during each session (which validates that this additional intervention is effective). This is salient as teachers tend to use interventions

that they feel will be effective with their students (Gersten & Dimino, 2001). Further, one of the barriers to implementation of self-management reported by practitioners was belief that the system will not or does not work for their students (Briesch et al. 2014). Given the complexity and diversity of student with disabilities, it is important that teachers first understand that EBPs can be highly effective overall, even if there are particular days where the student struggles, or if the EBP is only one layer of multiple interventions. Interventionists can support teachers by streamlining multi-component packages and ensuring that data systems are clear and manageable such that teachers can see behavior change in the data. Although the quantitative data indicated the system was effective (i.e., we know it works), it is clear from the qualitative data that individual student characteristics and related teacher perspectives are mediators with regard to implementation.

Maintenance. Despite the fact the quantitative data demonstrated this strategy was effective for all four of the student participants (and teachers reported that they saw improvement), three of the four teachers ceased implementation within six weeks of the end of the study (two of those weeks were winter break). The cessation of the intervention so quickly is worth exploring and the qualitative methods employed here provide us with some information.

Sustainability, or continued use of an intervention and incorporation into daily practice, is a key factor of implementation of EBPs in classrooms, both for students who need ongoing support and for future students that may need this intervention to promote independence (Briesch & Daniels, 2013; Cook & Odom, 2013; Damschroder et al., 2009). There are several factors that may have contributed to the long-term sustainability

of the intervention in the classroom. For example, the classroom environment may not have been ready for the more intensive interventions. Several observations confirm that the implementation climate of Holly's classroom did not lend itself to long-term implementation of the more intensive (i.e., tier 3) interventions that Jackie needed to be successful. Holly did not consistently implement tier 1 strategies (e.g., using a consistent attention signal, establishing routines, referring to classroom expectations and rewarding students for following those with class wide reinforcement systems). More often she was observed implementing punishment-based measures, albeit also inconsistently (e.g., writing student names on the board if they were not following directions). This is salient because consistent implementation of tier one supports are both foundational to classroom management and need to be in place to support the success of more intensive and individualized interventions (i.e., tier 2 and tier 3) (Simonsen, Fairbanks, Briesch, & Myers, 2008; Walker et al., 1996).

Holly's classroom appeared to lack "absorptive capacity for new knowledge," or the ability to "fully assimilate new interventions" because the teacher struggled with implementing systems she already had in place (Damschroder et al., 2009, p.11). For example, she had students on IEPs who already had behavior plans that involved receiving more consistent reinforcement in the form of tickets that she was rarely observed implementing (and she discussed her challenges with implementing the ticket systems in her interviews). Part of this appeared to be that she was unable to devote time to implementation of more intensive and individualized interventions because she was struggled with implementing the tier 1 systems that kept *all* students on task. Holly was consistently trying to gain and regain class wide student engagement in unproductive

ways, which seemed to exhaust her (She commented on at least one occasion that it as a “tough day”). This is noteworthy because students in classrooms with high structure and well-established classroom management demonstrate higher task engagement (Simonsen, et al., 2008). As such, she did not absorb or assimilate the individualized interventions, which Jackie clearly needed. She appeared not to prioritize consistent implementation of several strategies. According to the CFIR, “The higher the relative priority of implementing an intervention, the more effective the implementation is likely to be” (Damschroder et al., 2009, p. 12). Although Holly implemented this self-management system with fidelity during all observations, she discontinued its use upon the conclusion of the study despite Jackie’s continual behavior challenges. Like with all interventions she was given for students with disabilities, it appeared that Holly struggled with maintaining implementation in her classroom.

This study surfaced contextual variables that impacted long-term implementation of self-management strategies. For example, it is likely that Holly’s classroom could be transformed into a more hospitable environment for individualized interventions prior to implementing a strategy like self-management. First, a classroom climate assessment that measures teacher use of key classroom management (i.e., tier 1) strategies could be administered to determine readiness for more intensive interventions. For example, the Self-Assessment-Classroom Management Tool (SACM) from Indiana University asks teachers to rate themselves on such strategies as teaching expectations, having a high ratio of positive interactions, and having clear structure in the classroom. It is possible that the results of such an assessment can be used to inform interventionists and administrators about where resources should be directed. That is, a teacher like Holly

would benefit from direct support around classroom management to make her setting more structured and the climate more amenable to introducing more individualized interventions. This is important given that the quantitative data indicate that this was a successful intervention that likely should have been continued for this particular student (Jackie).

The other two teachers that stopped implementing, Jessie and Wendy, both believed that their target students no longer required the intervention. Follow-up qualitative probes indicated that although Wendy initially simply forgot to reinstate the system after winter break, she reported “[Carly] has been pretty successful during math time lately (sits on the carpet during the math video, participates, completes math work, able to express if she needs help).” Therefore, she did not see a need to continue the system. Moreover, Jessie said, “I haven’t been using the MotivAider for Leroy for math because he works independently on his own now.” She said she had used it with another student in her classroom however. This transition off of the system is appropriate given that “Ultimately, the student should maintain the desired behavior independently” and, as such, self-monitoring “should be gradually faded” (Menziez et al., 2009, p. 31). It would have been ideal if they had faded the system instead of stopping it immediately per best practice guidelines (e.g., see Busick & Neitzel, 2009), but this was not discussed in the training and the teachers did not reach out to the researcher for advice.

Finally, fidelity is another area where the qualitative data enriched the quantitative data. A fidelity checklist to measure the daily use of the intervention was used during each observation which consisted of four steps: giving the student the form, prompting them to keep track of behavior, checking in with the student and collecting the form at

the end of the session. These four were chosen as they were steps that needed to happen each time the self-management system was implemented (e.g., see Gansle & McMahon, 1997). The steps included in the initial implementation checklist that was completed during the professional development session (e.g., choosing and operationalizing a target behavior, creating a self-monitoring form) were not able to be measured daily because each of these items, while necessary for creation of a self-management system, only occur once (i.e., prior to starting the system). However, this daily measure of implementation fidelity (i.e., the four-step checklist in Figure 4) was not sensitive enough to truly capture the *quality* of daily implementation. For example, Holly rarely went over the operational definitions when prompting Jackie to keep track of her behavior even though that would prime Jackie for what on task should look like. Pam covered the operational definition of on task each time she handed Christy the form initially, but eventually stopped this practice approximately midway through the study. Wendy went over the operational definitions consistently with Carly throughout the entire intervention phase. With regard to materials, on at least two occasions, teachers were not ready with fresh copies of the students' self-management forms and improvised by either erasing a used form or using the back of a used form. The fidelity checklist did not capture these examples, but it is possible that they impacted implementation. For example, when Jessie turned over a self-management form because she hadn't made fresh copies, Leroy was looking at a blank piece of paper rather than a form with clear behavioral definitions and supporting visuals. When Wendy went over the operational definitions with Carly prior to beginning the session, this primed Carly to engage in those positive behaviors to the best of her ability. As such, having a more nuanced measure of evidence-based practices,

such as self-management procedures, can more accurately capture the “character” or “nature” of implementation. This goes beyond identifying core components of a strategy (although this is important), but also speak to *how* these strategies are delivered to students. As Harn, Parisi, and Stoolmiller (2013) wrote, “Researchers should not limit themselves to using measures that are reliable and easy to collect but are unreliably related to outcomes (e.g., total time, lesson completion, self-report) as the sole documentation of fidelity” (p. 190). Indeed, they advocate analyzing how implementation is measured in several research studies as a means to “gain insights on translating research findings to classrooms” (p.190). This study contributes a unique perspective on the nuances associated with fidelity of implementation to the self-management literature.

Limitations

There are limitations to this study that are important to discuss. First, the trainer who led the professional development session was also the researcher who interviewed the teacher participants and took data several times a week in their classrooms. It is possible that this factor affected teacher behavior in general, and specifically with regard to implementation of the self-management system (e.g., fidelity of implementation increased because they felt accountable to the researcher). This may also have been the case with student participants. One teacher, Holly, reported that she believed her student, Jackie, associated the system with the researcher, and on one occasion did not run the system even though Holly had provided the materials because she was “waiting” for the researcher to arrive. To mitigate this, the researcher spent several days in each classroom with the goal of getting the students and teacher accustomed to the presence of an outside

observer. Further, the teacher was tasked entirely with implementing the system and the researcher took no part in facilitating this process after the training. However, it is worth noting that because this is a mixed method study, it is challenging to detach oneself completely. Merriam (2009) wrote:

In traditional models of research, the ideal is to be objective and detached as possible so as not to ‘contaminate’ the study. However, in qualitative research where the researcher is the primary instrument of data collection, subjective and interaction are assumed (p. 127).

Given the nature of this research method, it may be challenging for researchers to ensure that their presence does not affect participant behavior.

Another limitation is that maintenance data is not available. Three of the four teachers had stopped implementing at the time of follow-up, impacting what we can say about long-term implementation and effectiveness of the intervention. More qualitative research around factors that influence sustainability (i.e., long-term use) of an intervention may be beneficial to determine what factors can support sustainability. Further, incorporating clear protocol for how and when to fade the strategy into the professional development training (e.g., see Busick & Neitzel, 2009) may ensure that the procedures are ended in a thoughtful and systematic manner.

Finally, given the nature of the quantitative component of this design (single subject across four participants), some teachers had very long baselines while others had comparatively long intervention phases. For example, Jackie’s baseline was relatively short (five sessions) because her teacher Holly was the first to receive the intervention (self-management training). Comparatively, Wendy (Carly’s teacher) was the last to

receive the training and, as such, was held in baseline for 17 sessions. To ensure experimental control (i.e., behavior change happens when and only when the intervention is introduced), coaching was not given to any teachers at anytime. However, it would have been helpful to have the opportunity to provide coaching to the teachers to understand how small changes could have impacted student engagement and potentially supported more long-term use of the strategy for a student like Jackie with more significant behavioral issues in a classroom with less structure. In order to do that logistically in a timely fashion for four participants while staggering the introduction of the intervention (and maintaining experimental control) was too challenging.

Summary

In summary, this study contributes to the literature base in that it extends the evidence that self-management is an efficacious intervention for students with disabilities in general education contexts, a heretofore relatively neglected setting in the literature. Self-management procedures can and should be used in general education settings for students with disabilities, as these strategies are robust, adaptable, and acceptable to teachers, and efficacious for students. However, it is critical to understand the affordances and constraints of classroom contexts wherein the implementation of this strategy will take place as well as student characteristics that may impact its effectiveness. As Briesch et al. (2014) wrote: “Rather than equating local modifications with user error, we pose that understanding actual implementation may help researchers to develop more powerful interventions with a greater likelihood of adoption and sustainability” (p. 7). These factors can contribute to fidelity of implementation as well as maintenance, and can be addressed in preliminary stages (e.g., intervention choice),

professional development, and ongoing coaching. Mixed method research can inform the field about what factors impact implementation such that researchers, interventionists, and others can attend to appropriate factors to maximize utilization of evidence-based practices in the classroom.

This study highlights where implementation issues could potentially arise and therefore inform a proactive approach of variables to attend to. Mixed method studies can also inform what contextual factors should be in place prior to introducing an intervention into a particular setting. Given the research-to-practice gap in special education, it behooves the field to become more nuanced about what implementation actually looks like in various real-world contexts. It is not enough to proclaim a strategy as evidence-based. The complexities of where the system will be implemented need to be taken into account and planned for. Mixed method research is the means through which we can attain this information and tailor the interventions and training approach to maximize implementation. This sentiment is echoed by Klingner and Boardman (2011):

Whereas quasi-experimental and experimental approaches provide information about which instructional methods are most effective in a general sense, qualitative research helps establish which contextual factors may influence the success of an approach. Mixed methods can lead to insights about possible challenges to implementation as well as the circumstances under which a practice is most likely to be successful, adding depth and breadth not available through quantitative designs alone. We propose that it is not enough to ask, “What works?” Researchers must also ask, “What works with whom, by whom, in what contexts, under what circumstances, and for what purposes?” (p. 209).

Future Directions

To promote sustainability for students who need it (e.g., Jackie in this study), future studies should include coaching support. Though the components of the initial training are important, there is research to suggest that ongoing training can contribute to effective implementation. (Fixsen et al., 2005; Greenhalgh, et al., 2004; Kretlow & Bartholomew, 2010). At Hilltop Elementary, the resource room teacher had been named by all of the teacher participants as a resource for support with students with disabilities or for behavior management in general. This particular special education teacher had purchased MotivAiders prior to this study and asked for training to be provided for the general education teacher participants so she could learn more about self-management. Later, she wrote self-management into Christy's IEP to ensure that the use of this system would continue. As such, this teacher would be a candidate as an internal coach who could potentially support training and implementation of self-management. Indeed, Kretlow and her colleagues wrote that evidence in the coaching literature suggests that providing at least one follow-up coaching session can “provide an added boost” to implementation (2012). Researchers and interventionists can build capacity within schools to support implementation of self-management procedures in general education settings by identifying an internal champion or source of support for teachers. This individual can be a special educator or other interventionist who is familiar with the student and the classroom environment, and should be identified early and be included in the training process. Future research can explore the efficacy of a site-based coach to promote implementation.

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Appendix A

Observation Protocol

Classroom: observation:	Date of
What were the main issues or themes that emerged from this observation?	
<ul style="list-style-type: none">• Issues that emerged related to barriers:• Issues that emerged related to facilitators:	
What other salient or interesting moments or themes during this observation?	
What follow-up questions?	
Possible hypotheses?	

Appendix B
Interview Protocols

INTERVIEW PROTOCOL 1

- Tell me about how and why you decided to become a teacher.
 - How long have you been teaching?
 - Where did you do your pre-service training?
 - Tell me about your training in behavior management

What is your experience with students with or at-risk for disabilities?

Implementation climate

- Tell me about your school.
- Describe your classroom setting and the students you serve?
 - Probe for students with or at-risk for disabilities
- Tell me about a typical day in your classroom.
- Are there times that are more challenging than others?

What helps you as a teacher support your students behaviorally?

What are some challenges you face as a teacher when it comes to supporting your students behaviorally?

Characteristics of the individual and the innovation

- Describe how you make decisions about what behavioral strategies and practices you use with your students.
- How do your colleagues influence your decisions about what strategies and practices you use?

- How do you learn new strategies for working with students?
 - What role does professional development and training play?

What do you find to be the most challenging aspect of making decisions about what practices to use?

- What makes these so challenging?
- Probe for how challenges interact with decision-making

What comes most easily when making decisions about which practices to use?

What are some behavior management systems you use in your classroom?

How did you come to use these systems?

Specific to Self-Management

How do you define SM procedures? What does that mean to you?

How might they may be beneficial?

How might they be problematic?

Why did you decide to participate in this study?

What have I forgotten to ask you that you think is important for me to understand about these issues?

Figure B1. Interview Protocol 1

INTERVIEW PROTOCOL 2:

- I'm asking this to see if it has changed or evolved since our last meeting. In a typical day, are there times that are more challenging than others? Why?
- What are some ways you differentiate for kids with disabilities in your classroom?
- What are positive aspects of differentiating for kids with or at risk for disabilities?
- What are challenges in providing support or differentiating for kids with challenging behavior or disabilities?
- What has been helpful this year for you in being able to support kids behaviorally and differentiate?
- Tell me about your experience with this self-management system.
 - Specifically: Experience with implementation
 - Challenges
 - Philosophically
 - Managing system (e.g., materials)
 - Daily implementation and follow-up
 - Facilitators
 - Describe ways this system could be more easily implemented.
 - Training
 - Materials
 - Classroom factors (e.g., schedule, management of other plans)
- Tell me about your observation/experiences about how it affected student behavior
 - Positive
 - In this class
 - In other classes
 - Behaviorally
 - Academically
 - Negative
 - No effect.
- Tell me about continuing this system for the rest of the school year.
 - What are the challenges associated with this?

- What are the benefits associated with this?
- How does this system fit with your current behavior management systems?
- Would you try this system with other students? Why or Why not?
 - What would you change?
 - What would you keep the same?

Figure B2. Interview Protocol 2

INTERVIEW PROTOCOL: SPECIAL EDUCATION AND TITLE I/LAP

You provide services to kids in gen education settings. In general, what kind of success do you get and challenges do you have?

What are facilitators to the success?

Why do you think the challenges exist?

Give an example of a successful experience and a challenging experience

What does your work look like with regard to collaboration with general education teachers?

Figure B3. Interview Protocol for Special Education Teacher and Title I/LAP Teacher.