2013

A Self-Regulated Learning Approach for the Remediation of Behavioral Issues in Children with Attention Deficit Hyperactivity Disorder

Richard G. Allen

Philadelphia College of Osteopathic Medicine, richardgregoryallen22@gmail.com

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A SELF-REGULATED LEARNING APPROACH FOR THE REMEDIATION OF
BEHAVIORAL ISSUES IN CHILDREN WITH ATTENTION DEFICIT
HYPERACTIVITY DISORDER

By Richard Allen
Submitted in Partial Fulfillment of the Requirements of the Degree of
Doctor of Psychology
October 2013
PHILADELPHIA COLLEGE OF OSTEOPATHIC MEDICINE
DEPARTMENT OF PSYCHOLOGY

Dissertation Approval

This is to certify that the thesis presented to us by Richard Allen
on the 26th day of June, 2013, in partial fulfillment of the
requirements for the degree of Doctor of Psychology, has been examined and is
acceptable in both scholarship and literary quality.

Committee Members' Signatures:

George McCloskey, PhD, Chairperson

Jessica G Kendorski, PhD, NCSP, BCBA-D

Barbara B Williams, PhD

Robert A DiTomasso, PhD, ABPP, Chair, Department of Psychology
Acknowledgements

I have always believed that it is the support of our, colleagues, friends and family that truly make it possible for us to realize and accomplish our greatest endeavors. That being said I would like to express my sincerest gratitude to the individuals who were so influential in my completing this work.

First and foremost I must thank my mentor, friend, and colleague, Dr. Stewart Shear. Over the years, Dr. Shear has provided me with the encouragement and motivation to pursue my continued education and professional development. This accomplishment would have been impossible without his support, guidance, supervision and training.

Equally important has been the support of my family. My loving wife Kelly and beautiful daughter Carlie have graciously shared with me with the responsibilities presented by my continued academic and professional endeavors over the years. They are my inspiration and motivation as well as my greatest loves in this world. Also to my parents, Richard and Maria Allen, for their tireless support both emotionally and physically, I am extremely grateful. It is astounding to think how fortunate I am to have such self-less parents who would drop anything “on a dime” to help out any of their children in a need. I thank my brother Ted and sister Lisa, who also provided encouragement and support over the years; to the rest of my family, and in particular my in-laws, Bill and Christine Zoppel and my brother in-law and sister-in law Nick and Melissa Bielecki for their support to myself and my family over the years, I am most grateful.

I must also express my sincerest thanks to Dr. George McCloskey, whose guidance and support throughout this project and all of my work at PCOM has been
invaluable. Dr. McCloskey is a true pleasure to collaborate with as he is not only brilliant but unassuming. I am grateful to Dr. Barbara Williams for her continued support and guidance over the years and for encouraging me to continue my studies. I also thank Dr. Jessica Kendorski for her thoughtful feedback and support during this project and for the opportunity to continue my contributions to the PCOM community. To Dr. Michelle Rowe who has also provided guidance and encouragement to continue my studies over the years I am grateful. I thank all of my colleagues at Devereux who have provided me with both encouragement and support during some of the most challenging times when balancing career, school and family. Last, thank you to the numerous clinical staff and direct care workers I have encountered who provide invaluable direct support to children and individuals in need. You are often my greatest inspiration of all.
Abstract

Behavioral-based interventions have long been demonstrated to be effective for addressing behavioral difficulties for children with ADHD; however, such interventions do not always include explicit procedures to develop self-regulated learning. This is surprising, considering the strong evidence-based literature related to behaviorally-based self-management interventions. Considering the neurocognitive basis of ADHD, current assessment and intervention practices should emphasize the identification of self-regulatory deficits and evidence-based interventions to build such capacities. The current outcome study examined archival data from 12 cases to determine the clinical effectiveness of a function-based self-management intervention model for children diagnosed with ADHD in a community behavioral health program. Considerations related to program implementation and barriers were also reviewed to better inform future implementation of this model. Use of the functional-based multi-element approach with the focus of a self-management intervention was associated with improvements on 10 of 12 cases. Results indicated mostly large to moderate treatment effects, corresponding mean percent change and trend across all cases in at least decreasing one challenging behavior or increasing one prosocial skill. Results of qualitative data indicated that integrating self-management procedures into an existing clinical model was done systematically through the identification of needs, program development and implementation. Themes and barriers emerged related to coordination of clinical support, motivation, issues related integrating self-management on a case by case basis and contextual fit. Data from the current study indicate the effectiveness of self-management
interventions integrated into an existing clinical model in a community behavioral health program. A review of the phases, process and barriers related to program implementation are further discussed and offer a model to existing community programs to enhance clinical outcomes for children with ADHD.
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Chapter 1

Introduction

Attention deficit hyperactivity disorder (ADHD), is a lifelong disorder, is reported to affect 3% to 7% of school-aged children (American Psychiatric Association, 2001). Symptoms of ADHD include chronic and pervasive problems with impulsivity, inattention, and/or hyperactivity across all settings (Barkley, 1998). Thus, these students often struggle with multiple academic and behavioral difficulties at home and in the classroom, including problems with organizational skills (Robin, 1998), and sustained attention to academic related tasks (Vile, DuPaul, Jitendra, Volpe, & Cleary, 2006). These deficits may manifest as behaviors in the classroom, home and community such as difficulty attending to and following instructions, task completion, disruptive behavior and overall compliance with general classroom rules (Barkley, 1998; Ervin, DuPaul, Kern and Freeman, 1998). Without addressing these issues through intervention, such behaviors can compromise the student’s ability to acquire both academic as well as social skills (Stahr, et al., 2006).

Executive function deficits are believed to be the cornerstone of the neurocognitive profile of individuals with ADHD. Executive function refers to higher order cognitive processes, some of which include the ability to plan, organize, and self-monitor along with a number of other sub skills necessary for goal-directed activity (Riggs, Jahromi, Razza, Dillworth-Bart & Mueller, 2006). Further, all executive function skills can be subsumed under the process of self-regulation and self-regulated learning (McCloskey, 2009). Research findings with this population find consistent deficits in inattention, inhibition and working memory (Barkley and Shapiro, 2006). Although less
conclusive data have been found in finding deficits in other self-regulatory skills, the 
aforementioned deficits would clearly have an effect on such skills.

Currently, the two predominant intervention strategies utilized for school-aged 
children with ADHD include psychostimulant medication and behavioral interventions 
(Guresko-Moore, DuPaul, & White, 2006; DuPaul & Eckert, 1997). Psychostimulant 
medication has been found to be effective at increasing attention and decreasing 
impulsivity; however, it has been suggested that some positive effects may also be 
mediated by environmental conditions in the classroom (such as behavioral intervention 
strategies) (Northup, Fusilier, Swanson, Huete, Bruce, Freeland, 1999). Several 
limitations have been noted for each intervention. For example, for psychostiumlants,
critics point out the lack of adaptive skill building (Rapport, Denney, DuPaul & Gardner, 
1994) and positive academic outcomes (O’leary, 1980). Behavior contingencies have 
been criticized for not necessarily improving achievement (DuPal and Eckert, 1997), 
requiring external responses from classroom staff, including the fact that many behavioral 
gains are not maintained over time (Barkley, 1998).

**Statement of the Problem**

Various interventions based on behavioral contingencies have long been 
demonstrated to be effective for addressing behavioral difficulties not only for children 
with ADHD, but also for a variety of children with both mental health and developmental 
issues (see: Reid, Trout, Schartz, 2005; Mooney, Ryan, Uhand, Reaid & Epstein, 
2005;Maggin, Briesch, Chafouleas, 2012). However, such interventions and 
methodologies do not always include explicit procedures to develop self-regulated 
learning and competency for the child (see Eyeberg, Nelson and Boggs, 2008).
Unfortunately, many programs and models often focus on the use of only external contingencies which can lead to issues such as prompt dependence and the need for more restrictive supports (i.e. smaller classrooms, and 1 to 1 instruction in the home, school and community). This is surprising considering the strong evidence-based literature related to behaviorally-based self-regulation interventions (i.e. Maggin et al., 2012). In order to better develop specific self-regulatory skills in children with emotional/behavioral problems, including ADHD, current assessment and intervention practices should emphasize the identification of self-regulatory deficits and evidence-based interventions to build such capacities.

A focus on self-regulatory interventions is of particular relevance for children diagnosed with ADHD who are experiencing behavioral difficulties. This population in particular, suffers neurological deficits, which diminish their self-regulatory capacities at the neurocognitive level (Barkley, 1990). Thus, intervention models must be developed to provide the best clinical and socially valid outcomes both in a short and in a long-term time frame.

Current literature has demonstrated effective use of behavioral self-management procedures in reducing behavioral problems associated with ADHD, including off-task behavior, disruptive behavior, accuracy and productivity (Reid et al., 2005). Such methods have included different self-management interventions, including self-monitoring, self-evaluation, self-monitoring plus reinforcement (delivered externally) and self-reinforcement (Reid et al., 2005). Further, studies have demonstrated the fact that the utility of self-management procedures used in combination with stimulant medications were more effective than the use of medication alone (i.e. Guresko-Moore, et
al., 2006). Several questions remain, however, about the generalizability of self-management interventions across children under 7 and over 13 of age, among girls and in non-school settings because these characteristics are underrepresented in the literature (Reid, et al., 2006).

**Purpose of the Study**

Clearly, self-regulation/self-management skills are critical for academic success and positive social-emotional health (Schunk & Zimmerman, 2003). Previous research has indicated that problematic classroom behaviors in children diagnosed with ADHD (i.e. off-task, organization skills, etc.) have been effectively remediated through self-regulatory strategies (see Reid et al., 2005). Thus, in order to further assess the impact of self-regulatory-based interventions, current single case clinical methodologies should be further developed and enhanced, focusing on the development of self-regulatory skills in children with ADHD. Such a model should focus on utilizing best practice behavioral assessment methods, which lead directly into the use of informed and focused self-management interventions. This methodology would not only combine contemporary evidence-based methods for assessment and intervention, but also ensure the consistent focus of teaching socially valid self-regulatory skills for children with ADHD. This emphasis would seek both to remediate current difficulties and to provide skills, which may ensure greater autonomy and long-term quality of life.

The current outcome study examined archival data to determine the clinical effectiveness of a function-based intervention model for children diagnosed with ADHD, including self-management procedures as a program model in a community behavioral
health program. Considerations related to program implementation and barriers were also reviewed to better inform future implementation of this model.
Chapter 2

Literature Review

Self-Regulation

Self-regulated learning (SRL), as its own construct, has been described as the process used by a student/individual to activate and sustain cognitions, affect and behaviors which are oriented to accomplish individual goals (Zimmerman & Schunk, 2009). Individuals are able to monitor and adjust their behavior accordingly, based on their own personal goals. Motivational factors are vital to this process because they reinforce self-regulated goal directed behavior. Self-regulated learning as a process is best understood as those activities that the student directs and initiates for him or herself, as opposed to being externally directed by another person (Zimmerman & Schunk, 2001). Self-regulated learning can encompass traditional activities such as reading and studying, but can also include social learning through modeling or performance feedback (Zimmerman & Schunk, 2001).

Many theoretical perspectives differ in their descriptions of the processes involved with SRL, but all assume that the individual has an idea of the usefulness of such approaches to learning. Also common among these perspectives is the idea of a self-oriented feedback loop. The feedback loop is the process by which the individual is able to monitor how effective his or her self-regulated learning strategy is and respond in different ways. What differs among theorists involves how this process occurs. For example, the behavioral view of SRL may discuss these responses in very overt terms such as self-evaluation and self-reinforcement, whereas in the phenomenological
approach the theorists refer to changes in self-esteem and self-concept (Schunk & Zimmerman, 2001).

Another aspect of self-regulation which differs greatly between and among theorists includes explanations of the motivation behind an individual employing such strategies for learning. Such explanations range from a focus on environmental contingencies (according to the behavioral approach) to constructs such as self-efficacy, goal accomplishment, self-concept etc. (related to the social cognitive approach). Finally, some theoretical perspectives postulate different developmental reasons concerning the fact that younger learners are not able to initiate self-regulated learning; these include factors such as underdeveloped metacognitive strategies or lack of covert language development. Developmental reasons aside, theorists tend to attribute the failure to employ self-regulated learning into three factors. These include the following: individuals may not care enough about the learning outcome; they may believe that the self-regulated behavior is not needed, is not ideal for the situation or will not be effective, and they may also feel they will not be able to produce the self-regulated behavior properly to bring about the desired effect (Zimmerman & Schunk, 2001).

Operant/Behavioral Views of Self-Regulated Learning

The operant/behavior analytic approach to self-regulation is deeply rooted in a large body of self-management research. Numerous studies have established the effectiveness of self-management in order to decrease challenging behaviors and remediate skill deficits (Kern & Dunlap, 1999). According to the behavior analytic perspective, behavioral self-management/self-regulation can include four different skills:
self-monitoring, self-instruction, self-evaluation, and self-reinforcement (Mace, Belfiore, & Hutchinson, 2009). A key to this theoretical perspective involves the individual engaging in this process and ultimately becoming more aware of his or her behavior and of enhancing self-control (Mace et al., 2009). According to the operant approach the four self-regulatory approaches are shaped and reinforced over time through external contingencies. These external contingencies are then faded as the individual becomes independent in regulating his or her own behavior.

The focus of the operant perspective of self-regulated learning is on the ability of extrinsic reinforcement to elicit self-regulated behaviors. Such reinforcement also serves as a discriminative stimulus to signal and guide future responding (Mace et al., 2009). Behavioral theorists have determined that the self-regulated behaviors are maintained, dependent on the size and immediacy of the reinforcers (Ito & Nakamura, 1998).

The behavior analytic/operant approach to self-regulation also emphasizes self-monitoring through the recording of only observable and measurable behaviors, utilizing various direct observation methods (i.e. time sampling, frequency counts, etc.). For the process of self-instruction, behavioral theorists view thoughts or cognitions as discriminative stimuli which signal the availability of reinforcement, and which can precede self-regulatory behaviors (Mace et al., 2009). Self-evaluation involves the individual comparing his or her behavior with a standard, in terms of accuracy and improvement of performance (Belfiore and Hornyak, 1998). Through this process individuals can determine if they have met the criteria to self-reinforce (the last process in this model) or to review an inadequate response or performance and make self-
corrections to their behavior. Self-evaluation may also entail an individual adjusting his or her standards for self-reinforcement, which may be insufficient or unnecessary.

Of note is the fact that self-reinforcement on the part of the individual must be reinforced by an external person such as a teacher or therapist. The true reinforcement of self-reinforcement behavior often comes from increased social status or from affirmation following monitoring by others in the environment. For example, a teacher should provide a contingency following correct and incorrect self-reinforcement responses on the part of a student (Mace et al., 2009).

**Phenomenological Perspective**

According to the phenomenological perspective, individuals take in information in the environment, which in turn affects their self-perceptions and ultimately their self-concepts, either positively or negatively. This process of self-appraisal then affects an individual’s motivation. Positive evaluations of the self are said to lead to personal meaningfulness and relevance of learning activities, one’s belief in his or her own competence and goals as well as intrinsic motivation (despite external contexts). Negative self-perception is said to result in anxiety, decreased motivation, helplessness and possibly withdrawal from the learning task (Mcombs, 2009).

From the phenomenological perspective, individual self-perceptions are thought to include both global and domain-specific self-system structures. Global refers to an individual’s overall perception that he or she possesses the required knowledge, skills and abilities to be self-regulated learners and may include a perception of the person that he or she might become through self-learning. Domain-specific refers to an individual’s perception of his or her ability to direct and control motivation, cognition, affect and
behaviors in particular areas such as reading or social behavior. These perceptions are thought to be predictors of how well students will self-regulate in that particular domain. Ultimately, such self-perceptions leading to self-evaluation are said to affect specific self-regulation processes such as goal-setting, planning, monitoring, processing, encoding, retrieval and strategies (McCombs, 2009).

Unlike the behavioral perspective, the phenomenological perspective maintains that self-awareness is implicit and does not need to be taught through explicit behavioral procedures (Zimmerman & Schunk, 2009). They do encourage strategies to self-monitor and self-evaluate, but the focus is more specifically on the individual’s thinking and feelings while engaged in the learning process, as opposed to simply monitoring his or her objective behaviors (McCombs, 2009). According to this perspective, individual self-perceptions and self-confidence are thought to be more paramount in promoting self-regulation than is the environment.

**Information Processing Perspective**

In general, information processing theory seeks to understand human cognition as a computer system. This theory focuses on the recursive feedback loop (test, operate, test, exit). According to this idea, there is an input of information which is compared with a standard. If the match is not sufficient (negative feedback), then the input is modified and is retested. Individuals are motivated to modify their performances to meet the standard because the negative feedback is aversive (Winne, 20012). This cycle continues until the standard is met and the information is exited as an output. Complex tasks such as reading may involve different cognitive control loops which are
hierarchical, such as reading the information and using it to answer questions (Powers, 1998).

Information processing theory postulates that four primary personal beliefs serve as motivational variables along with other variables to determine the utility of a particular self-regulatory plan or script. They include outcome expectations, judgments of efficacy, attributions and incentives or values. They also emphasize the automation of self-regulatory behaviors as being critical for individuals to self-regulate at higher levels because automaticity frees up cognitive resources. Ultimately, self-monitoring and self-evaluation serve as the processes by which individuals determine if they are meeting their standards or outcomes, leading to subsequent learning (Winne, 2009).

**Social Cognitive Views of Self-Regulated Learning**

Social cognitive theory postulates that self-regulated learning is influenced by the reciprocal relationship between a person’s cognition, affect, behavior and environment (Schunk, 2001). For example, an individual’s behavior of self-monitoring his or her own helping behaviors may affect the environment (getting social praise) and in turn affect his or her personal processes (i.e. thinking that he or she is a good person). In this model, a critical construct to self-regulatory behavior is the individual’s level of self-efficacy, or the person’s perceived ability that he or she can perform the actions necessary to achieve a desired outcome (Bandura, 1999). Indeed, research has indicated that self-efficacy in students was significantly related to their levels of persistence, task preference, skill acquisition and levels of effort (Bandura, 1997; Schunk, 1984; Zimmerman, 2000). Thus, according to this model, outcome expectations based on prior experiences and self-efficacy assist individuals in setting goals. According to this theory these variables
ultimately drive self-regulated learning. Self-regulatory learning is also dependent on regularity and proximity of self-observations, which are used to inform self-efficacy and guide such learning efforts (Schunk, 2001).

Bandura (1986) suggests three sub processes of self-regulation, including: self-observation, self-judgment and self-reaction. As implied, self-observation assists individuals in self-evaluation and these evaluations lead to self-reactions. Self-reactions can include evaluative types (feelings of satisfaction or dissatisfaction) or tangible types (self-administered consequences, such as breaks or food). Self-judgments refer to the individual’s comparison of existing levels of performance compared with his or her desired outcome or standard. Of note is the fact that goals found unimportant or outside the individual’s control will not likely lead to self-reactive effects.

Also according to this model the self-regulatory process is cyclical, involving forethought, performance and self-reflection. Goal setting is involved with forethought; strategies are employed in performance, which is self-monitored in order to be interpreted during self-reflection. Finally, self-reflection informs forethought goals regarding efforts to learn as the process repeats itself in a loop. As self-efficacy and skills increase self-regulated learning is enhanced (Zimmerman & Kitsantas, 1997).

Research into this model has found that modeling and mastery of tasks have been found to have the greatest influence on self-efficacy. This is particularly true of coping models that have been successful under conditions of extreme adversity (Schunk, Hanson & Cox, 1987).
Volitional Views of Self-Regulated Learning

According to a volitional view of self-learning, volition processes are thought to guide action situations in which performance is demanded (Kuhl, 1984). Such theorists postulate that volition is a covert psychological force that controls action. Further, self-regulated behavior comes from a motivation related to the value and expectancy of achieving a specific outcome. They suggest that motivation promotes decisions, but that volition sustains functioning towards a goal after one has decided to initiate a task.

Kuhl (1984) discussed three state orientations (cognitive orientations) that can interfere with a person’s ability to control action. They include ruminating, which is the inability block out thoughts of past failures, extrinsic focus, which involves preoccupation with the future rather than with an immediate goal, and vacillating, which includes indecision from insecurity. Such cognitive issues are thought to be the primary factors involved with SRL and that environmental factors are acknowledged as only secondary influences.

The recommendation by contemporary volition theorists is to utilize cognitive mentoring and attention-control strategies to aid in a shift of perspective from self to outcomes. These include covert strategies such as control of various cognitions, emotional control and overt processes of self-control related to the external environment (Corno, 2009).

Vygotskian Views of Self-Regulated Learning

A key component to the Vygotskian view of SRL has to do with the role of covert speech as well as a model of co-regulated learning between the student and instructor (McCaslin & Hickey, 2009). For example, Meichenbaum’s (1977) self-instruction
procedure for children with learning deficits utilized student imitation of adult speech
during tasks, followed by a fading of the speech without adult support and in a covert
manner. Vygotsky believed that inner speech can serve as motivational and affective
statements to enhance self-control and control with tasks.

Developmentally, Vygotsky believed that children internalize speech from the
environment, allowing them eventually to guide, plan and monitor their own activities
(Diaz, Neal, & Amaya-Williams, 1990). Thus, as children develop what Vygotsky calls
egocentric speech, in which they talk out loud about him or herself and do not care if
anyone is listening, it is thought to be a transition from external to internal speech which
inevitably drives SRL (McCaslin & Hickey, 2009). Although the environment is thought
to be important to this process, once speech is developed it is considered the more
dominant factor in SRL (Zimmerman & Schunk, 2009).

**Cognitive Constructionist Views of Self-Regulated Learning**

According to cognitive constructivist views of Self-regulated learning, students
construct their own ideas and beliefs (similar to schemas) and suggest that these play an
important personal role in regard to self-regulation (Paris, Byrnes and Paris, 2009). The
theory is based largely on Piaget’s (1952) ideas of accommodation and assimilation as
well as Bartlett’s (1932) work on schemas (Paris et al., 2009).

Contemporary constructionist theorists suggest that students construct theories to
assist them in regulating self-competence, agency and control, schooling and academic
tasks and strategies. Strategies refer to actions utilized to attain a goal, but also involve
information about how and when to use different strategies. Self-competence refers to
the student’s perceptions of academic ability and ability to self-regulate, but agency and
control focus on attributions of success and failures and help the student consider the reasons to self-regulate and how much effort to expend on such endeavors. Finally, schooling and academic tasks refers to the student’s theory about some of the key aspects of a task such as difficulty, control and meaningfulness (Paris et al., 2009).

Some of the interventions from contemporary constructionists include working to enhance personal constructs for students with deficits by utilizing cooperative learning, personal theories, identities and adaptive actions. Constructionist theories also largely acknowledge the developmental aspects of SRL. For example, because young children have not developed the capacity to understand others, their cognitive constructions are quite limited in regard to self-competence, agency and control, etc. (Paris et al., 2009).

Summary of Theoretical Perspectives of Self-Regulation

There currently exist multiple theoretical perspectives which attempt to explain the process of self-regulation and also a rich literature highlighting the efficacy of self-regulatory interventions both in the fields of educational psychology (Zimmerman & Schunk, 2009) and in applied behavior analysis (Kern & Dunlap, 1994). Among these perspectives it is clear that the learner’s behavior is of chief importance; however, the theories vary on the mechanisms believed to give rise to SRL. For example, the phenomenological perspective emphasizes self-concept; the behavioral approach focuses on the environment, and the social cognitive approach values cognitions and self-efficacy as well as the environment. Contemporary self-regulatory interventions should consider common themes across many of the perspectives including a focus on overt behavior, motivation, a self-oriented feedback loop, and cognitive variables such as self-efficacy and past learning experiences.
A Focus on Self-Regulation in Intervention

Despite its documented efficacy, many contemporary academic and behavioral assessment and intervention procedures lack a focus on self-regulation and thus rely first and foremost on external contingencies such as externally administered reinforcement and consequent procedures. This approach would seem lacking because, arguably, the ultimate goal for all children is the development of self-regulatory capacities, which will allow them to operate independently both personally and professionally as they grow into adulthood and integrate into the community.

There are many advantages of focusing on such self-regulated capacities and related procedures; the focus is on socially valid outcomes. First, such an approach ultimately can require much less support from teachers, parent and change agents (Cole, 1992). This is more important than ever in the current economic climate which has emphasized a reduction in educational funding and resources. Second, such an approach allows for a more systematic instruction of self-regulation from the very beginning, rather than reinforcing a skill or behavior through externally presented contingencies and attempting reinforcement and/or prompt fading procedures later on or not at all. An example may be the child with ADHD who acts impulsively, committing aggressive behaviors toward peers at recess. Teaching this student to monitor the particular problem behavior accurately and with veracity would allow the student to manage this behavior independently and even obtain self-reinforcement. This would be in contrast to other effective methods, which could include teacher monitoring and administration of reinforcement and other consequences to reduce behavior effectively. This example is also particularly salient, given the contemporary thinking regarding the ineffectiveness of
external behavioral contingencies for children with ADHD, after such procedures are faded or removed (Barkley, 1998).

Finally and most importantly, focusing on self-regulation would seem to have the highest social validity for the children and families who are supported for mental health concerns and developmental disorders. Such an approach fosters independence and autonomy, which are important ethical principles (Williams, Armistead, & Jacob, 2008). Such an emphasis also presents a more sophisticated and long-term approach to treatment for such populations. For example, a student with ADHD will most likely not find an employment setting that will allow him/her to receive immediate and clear reinforcement for performing job duties or exhibiting socially appropriate behavior. In contrast, such a student would conceivably be able to utilize a checklist as a compensatory strategy to aid him or her in reviewing and monitoring behavior at work in order to keep it in line with optimal social and professional behavior. Given such a scenario, it would seem obvious that systems should reflect a self-regulation emphasis beginning as early as possible in the course of treatment.

**The Effectiveness of Contemporary Self-Regulatory Strategies**

Effective Intervention approaches which focus on self-regulatory skills are hardly new and have been widely studied across multiple disciplines including educational psychology, behavioral psychology, and counseling (i.e. Zimmerman & Schunk, 2009; Kern, Ringdahl & Hilt, 2001, & Barlow, Hainsworth, Jones & Fisher, 2005). Presently, much of the literature concerning self-regulatory strategies has focused on the use of operant procedures including self-monitoring, self-evaluation, self-reinforcement and self-instructional interventions in remediating student behavioral and academic deficits.
Such literature has outlined the efficacy of self-regulatory/self-management interventions along a wide spectrum of students, including those with learning disabilities (i.e. Graham & Harris, 2003; Reid, 1996), with emotional/behavior disorders (see: Reid et al., 2005) and with intellectual and developmental disabilities (i.e. Cole and Gardner, 1984).

Behaviorally-based self-management procedures can traditionally include more cumbersome materials such as the headsets and tape recorders with taped tones (to cue self-monitoring), to go along with data sheets and reinforcing contingencies or simply involve the use of a simple checklist periodically reviewed with the student. The idea is, randomly, to cue or prompt the student to assess his or her behavior and lengthen the interval over time, thus fading out the external support (Prater, Joy, Chilman, Temple & Miller, 1991; Levendoski & Cartledge, 2000).

Self-management at its core is most notably related to an operant theoretical perspective. Although contemporary self-management procedures focus primarily on overt behavior, the model continues to capture the spirit of other perspectives. For example, the interventions focus on features apparent in all perspectives including the importance of motivation, high success rates, and a self-oriented feedback loop. Purely cognitive constructs such as affect and self-efficacy are more definitely implied as being optimal and positively affected through secondary gain if behavior is properly reinforced. This is consistent with Badura’s (1986) idea of reciprocal determinism between affect, behavior and cognition.
**Self-Regulation: Linking Assessment to Intervention**

In focusing on remediating self-regulation difficulties in children with mental health issues such as ADHD, it is important to consider specific assessment guidelines which are helpful in developing self-regulatory interventions. Given the current zeitgeist and widespread effectiveness of functional-based intervention in remediating behavioral and academic problems (Stahr, Cushing & Lane, 2006), this ideographic methodology along with a profile of student cognitive strengths and weaknesses and other comprehensive assessment methods would seem ideal in conceptualizing assessment and treatment of behavioral problems utilizing self-regulatory interventions.

A functional behavioral assessment (FBA) includes strategies utilized to identify the function of an operationally defined behavior, as well as corresponding setting events and antecedents which increase the likelihood that the behavior will be exhibited (Sugai, Lewis-Palmer, & Hagan-Burke, 1999). The intervention is then developed, based on the results of the FBA or the variables that predict the behavior and the consequences that maintain it (Dunlap, Kern, DePerczel, Clarke, 1993).

Interventions based on functional-based assessment are not only widely accepted practices, but have also shown multiple benefits within the scientific literature (See: Lane, Umbreit, & Beebe-Frankenberger, 1999). These include an increase in the likelihood of positive and long-term outcomes due to hypothesis-driven intervention, and most importantly, a focus on building functionally-equivalent responses and prosocial skills (Kern, Ringdahl & Hilt, 2001). Such methodology is designed to help the student have his or her needs met as opposed to placing an emphasis on punitive behavior reduction measures (Stahr et al., 2006).
It may be helpful to explore this type of case methodology by examining a hypothetical case. In the case of student A, he/she is diagnosed with ADHD and receives a neuropsychological-based assessment that reveals a severe global deficit in the areas of organization and planning. Also, a functional based assessment may hypothesize that student A engages in off task (i.e. out of seat, not attending visually to instructor, etc.) behavior and even disruptive behavior (i.e. calling out, hitting classmates, etc.) to escape demands. There might also be found, through careful behavioral assessment, that student A tends to exhibit such behavior when given a task in a group and during certain subjects, etc. In this case a global cognitive deficit, perhaps in organization skills, increases fatigue and adds to the value of escape-maintained behavior as reinforcement and may simultaneously decrease the value of a preferred item offered for completion of the task. Thus, in this particular case, increasing this student’s organizational skills and success with related tasks would presumably decrease the motivation to escape such tasks.

Again, if student A has a difficult time with certain tasks which rely heavily on organization, planning etc., he/she may be more likely to try everything possible to escape a task if it seems extremely difficult; this behavior may be compared with student B, who has no such deficit. Clearly this conceptualization is hardly new because much of the literature has demonstrated the way in which easy and difficult tasks mediate student academic and social emotional behavior (Bambara & Kern, 2004). Further it provides a more specific example of the conceptualization of multiple factors linked to classroom problem behaviors, which are self-regulatory and performance-based in nature as opposed to a lack of academic skill or proficiency.
This model for skill remediation fits nicely into the necessary development of functionally equivalent, self-regulated responses to help the student have their needs met. Functionally equivalent responses are skills taught and/ or reinforced, which serve the same function as the problem behavior (Kern et al., 2001). The student could be taught self-regulation skills such as asking for a break, for help and for extra time with a task, as well as other self-monitoring and compensatory skills to be able to compensate for his or her self-regulatory deficits in order to complete the task. For example, through self-management training the student may be able, explicitly, to learn independent ways to break down tasks and plan towards a goal or follow a checklist to monitor and evaluate organization skills explicitly. This could include looking at the information and developing steps to follow in achieving the task. Such a “script” could be developed and utilized across similar academic tasks throughout the day. Also the plan to fade extrinsic assistance, reinforcement, etc. would be planned from the very beginning of the assessment process. Indeed, a few studies have integrated the use of functional behavior assessment methodology and the use of behavioral self-management interventions (Stahr et al., 2006; Kern et al., 2001).

Although reviews of behavioral self-management literature have called for component analyses of self-management as opposed to a multi-element approach (i.e Barry & Haraway, 2005), contemporary best practices recommend a function-based intervention plan, which must always include functionally equivalent skills to teach (Lane, Umbreit, & Beebe-Frankenberger, 1999). As illustrated by the previous example, these skills may not always be the same as the socially valid behaviors required by the context in question. For example, a child may self-monitor his or her work production;
however, if the child engages in escape behavior, he or she will need to be taught or to be reinforced with a competing response such as asking for help or taking a break. Further, a multi-element approach, function-based approach is more practical, encompassing and ecologically valid, considering integration of self-management approaches into “real-world” treatment settings such as schools, homes and community settings.

Self-Regulation for Students with ADHD

As previously mentioned there is a robust amount of literature highlighting the efficacy of self-regulatory-based interventions for academic and behavioral problems within home and school settings, across a variety of different student populations (i.e. Zimmerman & Schunk, 2009; Kern, et al., 2001, & Barlow, et al., 2005). Students with ADHD form a particular group, which has been found to benefit from such interventions (Reid, et al., 2005), predominantly through operant/behavior analytic strategies often described in the literature as self-management (Shapiro & Cole, 1994) and sometimes using a functional-based approach (i.e. Stahr, et al., 2006).

Again, ADHD is a lifelong disorder, which is reported to affect 3% to 7% of school-aged children (American Psychiatric Association, 2001). The hallmark symptoms of ADHD such as chronic and pervasive problems with impulsivity, inattention, and/or hyperactivity (Barkley, 1998) are thought to be related to underlying executive function deficits. Research findings with children with ADHD indicate consistent deficits in inattention, inhibition and working memory (Barkley and Shapiro, 2006).

Such cognitive deficits, which can then manifest themselves as academic and behavioral difficulties at home and in school, include not attending to and following instructions, task non completion, disruptive behavior and overall non compliance with
general classroom rules (Barkley, 1998; Ervin, DuPaul, Kern and Freeman, 1998). These issues, in turn, can compromise the development and performance of the child’s academic and social skills across all environments (Stahr, et al., 2006).

As previously discussed there have been two predominant intervention strategies employed in school settings for students with ADHD: psychostimulant medication and behavioral interventions (Guresko-Moore, DuPaul, & White, 2006; DuPaul & Eckert, 1997). Behavioral interventions may include parent and teacher training regarding reinforcement, and punishment, contingency-based interventions such as rewards (tokens, preferred items, etc.) and punitive consequences (i.e. timeout, response cost, etc.). Often interventions have included the use of compensatory strategies for the executive function deficits and corresponding behavioral problems associated with the disorder (Soorya & Halpern, 2009).

Some research indicates that there have been observable, positive treatment outcomes involving psychostimulants/methylphenidate, but these may also be mediated by environmental conditions in the classroom (such as behavioral intervention strategies) (Northup, Fusilier, Swanson, Huete, Bruce, Freeland, 1999). Although conclusions regarding the efficacy of these interventions in combination may seem intuitive, they continue to be widely debated by researchers in the field (Barkley and Shapiro, 2006).

As noted, several criticisms of the use of psychostimulants alone indicate that they have not been found to increase academic achievement in individuals with ADHD (Rapport, Denney, DuPaul & Gardner, 1994) and that they do not teach the student any adaptive or compensatory skills (O’leary, 1980). These criticisms are important to consider because both the academic achievement and the skill development are necessary
short and long-term outcomes needed for children in order to be successful at home and in school. Further, some studies have indicated that parents of children with ADHD would prefer alternatives other than medication for treatment of their children (Wilson and Jennings, 1996).

Behavioral contingencies, such as token economies, and other reinforcement procedures have been found to be very effective at reducing problem behaviors, but not necessarily at improving achievement (DuPal and Eckert, 1997). They also require external responses from classroom staff, which may not always be possible or practical, given the other demands present. Finally, research has demonstrated that although behavioral intervention is extremely effective, many students with ADHD may lose their behavioral gains, after such externally provided contingencies are removed (Barkley, 1998). Again, these limitations are crucial to consider in terms of the long-term implications of treatment and quality of life for the individual. For example, it would seem untenable for a child to learn and to grow into adulthood with the need for immediate and systematic contingency systems in place in order to exhibit optimal behavioral performance at home work or school.

Self-regulatory interventions would appear to be a superior way to help individuals with ADHD to self-regulate, as opposed to relying on constant external assistance. This can be done by teaching the student to record, assess and manage his or her behavior (Reid, et al., 2005). Indeed, contemporary theorists have characterized academic difficulties in students with ADHD as being self-regulatory in nature (Barkley, 1998). Further, ADHD has been described as a performance disorder in which the student may have the skill needed for the task but lack the self-regulatory skills to
perform it. This is thought to relate to difficulties in the student’s being able to appraise past behavior in a timely manner, internalize self-directing speech, self-regulate emotional and engage in problem solving and goal directed behavior. At their core, self-regulatory strategies help the students to assess past behavior explicitly and to change their behavior as needed. This process can function as the cue to maintain desired behavior and change undesired behavior (Barkley, 1998).

As previously mentioned, a behavioral methodology based on pertinent cognitive and behavioral assessment data could inform self-management interventions, built on skill building of prosocial and functionally equivalent responses. This method would also allow interventions to be tailored individually around ADHD students with particular cognitive strengths and weaknesses, rather than the general symptoms gleaned from only a DSM-IV diagnosis.

**Behavioral Self-Management Interventions**

Although limited, current literature has proposed and demonstrated the utility of different self-management interventions including self-monitoring, self-evaluation, self-monitoring plus reinforcement (delivered externally) and self-reinforcement for children with ADHD (i.e. Hinshaw & Melnick, 1992; Barry & Haraway, 2005; Reid et al., 2005). In fact, one meta-analysis of such literature (sixteen studies) found a combined effect size for all 4 types of interventions was greater than 1.0 (a large effect) for treating the following behavior problems related to ADHD: off-task behavior, disruptive behavior, accuracy and productivity (Reid et al., 2005). For example, Mathes and Bender (1997) found that self-monitoring among 3 children with ADHD ages 8-11 led to an increase in the percentage of on-task behaviors; Shimabukaro, Prater, Jenkins & Edelen-Smith
(1999) also used self-monitoring (including a self-graphing component) to increase academic accuracy, schoolwork productivity and on-task behaviors during the school day among 3 children with ADHD ages 12-13.

Self-monitoring with the addition of an external reinforcement component was found to be effective at increasing on-task behaviors in 7-9 year olds with ADHD in school (Edward, Salant, Howard, Broughter, & McLaughlin, 1995) as well as decreasing problem behaviors and increasing appropriate requests in a 7 year-old with ADHD in a hospital setting (Kern et al., 2001). Studies utilizing self-evaluation, in which individuals self-monitored and compared their behavior with a standard, found that this method was also effective at decreasing disruptive behaviors in the school setting among 3 individuals, 9 years of age, with ADHD (Hoff & DuPaul, 1998) and of increasing on-task behavior in school at a residential facility among a 14 year old with ADHD (Ervin, et al., 1998).

Finally, several examples of studies utilizing self-reinforcement in addition to monitoring and evaluation found increases in academic productivity both in school settings and among multiple students with ADHD ages 9-12 (Ajibola & Clement, 1995; Chase & Clement, 1985). Interestingly, there was also evidence suggesting that in the Ajibola & Clement (1995) study that medication combined with the self-reinforcement procedure was most effective compared with the use of medication alone.

Limitations of this review, however, included the fact that there were a small number of studies available (n=51) as well as the fact that there was a paucity of studies utilizing self-reinforcement and self-evaluation interventions. The authors also point out that over half of the participants were lacking adequate (and in some cases any)
diagnostic information. Thus, there are questions about whether or not the participants in these studies are truly representative of children with ADHD. Finally, it was pointed out that there were relatively little data on generalizability of treatment outcomes and the studies included only students between the ages of 7 and 13 years of age, with very few females represented (Reid et al., 2005). Generalizability across settings in particular would seem an important issue in terms of social validity of self-management interventions. As already mentioned, the ability to generalize self-regulatory skills into other settings across an individual’s life-span can make enormous differences regarding issues of quality of life and contributions to the overall community.

Another review of the behavioral self-management literature also examined the effectiveness of such interventions with children with ADHD (Barry and Haraway, 2005). This review examined 11 single case design studies including unpublished dissertations and found behavioral improvements in operationally defined target behaviors such as on-task behavior, as well as academic work completion and accuracy (i.e. Barry & Messer, 2003).

Several limitations found that within this review of the literature were included 2 studies in which multiple interventions were used, thus making it hard to determine the true effect of the self-management procedures (i.e. Davies & Witte, 2000). Similar to Reid et al. (2005), the authors further noted a lack of generalization to other settings and contexts and maintenance effects over time, studies that primarily took place in the school setting only; there was also a lack of diagnostic information (Barry & Haraway, 2005).
Again, many reviews of behavioral self-management literature have called for component analyses of self-management as opposed to a multi-element approach (i.e. Barry & Haraway, 2005); contemporary best practices recommend that a function-based intervention plan often leads to a multi-component intervention package (Lane, Umbreit, & Beebe-Frankenberger, 1999). Several studies have utilized a function based approach, including a multi-component treatment approach which has self-management interventions with children with ADHD. Such studies utilize their assessment data to develop an intervention package, including procedures to reduce maladaptive behavior, while increasing self-management and functionally-equivalent responses.

One such case by Kern et al., (2001) utilized functional analysis data to decrease disruptive behaviors among 3 boys ages 4 to 7 with ADHD. The researchers utilized a two-component self-management procedure to increase desirable behavior, utilizing an appropriate alternative behavior/functionally equivalent response. For example, based on the functional analysis, one child’s problem behaviors were found to maintain attention and escape. Interventions for this student included a self-management procedure to self-monitor problem behaviors using a worksheet in which he circled “yes” or “no” next to each behavior after training in self-evaluation. Another intervention component included the students being taught the functionally equivalent response to ask for attention appropriately from the teacher. This intervention model was found to be effective at increasing functionally equivalent responses and decreasing problem behaviors across all three children.

A more recent study by Star et al., (2006) implemented an intervention package which was found to be effective in decreasing off-task behavior in a 9 year old boy with
ADHD in the classroom setting. The child’s off-task behavior was found to be maintained by escape and by teacher attention, leading to an intervention plan involving increased communication skills, extinction (planned ignoring of attention-seeking behavior) and self-monitoring. Self-monitoring consisted of a training procedure on using a checklist to monitor desired behaviors, followed by the teacher inspecting the cards roughly half of 15 minute sessions.

Similar to Ajibola & Clement (1995), more recent studies further support the findings from that stimulant medication in combination with self-management interventions can be effective for improving classroom behavior in adolescents with ADHD. For example, self-management interventions, which included self-evaluation and self-reinforcement interventions were found to be effective in school with 3 ADHD adolescents in improving their organization skills/class preparatory behaviors (Guresko-Moore, et al., 2006). The children were trained on the procedures and the sheets were reviewed daily with a professional. The procedures involved the students setting goals for classroom preparation, listing the behaviors on a sheet and tracking them (self-monitoring component), tallying the number of behaviors they had complied with on the form (the self-evaluative component) as well as documenting what they did to work towards their goals, what they did not do and what they could do better. Finally they rated their own effort on a Likert scale (the self-reinforcement component). Percentages of classroom preparation for such behaviors as being on time for class, staying in ones’ seat and making eye contact with the teacher during a lesson increased for all three students, suggesting the efficacy of this treatment combination with their psychostimulant medication.
A follow-up study found self-management procedures were effective in increasing percentages of homework completion and class preparation behaviors in six adolescents diagnosed with ADHD (Guresko-Moore, DuPaul, & White, 2007). In this study, the students received similar training in self-monitoring and self-evaluation as in the study by Guresko-Moore, et al., (2006) related to such behaviors as arriving on time to class, having a pen/pencil and sitting quietly with eye contact on the teacher to begin class. However, in this study only 2 of the six students were receiving stimulant medication, thus suggesting the effectiveness of such techniques for students with ADHD who are both medicated and unmedicated.

Although limited, current literature reviews and single case studies have demonstrated the effectiveness of behavioral self-management interventions in improving behaviors for children with ADHD (i.e. Redi et al., 2005). Studies have utilized self-management procedures only (i.e. self-monitoring, with or without self-evaluation, self-reinforcement) as well multi-component approaches both with and without the use of a functional-based assessment. These effects have also been demonstrated for children who have been reported to be on psychostimulants as well as those who have not (i.e. Guresko-Moore et al., 2006; Guresko-Moore, et al., 2007). Limitations of this literature, however, include the lack of effects in settings other than school, issues in the lack of adequate documentation of the diagnosis of many study participants, the lack of representation of females, as well as age groups above 13 and below 7 years of age. Also note worthy is the uncertainty of behavioral self-management alone in some studies in which multiple interventions were utilized; other factors include the lack of generalization and maintenance data (Reid et al., 2005; Barry & Harraway, 2005).
Cognitive Behavioral Interventions

Cognitive behavioral interventions involve an emphasis on internal thoughts/cognitions, cognitive schemas and core beliefs and how such constructs are related to feelings and behaviors. Some cognitive behavioral intervention components may include self-instruction and problem solving, keeping thorough records and “stop and think” procedures. The focus of such treatment often includes identifying cognitive distortions and errors in information processing (Kendall & Braswell, 1993). As previously mentioned, cognitive behavioral elements in regard to self-regulation (also referred to in the literature as cognitive self-management) is based on Vygotskian view of SRL and more recently, Meichenbaum (1977). This theoretical perspective suggests that cognitions are unobservable behaviors, and that self-statements are internalized over time developmentally and that this internalized language is an underpinning of behavioral self-regulation (Dush, Hirt and Schroeder, 1989).

Although the effectiveness of strictly behavioral interventions is well-documented at remediating challenging behaviors in children with ADHD, the effectiveness of contemporary cognitive interventions is not (Abikoff, 1991; Barry & Haraway, 2005; Dupaul, Vile & Flammer, 2006; Kendall & Braswell, 1993). Specifically, cognitive behavioral interventions have not been found to be effective at improving symptoms of impulsivity, attention, academic performance or problem behaviors (Abikoff, 1991). More recent studies have done little to provide evidence on the efficacy of cognitive behavioral interventions due to methodological limitations in the studies including non-experimental designs and the use of multiple interventions at one time (Barry & Haraway, 2005). For example, a study by Miranda, Presentacion & Soriano, (2002)
examined the utility of a multicomponent treatment for ADHD versus a control group among seventy-one participants in the school environment. The treatment consisted of teacher training in cognitive behavioral therapy, behavior modification, and instructional management strategies. No difference was found between groups on neuropsychological tests; however, significant decreases in hyperactivity, inattention and related behavioral problems were reported both on parent and on teacher rating scales. Some academic improvement was also noted, based on student records.

Another study by Froelich, Doepfner, & Lehmkuhl (2002) utilized an AB design (baseline-treatment) to examine the effectiveness of a cognitive behavioral intervention on conduct issues and academic problems in the school setting. In the study, parents participated in a cognitive behavioral training, as well as education in ADHD symptoms, treatments, basic training in behavior change procedures such as token economies, reinforcement and response cost. Similar to the previous study, parent and teacher ratings indicated a significant reduction of teacher-reported symptoms of ADHD. Significant decreases in conduct issues and homework problems were also reported.

Based on these and similar studies lacking in design there have been indications that cognitive behavioral interventions also sometimes referred to as self-management cognitive behavioral interventions cannot be classified as effective, based on a lack of empirical evidence. (Barry & Haraway, 2005; DuPaul et al., 2006). Some researchers have suggested that perhaps cognitive behavioral interventions, which have been found to be effective with other behavioral disorders, are not effective with ADHD due to the neurocognitive underpinnings of the disorder (i.e. Barkley, 1997; Abikoff & Gittleman,
1985; DuPaul & Eckert, 1997). Specifically, it has been suggested that the reason for this is that the approach relies on the effective use of executive functions such as goal setting, self-reflection, and internalization of verbalizations, which are thought to be directly compromised among children with ADHD (Barry & Haraway, 2005). Further, traditional cognitive behavioral interventions are often conducted outside the time and place of the behavior as opposed to the actual point of performance in the classroom. Recall that ADHD is characterized as a “performance based issue” in which individuals often know what they need to do, but are unable to perform in the moment (Barkley, 1997). Finally, some researchers have also suggested that positive effects of cognitive behavioral interventions likely are not due to internalized speech acquired through self-instruction, but rather purely behavioral constructs such as reinforcement for memory of instructions, or reinforcement for completion of tasks may actually be implicated in positive results with this population (Abikoff, 1985; Kendall & Braswell, 1993).

It is worth noting that cognitive behavioral interventions have shown some effectiveness in treating comorbid symptoms and disorders including symptoms related to depression, anxiety and conduct problems, although more research is needed (Schultz, Storer, Watabe, Sadler & Evans, 2011). Not surprisingly, parent-focused cognitive behavioral interventions also have some research support in the literature as a complement to behavioral interventions (see Kohut and Andrews, 2004).
Current Study

Again, treatment of behavioral problems for children with ADHD should focus predominantly on assessment and intervention methods designed to increase self-regulatory skills. Current research supports the use of function-based, behavioral self-management interventions in school with students who have ADHD for off task, behavior problems and variables related to task completions, such as accuracy and productivity (i.e. Reid, et al., 2005). Indeed, behavioral self-management interventions alone have been referred to as “probably efficacious” (Schultz et al., 2011) according to the criteria for empirically supported interventions (see Chambless & Ollendick, 2001) because of the existing research, although it does lack repeated, randomized clinical trials or large single case design studies.

The current study examined archival program outcome data, in which a clinical model was implemented in a community behavioral health program which emphasized the blending of effective self-regulatory interventions with current best practice behavior assessment and intervention methodologies in the treatment of children with ADHD. Data to be analyzed in the current study included single cases in which functional behavioral assessment information is linked to an intervention plan, which utilized the principles of applied behavior analysis to teach the child compensatory strategies in the form of self-monitoring and self-evaluation. The model expands the current knowledge base of the efficacy of such approaches to remediating behavioral difficulties in children diagnosed with ADHD and is currently receiving community behavioral health services due to sever behavioral problems in the home, school and community.
Research Questions

The goal of this study, which involved conducting an analysis of the implementation of a self-management intervention model for individuals with ADHD in a community behavioral health setting, was to answer the following questions:

1. What process was used in the development and implementation of self-management interventions into the existing clinical model for children and adolescents with ADHD?

2. What were barriers encountered by different groups in training and implementation of self-management interventions for this population?

3. Was the training and intervention model successful in its efforts to provide effective behavioral treatment to children and adolescents with ADHD?

Expected Outcomes

Process. It was expected that moments of insight resulting from direct experiences would be identified, and further, that such insights would better inform model implementation in the future.

Barriers/Themes. It was expected that the logistics regarding staff training, supervision, and retention would emerge as barriers, as would issues regarding continued family eligibility for services and general compliance. Additional potential barriers were expected regarding fidelity to intervention model and data collection.

Program Outcomes. Quantitative outcomes were expected to reflect an increase in mean percent change in adaptive skills and/or a decrease in mean percent change in challenging behaviors among the cases utilizing a function-based self-management intervention package. It was further expected that these outcomes would be reported for
cases in which the individuals with ADHD are younger than 7 years of age, older than 13 years of age and in multiple settings, thus expanding the knowledge base presented by Reid et al., (2005).
Chapter 3

Method

Research Overview

Implementation of evidence-based treatment and program implementation can often be problematic in real-world environments due to the potential of numerous uncontrollable variables. Indeed, Stringer (2004) suggests that rigorous experimental research can often be of little relevance when applied to the daily practices of public schools. A more practical way to implement change in real world settings such as schools and home can be through an action oriented research approach (Stringer, 2004; Marzano, 2003; Sagor, 2000). Action oriented research involves a process in which those involved with the project can utilize their background experience and context-specific wisdom to gain greater in-depth insight into issues regarding the project or intervention in order to develop practical and effective methods for solving relevant issues and barriers. This process is referred to as transformational understanding (Stringer, 2004).

In conducting action research in a community behavioral health program in Eastern Pennsylvania, this researcher collected and examined data in order to enhance future program outcomes and increase program effectiveness. Children in this program are typically referred for community behavioral health services due to behavioral issues deemed to be too intense or complex to benefit from a lower level of care (i.e. outpatient). The researcher, in his role as the lead clinical supervisor, was responsible with other clinical supervisors for developing in-service training, providing staff clinical supervision, overseeing program components, developing program content, coordinating training of involved staff, and for overseeing the program components implemented. In
his role as the lead clinical supervisor, the researcher had direct experience with the program’s development and implementation, and guided the implementation of the clinical model in order to address the research questions and program outcomes.

**Procedures and Measures**

This study analyzed 12 archival cases maintained by a community behavioral health program in the Northeastern United States. The researcher, who analyzed the data, obtained this data from archival records.

1. The specific cases to be used in the study were identified through clinical supervision contact with behavioral consultants within the programs. Clinical supervisors asked behavioral consultants working in the community behavioral health program to identify cases with which they utilized self-management interventions in their intervention plans.

2. The researcher reviewed each case to confirm 1) that each individual had a history of ADHD as documented by a Pennsylvania licensed psychologist in the child’s most current psychological evaluation and 2) that a behavioral self-management procedure was utilized, which included self-monitoring and/or self-evaluation components. Documents were reviewed by the researcher pertaining to the development and implementation of the behavioral self-management model for intervention.

3. Data from cases that fit the study inclusion criteria were transferred from the subject file to a data code sheet (see Appendix A) that was identified by an ID number only; no specific identifiers were included in the file to be used for data analyses. Documents from subject files that were used as codable data include:
A. Self-management checklists/data sheets utilized for the self-management intervention.

B. Data collection sheets from parents, teachers and community behavioral health staff documenting frequency, intensity and/or duration of challenging behaviors and replacement skills.

C. Any data sheets documenting procedural integrity such as a checklist administered during self-management training, which lists the steps involved with self-management interventions.

D. Any data sheets documenting interobserver agreement across raters related to data reliability.

E. Supervision logs and training records for behavioral consultants that worked on cases selected for the study.

F. Positive behavioral support plans for each case selected for the study. Positive behavioral support plans include background information, assessment information and the behavioral interventions that were implemented for a given case.

G. Recommendation tracking forms for each case selected, which summarize clinical progress with goals/objectives in the positive behavioral support plan every 90 days.

H. Any individual or team member’s ratings of social validity that were conducted on selected cases.

I. The most recent psychological evaluation for each case selected, which documented a diagnosis of ADHD.

4. The researcher also developed a chronology of events related to the implementation and dissemination of resources to the behavioral consultant team
related to utilizing a self-management based clinical model in the program in order to
structure the recall of relevant events and develop relevant themes.

5. In the process of reviewing the program as listed by these documents, the researcher identified themes and barriers as related to different roles in the program. These roles included: Community behavioral health clinical supervisors, Behavior Specialist Consultants/Mobile Therapist (BSC/MT) staff and change agent staff such as Therapeutic Staff Support (TSS) teachers, parents, or other professionals.

**Specific Measures**

Data collection forms and recommendation tracking forms were utilized to record baseline (or pre-intervention package phase) data (before behavioral intervention (self-management intervention treatment package) and intervention data (once self-management intervention package was implemented). This data were recorded on the master data form for each challenging behavior and skill being targeted. Such forms are typically utilized in community behavioral health programs and other intervention settings to record intensity, frequency and or duration of challenging behaviors as well as prosocial replacement skills. Self-management checklists were also reviewed in order to record ratios or percentages of replacement skills demonstration.

Procedural integrity checklists were analyzed for each case (as available) to record percentages on the master data form. Procedural integrity is calculated through dividing the number of training/intervention components implemented correctly by the number of possible steps on the checklist and multiplying by 100 to get a percentage.

Such forms are typically utilized to document the implementation of the
intervention consistently (see appendix B for the form utilized by BSC/MT staff in the current study).

Finally, any social validity ratings by individual and or professional/parent on satisfaction with the intervention package were documented for several cases on the master data form through review of rating scales.
Chapter 4

Results

Research Questions

The goal of this study, which involved conducting an analysis of the implementation of a self-management intervention model for individuals with ADHD in a community behavioral health setting, was to answer the following questions: 1. What process was used in the development and implementation of self-management interventions into the existing clinical model for children and adolescents with ADHD? 2. What were barriers and themes encountered by different groups in the training and implementation of self-management interventions for this population? 3. Was the training and intervention model successful in its efforts to provide effective behavioral treatment to children and adolescents with ADHD?

Question One

1. What process was used in the development and implementation of self-management interventions into the existing clinical model for children and adolescents with ADHD?

The following documents were reviewed and cross-referenced for information pertaining to the development and implementation of the project: Clinical Supervision Documentation Notes from January 2012 through April of 2013 for clinical supervisors; behavior specialist consultants/mobile therapists (BSC/MT) on cases in which the intervention was implemented; Clinical Supervision Agendas from January 2012 to April 2013; Training records for behavioral consultants from January 2012 to April 2013.
The review of these documents enabled a chronicling of the conceptualization and implementation self-management interventions into the existing community behavioral health clinical model. For example, tasks addressed and completed in notes in regard to training helped the researcher construct sections of the timeline and implementation pertaining to self-management training.

The existing clinical model for the community behavioral health program included a functional behavior assessment of the problem behavior, followed by evidence-based intervention and progress monitoring. The self-management intervention model was implemented in complement to this model across 12 cases in the program in which the individuals were diagnosed ADHD. Three distinct phases emerged as part of this process: 1) a needs identification phase, 2) a development phase and 3) an implementation phase.

**Needs identification phase – April 2011-December 2011.** During the needs identification phase several factors drove the development of a more highly self-regulated approach to intervention. These included a need to provide interventions that were less restrictive to the ADHD and to other populations; these were based on current evidence-based practices and provided more long term solutions. The primary influences that created the realization to implement a clinical model with greater focus on self-management interventions included, 1) decreasing managed care approvals in the scope and intensity of community behavioral health services, 2) increased awareness of evidence-based interventions for ADHD and 3) barriers to treatment related to treatment integrity among parents, teachers and other change agents on individual cases.
Decreasing Managed Care Service Approvals. Community behavioral health services are prescribed for individuals with at least an Axis I mental health diagnosis who are also at risk for an out of home placement due to challenging behavior. After the initial prescription, services are reauthorized as needed every six months. They may include any combination of three types of service including a behavioral specialist consultant (BSC), mobile therapist (MT) or therapeutic staff support (TSS). BSC staff typically provide consultation to parents, teachers, TSS and other professionals; MT staff typically provide direct therapy to the child and family, and the TSS act as an additional change agent and liaison to help transfer intervention skills to parents, teachers and other professionals.

During 2011, approvals for community behavioral health services were declining in the current agency’s program. As the availability of community behavioral health services continued to decline, it was determined by the lead clinical supervisor of the program that a focus on more self-management interventions in general would be a way to maximize the use of fewer hours of prescribed service. Further, in meetings with managed care representatives, continued themes of shorter and less intense service prescriptions were emphasized.

Increased awareness on evidence-based interventions for ADHD. The clinical supervisory team included 4 supervisors with one functioning as the lead clinical supervisor. Together, the 3 clinical supervisors of the community behavioral health program under the direction of the lead clinical supervisor conducted multiple reviews of the existing literature on self-management interventions and evidence-based interventions for the treatment of ADHD in children.
The information reviewed through this literature was reviewed in subsequent clinical supervisors’ meetings, and a plan was developed to summarize and disseminate the information to the clinical team of the community behavioral health program through in-service training, clinical supervision and clinical consultation.

**Barriers to treatment related to treatment integrity among parents, teachers and other change agents on individual cases.** A major barrier to sustained progress among clients in the behavioral health program had included difficulty with transferring effective behavior intervention strategies to parents, teachers and other change agents. For example, many cases’ data sets indicated progress on a case in the presence of a community behavioral health staff (i.e. TSS, BSC, etc.); however, these same behavioral gains were diminished when the individual was with only the parent or teacher. Similarly a consistently voiced difficulty among treatment teams was low treatment integrity among natural support change agents such as parents and teachers. A natural solution on cases in which multiple attempts to transfer skills were met with resistance or challenges included emphasizing a self-management component either to complement existing externally provided interventions, or to be used in their place.

**Development phase - January, 2012 through February 2012.** The development phase was influenced by several factors including 1) interest and motivation among clinical supervisors in the program 2) continued pressure from managed care funders to prescribe less intense services and for shorter durations 3) continued review and study of evidence-based interventions and case conceptualization of ADHD in children.
Interest and motivation among clinical supervisors in the program. The development of outcome studies and training resources is an integral part of the role of clinical supervisors of the community behavioral health program. Both the clinical supervisors along with the BSC/MT clinical staff that worked directly with clients in the program were highly motivated to provide more effective interventions that would present the best outcomes in terms of length of stay in service and clinical effectiveness. After a review of the literature, the 4 clinical supervisors of the program were motivated to utilize the information gathered into further enhancing the model for intervention for children with ADHD in the program.

Continued pressure from managed care funders to prescribe less intense services and for shorter durations. Managed Care case managers had continually communicated the need to decrease the length of stay for existing cases and the amount of hours in which program staff were allotted to provide weekly service to individuals in the program. Therefore it was important to develop a model for intervention that could be clinically effective and also lead to as little dependence as possible on continuing service. Thus, a focus on self-management interventions was determined to be a focus because it was evidence-based (i.e. Reid et al., 2005) and would also theoretically lead to the greatest independence for the child (including the least amount of need for continuing services).

Continued review and study of evidence-based interventions and case conceptualization of ADHD in children. Following review of the literature regarding psychosocial interventions and neuropsychological implications for children with ADHD, it became apparent to the clinical supervisors of the program that a self-regulated learning
approach would better match the neurocognitive profile of children with ADHD. Further, such an approach would move beyond focusing only on environmental contingencies and would increase skills within the client. This approach would also be more palatable to managed care funders because the ultimate goal was more highly focused on client independence. Finally, this approach could also work directly around treatment barriers related to low treatment integrity among parents and other professionals in carrying out intervention plans with consistency and fidelity.

The literature reviewed was then utilized by the clinical supervisors to create in-service training and resources to support the integration of self-management interventions into the current clinical model for providing community behavioral health services to individuals within the program. This included a power point presentation, providing an overview of self-management interventions, which included sections on implementation, prepared examples of self-monitoring sheets and case examples. Ultimately the self-management interventions utilized in the current study reflected the teaching of self-monitoring and self-evaluative skills as outlined on the procedural integrity checklist (Appendix B) and is based largely on the work of Shapiro & Cole (1984) and more current studies focusing on children with ADHD (i.e. Guresko-Moore et al., 2006; Guresko-Moore et al., 2007).

The training component of the intervention included the following steps: a review with the child of his or her current behavior in the environment; a brief description of the importance of self-regulation; a review of the behavioral expectations for the environment; the BSC creating and reviewing a self-monitoring sheet with the child, including definitions for the behavior and goals, and the BSC/MT asking the child to
generate examples of the behavior and assisting the child in using the form. The checklist indicated that these steps would require training across 2 days; however, the BSC/MT staff was able to train the intervention over 1 or two days at the staff’s own discretion.

In addition to the training components, the following aspects of the intervention were listed on the procedural integrity checklist during implementation: the child receives prompts as needed and is reinforced with verbal, specific praise and also receives desired items for accurate self-monitoring, based on comparison with parent or professional data; the parent/professional meets during a specified time with the child regarding the checklist sheet in relation to the goals set and provides feedback and offers assistance; after goals are met for three consecutive sessions, the goals are changed until all items on the checklist are completed at 100% for at least 4 consecutive days; following the meeting of this criteria, the professional /parent schedule meetings to review the sheet at every other session and then are pulled back to scheduling of review meetings only 1 time per week after 4 consecutive weeks of 100% completion of behaviors on the checklist; the child, independently, turns in the self-monitoring sheet at the end of the session and then receives verbal, specific praise or a desired, tangible reinforcer (See Appendix B).

**Implementation phase – March 2012 through April 2013.** Integration of a model for self-management interventions began in March of 2012; the in-service was offered at all clinical supervision meetings in the month of March and throughout the year as needed. The in-service provided a background on the use of self-management interventions and included sample resources and the listed steps to follow for
implementing the procedure. Clinical staffs (BSCs and MTs) are required to receive at least 2 hours of supervision per month either in group or in individual format. Again, in terms of function, BSC staff typically consult with parents and MT staff tend to provide direct behavioral therapy to the client and family; however, these roles may sometime overlap. In actuality, the BSC staff and some MT staff were considered to be the primary staff responsible for the implementation of the self-management interventions on their cases.

The in-service was provided during all group meetings and in many individual meetings with BSC and MT staff in the community behavioral health program. BSC/MT staff members who attended supervision were encouraged to apply self-management interventions to cases as they deemed appropriate during the training and throughout supervision meetings for the remainder of April 2013. BSC and MT staff were also able to seek out clinical supervisors as needed for support and consultation throughout each month in conjunction with regularly scheduled supervision time.

During this phase, self-management interventions were integrated into existing treatment intervention plans across 12 cases that included individuals with an ADHD diagnosis. Both anticipated and unanticipated barriers were experienced and addressed on individual cases as they presented themselves. Integration of self-management interventions on existing cases and barriers were influenced by the following needs: 1) the need for increased training and supervision/consultation for direct service staff (BSCs, TSS and MTs) 2); the need to conceptualize the implementation of a self-management intervention approach to an intervention model traditionally focused on parent/teacher training and the provision of systematic external contingencies; 3) the need
to coordinate support for direct clinical staff regarding training/supervision and consultation, 4) the need to maintain procedural and treatment integrity of self-management interventions, and 5) the need to document social validity.

The need for increased training and supervision/consultation for direct service staff (BSCs, TSS and MTs). During the implementation phase, clinical supervisors continued to follow-up with BSC and MT staff regarding the integration of self-management interventions. These contacts occurred during regularly scheduled clinical supervision meetings each month as well as additional contacts as needed. BSC and MT staff had the option to attend a group meeting or receive individual supervision or both at a minimum of two hours per month. Group in-service materials included those reviewing literature on the core deficits of ADHD (and other topics) as well as the conceptualization of the disorder as one of deficits related to self-regulations and also on the use of self-management to address such issues. Much of the information was based on the ADHD work of Barkley (1990). All ten BSC and MT staff who implemented self-management interventions on their cases received at least two hours of supervision per month, including access to group in-services and to, at least, bi-monthly individual supervision meetings.

Individual supervision included more case-by case discussions of specific implementation to an existing intervention plan. This may have included following a procedural integrity checklist to train the self-management skills, and monitoring to ensure treatment integrity among parents, teachers and TSS staff working with the individual on a day to day basis. BSC and MT staff were highly encouraged to utilize psychoeducation with change agents on their cases, including parents, teachers and TSS
staff. Clinical supervisors were also available to provide on-site consultation if necessary; however, this was utilized on only 1 of the 12 cases.

The need to conceptualize the implementation of a self-management intervention approach to an intervention model traditionally focused on parent/teacher training and the provision of systematic external contingencies. As mentioned, group in-services were prepared to provide information to BSC and MT staff on a better conceptualizing of ADHD as a disorder as well as the most current ways to treat the disorder properly. These in-services included two separate modules prepared by program clinical supervisors. Both modules were developed, based on the previous literature reviewed in preparation for the project. The modules included an approximately 1-hour in-service reviewing the conceptualization of ADHD and evidence-based interventions. This in-service helped to lay the foundation and rationale for the use of self-management interventions as a suitable and logical intervention strategy for behavioral problems related to the disorder. The second module was a short review of literature outlining the clinical effectiveness of self-management interventions to address problem behaviors in children diagnosed with ADHD. These modules were presented at group clinical supervision meetings and individual meetings as needed throughout the project from May of 2012 to January of 2013.

The need to coordinate support for direct clinical staff regarding training/supervision and consultation. Four clinical supervisors typically provide up to five group clinical supervision meetings per month and individual clinical supervision meetings as needed across a clinical team of about seventy BSC and MT staff. These clinical supervisors were responsible for providing support to the 10 different BSC/MT
staff who implemented self-management interventions across 12 cases. All four clinical supervisors met for their own meeting for two hours, 1 time per week during the project. During this meeting various general and clinical operations issues were discussed, including coordination of the use of self-management interventions utilized with individuals with ADHD in the program. These meetings also functioned as work-groups in which tasks were assigned regarding the creation of the in-service modules and coverage for supervision meetings among the BSC and MT staff.

**The need to maintain procedural and treatment integrity of self-management interventions.** The initial in-service on self-management interventions, which was conducted prior to implementation included the steps of teaching the skills to individuals in the program. The subsequent group in-service offered a review of the literature outlining the effectiveness of these interventions for ADHD and also included a sample procedural integrity list outlining the relevant steps to be followed for teaching the intervention (see appendix B). This form was also referred to in individual supervision with all 10 BSC/MT staff who participated in the study and was completed for each case in which the intervention was implemented. This was to ensure procedural fidelity to the intervention steps for self-management as outlined in the literature across the 12 cases in the study.

**The Need to Document Intervention Social Validity.** Because practicality and application are key indicators of success in clinical work, it is vital to ensure that the families and individuals in the program receive interventions that are effective and desirable, given the context of each individual case. Thus, through ongoing consultation, team meetings and the use of satisfaction and or social validity questionnaires, BSC/MT
staff gauged and adjusted the intervention plan based on feedback from the families on each case.

**Question One Summary.** Integrating self-management procedures into the existing clinical model was done systematically through the identification of needs in the program related to the effective use of available resources and clinical effectiveness. A development phase involved the motivation and continued literature review by clinical supervisors to develop resources and training for self-management intervention. Finally, implementation involved further developing and presenting additional in-service and resources and offering clinical consultation, support and supervision related to general and individual case implementation.

**Question Two**

2. *What were themes and barriers encountered by different groups in training and implementation of self-management interventions for this population?*

The following documents were reviewed and cross-referenced for qualitative information themes and barriers on the project: Clinical Supervision Documentation Notes from January 2012 through April of 2013 for clinical supervisors behavior specialist consultants/mobile therapists (BSC/MT) on cases in which the intervention was implemented; Clinical Supervision Agendas from January 2012 to April 2013; Training records for behavioral consultants from January 2012 to April 2013.

As with the development and implementation process, review of these documents enabled a chronicling of the themes and barriers that emerged during the project as well as how these barriers were addressed. For example, treatment barriers indicated in clinical supervision notes were used to identify the presence of issues that were reported
by staff and families across multiple cases in the project, including the documentation of how these issues were addressed.

Specific groups included: clinical supervisors, BSC/MT staff, and change agents such as parents, teachers, TSS staff and other professionals. Themes and barriers for each were identified through a review of documents related to clinical services and clinical supervision. Clinical supervisory themes were as follows: Who is the population to be served? How should staff training and supervision of services be managed? How should training be provided?

BSC/Staff themes were as follows: How should self-management interventions be integrated on a specific case? How were BSC/MT motivated to utilize self-management interventions on their cases? How should data be collected to monitor progress? How should data be collected to monitor progress, ensure treatment integrity and data reliability? How should contextual barriers to treatment be conceptualized and addressed?

Themes, as they related to change agents such as parents, teachers, TSS and other professionals, were as follows: How can change agents be trained to support the implementation of self-management interventions on a case? How should “buy-in” to the intervention plan be established? How should contextual and cultural issues be addressed?

**Themes and barriers: clinical supervisor.**

Who is the population to be served?

The initial self-management intervention in-service provided during the implementation phase of the study was provided to all BSC/MT staff with the
recommendation that such procedures could be used across both mental health cases (those carrying a diagnosis of ADHD, ODD, Anxiety disorders etc.) as well as cases serving individuals with intellectual and/or developmental disabilities (i.e. autism). It was the subsequent group in-services that focused specifically on children and adolescents with ADHD. All of the case data in the current study included individuals with a current ADHD diagnosis as determined by a PA licensed psychologist or physician and documented in a psychological evaluation within the previous six month period.

It should be noted that most cases within the community behavioral health carry multiple axis I disorders and this is true of almost all of the cases in the current study. This is not surprising, considering that the program is designed to provide intervention to complex and involved cases which have not responded to less restrictive service (i.e. outpatient) and are at risk for out of home placement. Therefore it was decided by the clinical supervisory team to include ADHD cases in the current study even though they carried comorbid diagnoses ranging from mood disorders, and disruptive behavior disorders to autism. It was concluded that results of the intervention would reflect outcomes for the typical complex cases treated in such programs.

How should BSC/MT training and supervision of services be managed?

A concern among clinical supervisors was their ability to fit in additional in-service training, consultation and supervision in such a limited time frame (usually only 2 hours per month). This barrier was considered at the weekly clinical supervisor meetings, and solutions were discussed and implemented. Solutions included utilizing phone and email contacts when possible to increase convenience for clinical supervisors and for
BSC/MTs; meeting in smaller groups with BSC/MT staff involved in the project, and having one clinical supervisor as a point person for small group and also more specifically focused and individualized supervision, consultation and training issues.

The clinical supervisory team was also motivated by the prospect of spending time on a project that would be directly related to increasing clinical effectiveness and outcomes for ADHD cases. Further, they were also quite enthusiastic about the fact that the project was very definitely applied in nature and could lead to timely revision of the current clinical model in the general sense to reflect a greater focus on self-regulation. Finally, the clinical team was motivated to produce outcomes to share with their managed care funder to help justify continued authorizations in the future.

How should training be provided?

The existing model for clinical supervision services in the program led to a natural vehicle in which to provide supervision, in-service training and consultation to BSC/MT staff implementing self-management interventions. What was discussed and determined among the 4 clinical supervisors of the program involved all clinical supervisors being involved with providing the 3 in-service modules on self-management, ADHD and specific self-management interventions for ADHD. All clinical supervisors would also be responsible for dissemination of in-services materials during group supervision and any individual sessions.

It was also determined that the lead clinical supervisor would take on most of the individual supervision and consultation regarding self-management on cases in which the child or adolescent was diagnosed with ADHD. The lead clinical supervisor was chosen as the clinician with the most extensive background in both assessment and intervention
for individuals with ADHD as well as in self-management interventions and applied behavior analysis.

Themes and barriers: behavioral specialist and mobile therapy staff.

How should self-management interventions be integrated on a specific case?

BSC/MT staff in the program receive in-service and supervision/consultation within the program’s basic clinical model. This entails operationalizing the problem behavior, conducting a functional assessment, selecting an evidence-based intervention and progress monitoring. For the BSC/MT staff, implementation of self-management interventions occurred within the evidence-based intervention part of this model, but was also to be linked to functional behavior assessment data and was reflected in data collection practices. For example, it was found in case #1 that the function of tantrum behavior was related to escape from frustrating homework tasks. Thus, the individual was taught to self-monitor her ability to take a break and utilize calming strategies before she exhibited disruptive behavior. Progress was ultimately tracked in regard to tantrum behavior reduction.

The decisions on how to integrate self-management interventions on existing cases was largely developed by the BSC/MT in consultation with the family/school, individual and, in some cases, the clinical supervisor. For most of the cases, however, the BSC/MT was able to integrate the use of self-management interventions seamlessly into their existing intervention plans by focusing on the individual either through self-monitoring functional equivalent skills, desired behaviors in the environment, problem behaviors or any combination of the three.

How were BSC/MT motivated to utilize Self-Management Intervention on their cases?
Given the numerous responsibilities of BSC/MT staff, and the fact that such staff are fee for service independent contractors, it is often challenging to get BSC/MT staff to implement changes on their cases in a timely fashion. In fact previous resources and in-service training often are not implemented with direct follow-up during more individualized ongoing support on a case by case basis (which again, is often limited considering there are only 4 clinical supervisors available in the program).

Increasing the motivation of BSC/MT staff to utilize self-management interventions on their cases was addressed in the following ways. During the implementation of the project the clinical supervisors of the program presented the information and resources to the BSC/MT staff in ways that highlighted the availability of extra support for clinical supervisors as needed, the possibility of being pooled into a particular group of staff best trained to work with children with ADHD in the program, and, of course, the positive outcomes and conceptual fit achieved in using the intervention. Implementation of self-management interventions program-wide, however, occurred on only 12 of approximately 75 cases in the program across 10 different BSC/MT staff. All of the 10 BSC/MT staff had been working in the program for 2 or more years and participated in at least monthly supervision and in-service training.

How should data be collected to monitor progress, ensure treatment integrity and data reliability?

Again, the program clinical model includes training relative to data collection, data reliability and treatment integrity. Because these were already existing parts of the current clinical model, BSC/MT staff members were able to apply their existing skills in these areas to ensure that progress monitoring for each case was collected by parents,
teachers, TSS and self-monitoring data by the client. They were also able to utilize direct observation and consultation skills to address reliable data collection and treatment integrity. Common strategies included utilizing simplified data collection sheets and self-monitoring sheets, observing and providing performance feedback and modeling on data collection and treatment integrity.

How should contextual barriers to treatment be conceptualized and addressed?

BSC/MT staff typically face multiple barriers to intervention implementation in the program in general, and this was also true among many of the 12 cases in which self-management interventions were implemented for children and adolescents with ADHD. At least one barrier was reported on 10 of 12 cases. In some instances, these barriers were addressed or worked around and a positive outcome was achieved on the case. In other instances, such barriers prevented the intervention from being implemented entirely. In other cases, however, barriers developed after the intervention had been implemented. For example, in case #11 the BSC/MT was unable to implement the intervention with integrity because after the self-management intervention was created and taught to the child on the case, the child had an issue of numerous absences from school and experienced difficulties in getting education staff at his school to support the intervention and reinforcement system for self-monitoring. On case # 7, however, the intervention was implemented successfully over 3 months before custody issues and nonsupport from the child’s parents led to the discontinuation of the intervention. In this latter case, the BSC on the case is in the process of working with the parents and school to re-establish the intervention.
Themes and barriers: parents, teachers, therapeutic staff support and other professionals.

How can change agents be trained to support the implementation of self-management interventions on a case?

BSC/MT staff generally meet with families and or schools (depending on the service location) 1-2 times per week. Thus, it is imperative for these staff members to be able to train parents, teachers, TSS and other support professionals to carry out interventions from the intervention plan consistently throughout the week. BSC/MT staff receive general in-service training and support and consultation regarding the transfer of intervention skills to such change agents. Again, this existing model helped to support and to sustain the integration of self-management interventions among the cases in the current study. BSC/MT spend time with these change agents; during this time they model, observe and deliver performance specific feedback to work towards treatment fidelity and consistency across all potential change agents who have contact with the child. BSC/MT staff are also trained to take data on checklists reflecting treatment integrity. In the case of self-management interventions, the use of the procedural integrity checklists (Appendix B) and the completion of the self-monitoring sheets themselves were utilized on all cases to assess treatment integrity. These methods were supplemented in some cases by periodic observations of change agents carrying out aspects of the intervention plan by BSC/MT staff.

Common barriers to intervention consistency included being able to coordinate meetings/consultation with various change agents for the child; these include multiple teachers, or both parents in the home. These barriers were addressed most effectively
through coordinating team meetings by BSC/MT more frequently than the 90 day minimum requirement. This enabled team members to work on getting as many change agents together for a setting at once in order to make the most effective use of BSC/MT consultation time.

How should “buy-in” to intervention plan be established?

Another common barrier in the community behavioral health program in general is related to “buy-in” by change agents such as parents, teachers and other professionals. BSC/MT staff in many cases utilized some psychoeducation regarding ADHD and self-management interventions to increase buy-ins from change agents. BSC/MT staff members also were careful to keep change agents focused on step-wise gains of the intervention in order to maintain their support. For example, it was reported through supervision notes that a BSC/MT on one case reviewed with the parent, the child’s initial progress with the goal simply of self-monitoring accurately before requiring a specific behavioral criteria for access to reinforcement.

Despite these procedures to increase “buy-in”, this issue continued to be a significant barrier on at least two cases, #7 and #11. On case #7, interventions were implemented and proven successful over a 3-month period; however, the father of the child receiving treatment influenced him to stop utilizing his self-management sheet at school. Attempts to meet with team members, including the father, to increase “buy in” are ongoing, but to date have not been successful in continuing the intervention. On case #11 the child’s teachers were not consistent with the interventions and ultimately communicated the fact that they did not feel that they had the time to support the
intervention. As a result, the BSC/MT was seeking to redevelop an intervention plan supported in the school.

“Buy-in” should also be mentioned regarding the clients themselves. Because self-management interventions in particular require support and buy-in from the child with ADHD, BSC/MT, staff needed to work with all team members to develop a reinforcement system that was not only effective with the client, but also utilized some psychoeducation regarding their diagnosis of ADHD. Additionally, BSC/MT staff tried to communicate the reasons why increasing their self-regulation skills would be much more beneficial for them long-term than would only an external contingency plan.

It should be noted that in one case in particular (case #12) the client was opposed to following through with the intervention despite all of these attempts and thus the intervention was neither implemented nor effective on this case.

How should contextual and cultural issues be addressed?

Even the most technically savvy intervention plan will ultimately fail if it does not match the context of the case in which it is implemented (Albin, Lucyshyn, Horner, & Flannery, 2001). This issue was addressed by BSC/MT staff on cases in the study through maintaining an open dialogue with change agents and the child to develop reasonable goals and objectives and utilize interventions, which they were confident in the ability to implement. The integration of self-management interventions into the existing cases in the study naturally supported less restrictive and time-consuming intervention, when compared with interventions related to more careful monitoring by parents and teachers. Thus, as would be expected this type of intervention there was a high level of contextual fit in most situations, in which time and parental oversight may
be limited due to care for other children and responsibilities that exist in classroom and home environments.

The idea of contextual fit also encompasses cultural issues. The only relevant cultural issue reported was related to the conceptualization of some professionals and parents working as change agents in the present study. It was apparent that several parents and teachers felt that children with ADHD and mental health behaviors were making conscious choices not to be engaged, not to pay attention and not to stay on task. This cultural belief reflecting a high degree of the need for personal responsibility is common among change agents in the program. BSC/MT staff worked through psychoeducation to explain some of the neuropsychological issues related to ADHD in an attempt to discuss how this disability can impact behavior. This was done in a way to give more insight into the disorder in a manner that maintained sensitivity to beliefs by change agents regarding self-reliance and personal responsibility.

**Question Two Summary.** During the study, themes and barriers emerged relative to three groups: Clinical supervisors, BSC/MT staff and change agents (TSS, parents, teachers, etc.). Coordination of clinical support and motivation were important themes among clinical supervisors; issues regarding motivation, and issues related integrating self-management on a case by case basis were the most salient issues among BSC/MT staff, and issues of “buy in” and contextual fit were important themes for parents, teachers, TSS and other change agents.

**Question Three**

*Was the training and intervention model successful in its efforts to provide effective behavioral treatment to children and adolescents with ADHD?*
In order to determine if the training and intervention model was successful in its efforts to provide effective behavioral treatment to children and adolescents with ADHD, direct observational data from self-monitoring sheets or data collection sheets were analyzed between baseline/pre-intervention data and intervention data were reviewed: demographic information was collected through review of the most current treatment plans and barriers to treatment were documented through the most current treatment plans and psychological evaluations as well as through supervision documentation. Several ratings of social validity were also collected along with anecdotal reports in order to gauge the social acceptability of the intervention.

Table 1 and 2 provide the demographics of the 12 cases that were part of the outcomes study. Table 1 includes the age, sex, service setting, diagnoses and medication for each individual in the study, and Table 2 includes the level of services authorized, length of overall service in the program and any noted barriers to treatment. Ages of the children and adolescents ranged from 5 to 13 years of age. Nine of the children in the study were males and 3 were females. The setting for the intervention was very evenly split at 6 cases in the home and 5 in the school with 1 setting including a day-care. As previously mentioned most of the children in the study had comorbid diagnoses with ADHD except two cases. This included 6 cases with a comorbid mood disorder diagnosis (i.e. anxiety, bipolar, etc.). Five had a comorbid disruptive behavior diagnosis (i.e. oppositional defiant disorder), and there were 3 cases with comorbid Asperger’s disorder/autism spectrum disorders. All but 3 cases were taking some form of psychotropic medication, with 7 cases on medication prescribed directly for ADHD.
symptoms in the form of psychostimulants (i.e. Ritalin, Adderall) or nonstimulants (i.e. Strattera and Clonidine).

Services prescriptions for community behavioral health services among individuals in the study included the fact that all were receiving BSC service, with much fewer receiving TSS (3 cases) and MT services (3 cases). Generally, any TSS services authorized on a case are indicative of a more intense level of service provision. Length of stay ranged from 1-6.5 years, with most cases being in the program for at least 2 or more years.

Barriers to treatment are generally understood as factors outside the treatment that affect the progress on a case. Common reported barriers to treatment included lack of support and/or implementation of intervention by parents, teachers or other change agents (on 9 cases), custody issues between parents on a case, attendance issues in school and issues in which staff changed or were unavailable, leading to gaps in service (3 cases).

Table 1

Case Demographics

<table>
<thead>
<tr>
<th>Case #</th>
<th>Age</th>
<th>Sex</th>
<th>Diagnosis</th>
<th>Service Setting</th>
<th>Medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>F</td>
<td>Anxiety Disorder NOS, Disruptive Behavior ADHD Disorder</td>
<td>Home</td>
<td>Concerta 18 mg, Zoloft 25 mg, Ritalin 5 mg</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>M</td>
<td>ADHD</td>
<td>Home</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>12</td>
<td>M</td>
<td>Asperger's Disorder ADHD, Combined Type</td>
<td>School</td>
<td>Strattera 25mg</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
<td>M</td>
<td>Bipolar Disorder, ADHD, Anxiety Disorder, NOS</td>
<td>Home</td>
<td>Seroquel XR 75, Clonazepam .5 mg, Clonidine .1 mg, Lamotrigine 50 mg</td>
</tr>
<tr>
<td>Age</td>
<td>Gender</td>
<td>Diagnosis</td>
<td>Treatment Sites</td>
<td>Medications</td>
<td></td>
</tr>
<tr>
<td>-----</td>
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<td>----------------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>M</td>
<td>ADHD, Rule Out Generalized Anxiety Disorder, Oppositional Defiant Disorder, Mood Disorder NOS</td>
<td>Home</td>
<td>Adderall 15 mg, Tenex .15 mg, Vyvanse 30 mg</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>M</td>
<td>Asperger’s Disorder, ADHD, Anxiety Disorder NOS</td>
<td>School</td>
<td>Focalin XR 15mg, Zoloft 25mg</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>M</td>
<td>ADHD, Adjustment Disorder w/mix Emotional Disturbance</td>
<td>School</td>
<td>Ritalin 25 mg</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>M</td>
<td>ADHD, Disruptive Behavior Disorder NOS</td>
<td>Day Care</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>M</td>
<td>Pervasive Developmental Disorder NOS, ADHD</td>
<td>Home</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>F</td>
<td>ADHD</td>
<td>School</td>
<td>Vyvanse, Respridal, Tenex</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>M</td>
<td>ADHD, Oppositional Defiant Disorder, Rule out Bipolar NOS</td>
<td>School</td>
<td>Focalin 20mg, Tenex 5mg</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>F</td>
<td>ADHD Home, Mood Disorder NOS, Oppositional Defiant Disorder, Asperger’s Disorder, Parent Child Relational Problems</td>
<td>Home</td>
<td>Abilify 10mg, Vyvanese 50 mg, Intuniv 4 mg</td>
<td></td>
</tr>
</tbody>
</table>
Table 2

*Case Demographics*

<table>
<thead>
<tr>
<th>Case #</th>
<th>Service Prescription (weeks)</th>
<th>Length of Service</th>
<th>Treatment Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3 hours BSC</td>
<td>2.7 yrs.</td>
<td>None noted</td>
</tr>
<tr>
<td>2</td>
<td>4 hours BSC</td>
<td>1 yrs.</td>
<td>None noted</td>
</tr>
<tr>
<td>3</td>
<td>3 hours BSC</td>
<td>5.4 yrs.</td>
<td>Teacher Support</td>
</tr>
<tr>
<td></td>
<td>2 hours MT</td>
<td></td>
<td>Across Classes</td>
</tr>
<tr>
<td></td>
<td>10 TSS at School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>3 hours BSC</td>
<td>3.5 yrs.</td>
<td>Parent Consistency</td>
</tr>
<tr>
<td></td>
<td>2 hours MT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>4 hours of BSC</td>
<td>1.5 yrs.</td>
<td>Parent Consistency</td>
</tr>
<tr>
<td></td>
<td>2 hours MT</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 hours TSS home</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>4 hours of BSC</td>
<td>1 yrs.</td>
<td>School consistency</td>
</tr>
<tr>
<td></td>
<td>2 hours MT</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>27.5 hours TSS school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>3 hours BSC</td>
<td>2 yrs.</td>
<td>Custody Issues, Parent Issues</td>
</tr>
<tr>
<td></td>
<td>2 hours MT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>3 hours of BSC</td>
<td>2 yrs.</td>
<td>Staffing Issues</td>
</tr>
<tr>
<td></td>
<td>10 hours TSS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>3 hours MT</td>
<td>6.6 years</td>
<td>Parent Consistency, Effective Reinforcement</td>
</tr>
<tr>
<td>10</td>
<td>3 hours of BSC</td>
<td>6.5 years</td>
<td>Parent Issues, Grief/Loss of family Member, Disabled Sibling</td>
</tr>
<tr>
<td></td>
<td>5 hours TSS school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>3 hours of BSC</td>
<td>1.3 years</td>
<td>Staffing Issues, School consistency</td>
</tr>
<tr>
<td></td>
<td>15 hours TSS school</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 hours home</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3 provides a summary of means of directly observed behaviors at baseline and intervention phases for each case in which interventions were implemented. Cases in which self-management interventions were successfully implemented (10 of 12 cases) generally followed an A-B design, including baseline and intervention phases. One small exception occurred in Case #3 in which the intervention was naturally withdrawn for several days due to staffing issues, but was then reinstituted. For most cases such as case #1 and case #2 only 1 behavior was targeted, but on several others, such as case #6 multiple behaviors were targeted with regard to self-management interventions. Operational definitions for each behavior targeted per case are also provided in Table 4.

Table 3

Baseline and Intervention Behavior Means

<table>
<thead>
<tr>
<th>Case #</th>
<th>Baseline Mean</th>
<th>Intervention Mean</th>
<th>Target Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>.46</td>
<td>Frequency of Tantrums</td>
</tr>
<tr>
<td>2</td>
<td>3.38</td>
<td>.62</td>
<td>Frequency of Inappropriate Waiting</td>
</tr>
<tr>
<td>3</td>
<td>18</td>
<td>22.93</td>
<td>Intervals of On Task Behavior</td>
</tr>
<tr>
<td>3</td>
<td>.63</td>
<td>.48</td>
<td>Intervals of Arguments</td>
</tr>
<tr>
<td>3</td>
<td>1.25</td>
<td>.44</td>
<td>Intervals of Tantrums</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>1.68</td>
<td>Task Completion</td>
</tr>
<tr>
<td>5</td>
<td>1.04</td>
<td>.83</td>
<td>Inappropriate Expression of Frustration</td>
</tr>
<tr>
<td>Case</td>
<td>Target Behavior</td>
<td>Operational Definition</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-------------------------</td>
<td>----------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Tantrums</td>
<td>Slams doors, throws things, stares, yells, or cries.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Inappropriate Waiting</td>
<td>Screaming or whining when asked to wait.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>On Task Behavior</td>
<td>Compliance with classroom routines, attending to instruction, completion of assigned tasks, and overall compliance to adult demands.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arguments</td>
<td>Physically interacting with others in a way that is too intense or inappropriate for the given contexts. Examples include physically striking or pushing a peer or family member, not displaying appropriate social reciprocity, or lying down or sitting in an unsafe location. Examples of this behavior are most often escalated through play with the brother, beginning as play but escalating to rough play.</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-----------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Tantrums</td>
<td>Physically stomping the floor with his feet, crying with screaming, making threats, throwing materials (with no threat of harm to others), plopping to the floor, and generally refusing to move or transition.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Task Completion</td>
<td>Performs chores without having his mother instruct him how, anytime he initiates an activity on his own without prompting, or anytime that he completes daily routines without prompting from adult.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Inappropriate Expression of Frustration</td>
<td>Includes times when he yells, screams, cries, drops to the ground, throws things, destroying property or becomes self-injurious.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Starting Tasks</td>
<td>When presented with an assignment, starts the activity without protests, refusals, or off-task behaviors in 2 minute and within 2 prompts.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>On-Task Behavior</td>
<td>Starts a task; he remains on task for 15 minutes within 2 prompts back to task.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Off-Task Behavior</td>
<td>Anytime child is not engaged in a task given, is out of area, playing with objects, off topic, avoiding tasks.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Raising Hand</td>
<td>Raises hand to ask a question or make a statement.</td>
<td></td>
</tr>
</tbody>
</table>
### Baseline Phases

Baseline phases on each case were generally characterized by data collection of the problem behavior and or skill deficits and included existing intervention plans focusing on external reinforcement for desired and functionally equivalent replacement behaviors (based on results of a functional behavior assessment). Problem or challenging behaviors included:

<table>
<thead>
<tr>
<th>#</th>
<th>Behavior</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Calling Out</td>
<td>Calls out or gets out of his seat to get the teacher’s attention.</td>
</tr>
<tr>
<td>6</td>
<td>Self-Regulation</td>
<td>Requests a sensory break, replacement strategy/tool for sensory seeking behaviors, or uses a competing behavior.</td>
</tr>
<tr>
<td>6</td>
<td>Self-Stimulatory Behavior</td>
<td>Excessive verbalization about preferred topic/noises/tics in the home, school, and community.</td>
</tr>
<tr>
<td>7</td>
<td>Behaviors on Self-monitoring Sheet</td>
<td>Use coping skills such as deep breathing, self-talk, squish ball &quot;fidgets&quot; appropriately, raising hand to ask a question, on-task behavior such as eyes on work or teacher, follows teacher directions.</td>
</tr>
<tr>
<td>8</td>
<td>Behaviors on Self-monitoring Sheet</td>
<td>Followed directions, asked the same question only one time, used kind words, no tantrums which included yelling and screaming and dropping to the floor.</td>
</tr>
<tr>
<td>9</td>
<td>Non-Compliance</td>
<td>Not responding to adult directives within the first prompt.</td>
</tr>
<tr>
<td>9</td>
<td>Off-Task</td>
<td>When routine tasks such as homework, cleaning room, emptying the dishwasher, require repeated prompts in order to complete the task.</td>
</tr>
<tr>
<td>10</td>
<td>Tantrums</td>
<td>Yelling, using offensive language, making threats of physical aggression towards peers and siblings.</td>
</tr>
</tbody>
</table>
behaviors represented behaviors that were observable in the environment that the child’s team had decided to work on decreasing. These behaviors were typically those putting the child at-risk for out of home placement and could include disruptive and off-task behavior. Desired and functionally-equivalent responses are generally characterized as prosocial and adaptive types of behaviors such as taking a break, task-completion and on-task behavior.

In each intervention phase the self-management intervention was implemented in the form of self-monitoring as an adjunctive component to the comprehensive intervention plan. This phase included a training phase over 1-2 days in which individuals on the case demonstrated the ability to self-monitor their behavior accurately (see appendix B for teaching steps).

Data available on the ten cases reflected some sort of frequency data per set amount of time (i.e. frequency of tantrums per 2-hour interval) except for one case which utilized interval data (Case #3). The means represented in Table 3 were calculated, utilizing available behavioral data before and after the self-management interventions were implemented for each case. According to the data on Table 3, all but one of the problem behaviors targeted had a lower mean during the intervention phase, compared with the baseline pre-intervention phase. Also, all but 1 skill targeted for increase had a higher mean during the intervention phase compared with baseline/pre-intervention.

Outcomes for each case were measured utilizing the following metrics: data trend, mean percent change, single case effects size, PAND (percentage of all non-overlapping points of data and service level following intervention). Individual case outcomes from baseline to intervention phases are outlined in Table 5 and Table 6. Table
5 represents outcomes for skills to be increased, and Table 6 lists outcomes for decrease of challenging behaviors.

In regard to skill increases, 8 of 9 behaviors or 89% across all 5 cases represented an increasing trend from baseline to intervention phases. (See Figures 1-13) A mean percent increase of at least 60% was found for 5 of 7 (71%) behaviors, with only on-task behavior for case #3 having a relatively smaller mean percent increase of 22.9% and an actual decrease in Raising Hand behaviors for 1 of 4 skills tracked for Case #6.

Effects sizes were calculated for all data sets between baseline and intervention phases, utilizing Hedge’s G* adjusted due to smaller and uneven numbers of data points between phases. Effect sizes were relatively strong for 6 of 7 behaviors ranging from $G = .88$ to $G = 5.65$. PAND scores were variable with only 3 of 6 behaviors at 70% or more, indicating a higher amount of overlap between data points at baseline compared with intervention. Service prescription or the amount of hours or services authorized following the implementation of self-management intervention was stable on 2 cases but decreased on the other 3 cases.

Table 5

*Case Outcomes for Skill Increases*

<table>
<thead>
<tr>
<th>Case #</th>
<th>Behavior</th>
<th>Data Trend</th>
<th>Mean% Change</th>
<th>Hedge’s G* (Effect Size)</th>
<th>PAND Level</th>
<th>Service Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>On-Task Behavior Increase</td>
<td>22.9% Increase</td>
<td>.88</td>
<td>71% Decreased</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Task Completion Increase</td>
<td>68% Increase</td>
<td>1.00</td>
<td>60% Decreased</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Starts Task Increase</td>
<td>136% Increase</td>
<td>2.65</td>
<td>23% Stable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>On-Task Increase</td>
<td>300% Increase</td>
<td>2.75</td>
<td>29% ------</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Case outcomes of decreasing challenging behaviors included 10 of 11 behaviors or 91% across all 7 cases, showing a decreasing trend from baseline to intervention phases (see Figures 1-13). A mean percent decrease of at least 60% was found for only 4 of 10 (40%) of behaviors but in 4 of 7 cases. Smaller mean percent change decreases were found for Non-compliance (29%), Off-Task Behavior (33%), Argumentative behaviors on case #3 (26% decrease), Frustration-related behaviors on Case #5 (22%) and Self-Stimulatory behaviors on Case #6 (11%). Calling Out behaviors on Case #6 remained virtually unchanged from baseline to intervention (1.3% decrease), and Off-Task behavior increased by 100% after the implementation of the self-management intervention.

Effects Sizes were also calculated for all challenging behavior data sets between baseline and intervention phases utilizing Hedge’s G* adjusted. Effect sizes were relatively strong for decreasing challenging behaviors for 7 of 10 behaviors ranging from $G = -.43$ to $G = -2.85$. A small effect size was found for decreasing self-stimulatory behavior on Case #6, but a large effect size was found for the increase of Off-Task behavior on Case #6 following the implementation of the self-management intervention. PAND scores were again variable with only 4 of 10 behaviors at 70% or more, indicating a higher amount of overlap between data points at baseline compared with intervention.

<table>
<thead>
<tr>
<th></th>
<th>Behavior</th>
<th>Change</th>
<th>Percent Change</th>
<th>p-Value</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Raising Hand</td>
<td>Decrease</td>
<td>2%</td>
<td>.07</td>
<td>76%</td>
</tr>
<tr>
<td>6</td>
<td>Self-Regulation</td>
<td>Increase</td>
<td>309%</td>
<td>2.6</td>
<td>94%</td>
</tr>
<tr>
<td>7</td>
<td>Replacement</td>
<td>Increase</td>
<td>241%</td>
<td>5.65</td>
<td>36% Stable</td>
</tr>
<tr>
<td>8</td>
<td>Prosocial</td>
<td>Increase</td>
<td>---</td>
<td>-----</td>
<td>--- Stable</td>
</tr>
</tbody>
</table>

The table above shows the changes in behavior from baseline to intervention phases. The p-values and effect sizes provide insights into the significance and magnitude of the changes observed.

Further analysis and interpretation of these data and their implications for practice are discussed in the following sections.
Service prescription or the amount of hours or services authorized following the implementation of self-management intervention were decreased on 4 of the 7 cases, with services on the remaining case remaining stable following intervention.

Table 6

*Case Outcomes for Decrease of Challenging Behaviors*

<table>
<thead>
<tr>
<th>Case #</th>
<th>Behavior</th>
<th>Data Trend</th>
<th>Mean% Change</th>
<th>Hedge’s G* (Effect Size)</th>
<th>PAND</th>
<th>Service Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tantrums</td>
<td>Decrease</td>
<td>77% Decrease</td>
<td>-2.85</td>
<td>100%</td>
<td>Decrease</td>
</tr>
<tr>
<td>2</td>
<td>Inability to Wait</td>
<td>Decrease</td>
<td>81% Decrease</td>
<td>-2.29</td>
<td>83%</td>
<td>Decrease</td>
</tr>
<tr>
<td>3</td>
<td>Arguments</td>
<td>Decrease</td>
<td>23% Decrease</td>
<td>-.82</td>
<td>91%</td>
<td>Decrease</td>
</tr>
<tr>
<td>3</td>
<td>Tantrums</td>
<td>Decrease</td>
<td>64% Decrease</td>
<td>-.43</td>
<td>15%</td>
<td>------</td>
</tr>
<tr>
<td>5</td>
<td>Frustration</td>
<td>Decrease</td>
<td>20% Decrease</td>
<td>-.13</td>
<td>30%</td>
<td>Decrease</td>
</tr>
<tr>
<td>6</td>
<td>Off Task</td>
<td>Increase</td>
<td>110% Increase</td>
<td>1.2</td>
<td>29%</td>
<td>Stable</td>
</tr>
<tr>
<td>6</td>
<td>Calling Out</td>
<td>Decrease</td>
<td>1.3% Decrease</td>
<td>-.03</td>
<td>52%</td>
<td>------</td>
</tr>
<tr>
<td>6</td>
<td>Self-Stim.</td>
<td>Decrease</td>
<td>11% Decrease</td>
<td>-.03</td>
<td>47%</td>
<td>------</td>
</tr>
<tr>
<td>9</td>
<td>Non-comp.</td>
<td>Decrease</td>
<td>29% Decrease</td>
<td>-.89</td>
<td>67%</td>
<td>Stable</td>
</tr>
<tr>
<td>9</td>
<td>Off Task</td>
<td>Decrease</td>
<td>33% Increase</td>
<td>-1.4</td>
<td>73%</td>
<td>------</td>
</tr>
<tr>
<td>10</td>
<td>Tantrums</td>
<td>Decrease</td>
<td>---</td>
<td>-----</td>
<td>---</td>
<td>Stable</td>
</tr>
</tbody>
</table>

Generally, demographic variables such as comorbid diagnosis, medication, age, gender, service level, length of services and setting did not appear related to the effectiveness of the intervention on a case by case basis. For example, children and adolescents made strong gains on all cases either in the reduction of a problem behavior
or in the increase of a skill regardless of whether or not services were in the home and school, comorbid diagnosis such as mood disorders or autism spectrum were present, level of services or length of services varied, the presence or absence of medications and the age or sex of the child. One notable exception was on Case #5 in which the decrease in the frequency of frustration behaviors was only by 20% and with a small effect. Nonetheless, services were to be decreased following the use of the intervention.

**Social Validity.** Social validity data were collected anecdotally through ongoing discussions between change agents, BSC/MT staff and other team members. Additional data were collected on several cases formally through the Children’s Intervention Rating Profile (CIRP) (Turco & Elliot, 1986) and/or the Intervention Rating Profile (IRP) (Martens, Witt, Elliott, & Darveaux, 1985). These measures often indicate if an individual believes the intervention was effective and is satisfied with it (see appendices C and D). The results indicated scores by parents well above the threshold of 75 (indicating high acceptability). Scores of 4 or greater on negatively worded items and 2 or greater on positively worded items (indicating acceptability) for each question on the CIRP typically indicate acceptability of the intervention as rated by children /adolescents. These scores were more variable with 2 of the 4 children surveyed indicating, for example, that utilizing self-management was not helpful; they did not like the intervention and it seemed, generally, not a good intervention to use with others. At least one hypothesis for lower social validity ratings of the intervention among children (as opposed to parents) may have involved some variation in other procedures added to individual cases by change agents such as parents. For example, for case #7 the BSC staff discovered that one parent had been using the self-management intervention to
deliver punitive consequences outside the scope of the intervention plan after the school day. This context may have been related to negative ratings of the intervention by the child, which indicated the intervention did not help him or that he did not like it.

**Question 3 Summary.** Ten of the 12 cases in which implementation of the self-management intervention was attempted were able to implement the intervention successfully. Of those ten, direct observational data indicated primarily large to moderate treatment effects, corresponding mean percent change and trends across all cases in decreasing at least one challenging behavior or increasing one prosocial skill. Demographic variables appeared unrelated to the improvement on these cases; however, barriers did affect the consistent use of the intervention across at least two cases in which positive outcomes were observed (Case# 7 and Case #8). Social validity ratings as measured by the IRP indicated that the self-management interventions were desirable to change agents although they were less desirable to the individuals on the case in which they were implemented.
Chapter 5

Discussion

In conducting this study, an analysis of the implementation of a self-management intervention model for individuals with ADHD in a community behavioral health setting, the goal was to answer the following questions: 1. What process was used in the development and implementation of self-management interventions into the existing clinical model for children and adolescents with ADHD? 2. What were barriers and themes encountered by different groups in training and implementation of self-management interventions for this population? 3. Was the training and intervention model successful in its efforts to provide effective behavioral treatment to children and adolescents with ADHD? The data from Questions 1 and 2 provide qualitative information to better understand development, implementation, barriers and themes related to utilizing a self-management, focused intervention model for children diagnosed with ADHD in a community behavioral health program. Question 3 provides quantitative data to illustrate the positive clinical outcomes associated with utilizing this intervention approach. The following presents a summary of both the qualitative and quantitative findings of the present study.

Summary of Qualitative Findings

The implementation of the model followed a stepwise process in which three phases were identified in this process of program implementation: 1) a needs identification phase, 2) a development phase and 3) an implementation phase.

The needs identification phase could best be described by recognition of both internal (program effectiveness) and external needs (decreases in service levels) in the
program as well as the need to integrate current information on effective interventions for ADHD into the existing clinical model of the program. The clinical supervision team is ever-updating and expanding the dissemination of intervention approaches; however, the factors related to choosing interventions that would address issues of treatment integrity and of decreases in service authorizations helped to propel self-management as the optimal intervention on which to focus.

During the development phase, the motivation to further develop a self-management model was motivated by part of the clinical supervisor’s job description, which includes conducting outcomes studies as well as the continued review of relevant literature related to ADHD and evidence-based interventions. This motivation led to the development of the initial self-management in-service and resource materials.

The implementation phase can best be characterized as the actual training, followed by the implementation of the intervention model across the 12 cases in the program. Logistical concerns regarding coordinating the training as well as a more clearly focused follow-up support were seamlessly interwoven into the existing structure already set up in the program to provide BSC/MT staff supervision.

Themes and barriers developed throughout the project for the following groups: clinical supervisors, BSC/MT staff, and change agents such as parents, teachers, TSS and other professionals. For the clinical supervisors, themes were related to case issues regarding ADHD cases included in the project; however, the chief focus and concern related to ways in which to provide clinical support for the project, considering limitations of clinical supervisors’ time and resources. Discussion and subsequent problem-solving strategies developed weekly at supervision meetings were vital to
overcoming these barriers. The solution to have a lead clinical supervisor to help support a greater number of the focused aspects of integrating self-management interventions on a case by case basis seemed to be a solution; this was ultimately effective. Overall, however, it may be that more BSC/MT staff may have implemented the strategy on cases had there been more clinical support available to recommend and encourage a greater focus of self-management on all ADHD cases in the program. Because BSC/MT staff are independent contractors assigned to clinical cases, there is often autonomy on their part in the selection of various evidence-based procedures to treat clinical problems on their cases for individuals with ADHD or otherwise.

Probably the most significant themes and barriers for the program were related to the BSC/MT staff. These staff members were the most vital part of the project because they were actually responsible for the case by case implementation of the self-management interventions into their existing cases. The themes of the BSC/MT’s motivation were of paramount importance on the project because these directly influenced their ability to integrate self-management interventions into their existing intervention plans. Careful communication about the clinical materials, the offers of extra support and performance feedback and respect for the professional time of BSC/MT staff by the clinical supervisors appeared equally critical to staff motivation. Again, because they are fee for service workers, BSC/MT staff members are not necessarily compensated for increasing their knowledge and skills regarding new interventions. Because of this, asking many staff to go beyond “intervention as usual” can sometimes become a slow process without post training follow-up. It was specifically the extra support following training that appeared a critical support, based on anecdotal reports
from BSC/MT staff. Indeed, research on in-vivo performance feedback (i.e. Fleming and Sulzer-Azaroff, 1989) has demonstrated that in-service training followed by performance feedback can enhance behavioral intervention skills of change agents.

Other themes relative to ensuring accurate data collection and working through barriers related to individual cases are issues that BSC/MT staff members encounter regularly on all cases. In regard to data collection, for example, all BSC/MT staff members in the program, in general, receive specific skills training on working to ensure accurate data collection, writing observable operational definitions, among other things. Also, self-management intervention integrity was bolstered by the use of a procedural integrity checklist for teaching self-monitoring. These checklists outlined the essential components of teaching this skill to the child or adolescent (see Appendix B).

As expected, BSC/MT feedback indicated that utilizing self-management interventions actually provided an alternative way to work around difficulties, which included getting data collection from parent and teachers, and others, in a way that would work around difficulties in transferring interventions skills to change agents. For example, on cases in which external contingencies for positive reinforcement were entirely managed by teachers or parents on cases, self-management interventions involved less effort on the part of this group and thus was a welcomed approach on many cases. It is not surprising that 10 of the 12 cases reported some sort of barrier to intervention implementation as external barriers outside the actual intervention; these have been reported anecdotally as the variable which most often inhibits progress on cases in the program. Typical barriers were present among the 12 cases including, and at the forefront, consistency with intervention implementation among parents, teachers, TSS
staff and other professionals. In general, case progress within the community behavioral health program is typically tempered by this barrier and the individual case outcomes should be viewed within this context.

Again, even though intervention consistency is typically a common barrier, it was perhaps more manageable in the current study. This may have been related to the fact that agents were generally responsible for less data collection and reiteration of the desired behaviors for each child because these were often reflected on the self-monitoring sheets. Indeed, anecdotal reports and several social validity ratings from parents indicated high levels of satisfaction with the intervention on several of the cases sampled.

Finally, even though there were barriers to intervention, progress was reported on all cases; 10 of the 12 cases progressed to the point of some level of consistent implementation, leaving only two cases in which the individual did not make some clinical improvement and acquire an ability to self-monitor his or her own behavior. This data, however, could be misleading because the choice in implementing the self-management intervention on ADHD cases was at the discretion of the BSC/MT staff. Thus, it may be that many of the cases in which BSC/MT staff did not elect to utilize the intervention and seek support from the clinical supervisory staff were done because of existing barriers and/or pre-conceived notions of additional ones.

Themes and barriers related to parents, teachers and other change agents were related to recognizing and addressing cultural and contextual issues for each case in order to support intervention “buy in” and ultimately contribute to change agents who would be open to training and support. As mentioned, the BSC/MT staff are given much support and training in transferring intervention skills to change agents; however, barriers still
tend to persist throughout all cases within the community behavioral health program. Strategies including psychoeducation for the parents and the children and adolescents themselves helped to alleviate both contextual culture barriers as well as increased buy-in. Other important strategies included more frequent progress monitoring reviews with change agents, and communication regarding the benefits both to the client and to change agents regarding use self-management interventions.

**Summary of Quantitative Findings**

The most important outcome of the project was the actual progress monitoring of the individual cases in which self-management interventions were implemented. Even before reviewing such data it is important to note that of the 10 cases in which the intervention was utilized, all ten children were able to self-monitor and self-evaluate independently, as evidenced by self-monitoring/self-evaluative sheets. This is an important note because the ability to self-monitor is a key neuropsychological deficit associated with ADHD as a disorder (Barkley, 1997). Thus, explicit instruction and skill acquisition of monitoring one’s behavior in the moment directly addressed a well-documented deficit of the disorder.

In reviewing the direct observation data it is clear that each case in which the intervention was implemented made at least some progress across one or more challenging behaviors or skills. In the current study, the self-management intervention consisted of teaching the child or adolescent independent self-monitoring and self-evaluation. The data-based outcomes of the study are consistent with the increasing amount of literature documenting the effectiveness of self-management interventions (Hinshaw & Melnick, 1992; Barry & Haraway, 2005; Reid et al., 2005) as well as
literature demonstrating the effectiveness of self-management interventions combined with a multi-element intervention plan with a function-based treatment package (Star et al., 2006, Kern et al., 2001).

Of the ten cases in which the self-management interventions were implemented for at least several months, an increasing or decreasing trend (depending on whether or not it involved challenging behavior reductions or skills acquisition) was apparent for at least one behavior for all 10 cases (See Figures 1-10). Further, 7 of the 8 cases included mean percent changes of at least 60% and up to 300% and large effect sizes (at least .88) in regard to decreases for at least 1 challenging behavior and/or increases for a prosocial skill (See Tables 5 and 6). Although baseline data were not available for Case #8, positive gains were made in the percentage of prosocial behaviors exhibited on the child’s self-management sheet until the intervention was halted due to staffing issues. For example, the data trend for skills acquisition was increasing (an average of 89% scores for prosocial behaviors). Similarly, although only one baseline data point was present for case 10, a decreasing trend in tantrum behaviors was noted over time (see Figure 13).

The PAND was under 70% for 10 of the 17 behaviors tracked from baseline to intervention, indicating a higher amount of overlap between baseline and intervention data points. Overlap between baseline and intervention phases can be interpreted as less than optimal because it reflects less change in the levels of behavior between phases; however, this may be due to smaller ranges between data sets on many of the behaviors tracked for each case.
Finally, 5 of 10 cases not only made behavioral progress, but also had service decreases recommended. Decreases in service level is typically a positive sign that a case in the community behavioral health case is progressing toward discharge to a least restrictive or service (i.e. outpatient) or without service altogether.

It is noteworthy that on two cases multiple behaviors were targeted in relation to the self-management intervention, with some varying outcomes within the cases. For example, for case #3, at least modest improvement was seen over decreasing Argument behaviors and Tantrum behaviors and increasing On-task behaviors with mean percent changes above 20% and effect sizes of at least .4 (See Table 5 and Table 6). However, for Case #6 only 2 of the 6 behaviors, Starting Tasks and On-task behaviors showed strong improvement compared with baseline (Mean percent changes of at least 100% and effect sizes of 2.6). Raising Hand, Calling Out and Self-Stimulatory Behavior reflected small to little change from baseline (i.e. .07 effect sizes or less), and Off-Task behavior actually increased significantly (110% increase in mean percent change) following intervention implementation (See Table 4 and Table 5). It may be hypothesized that more than 2 or 3 behaviors may be too many to initiate for some cases when implementing self-management interventions, and that the likely remedy would be to work on fewer behaviors to be self-monitored and to be reinforced for behavior reduction/skill enhancement.

Also of note is the fact that Cases #3 and #6 were cases in which the children were diagnosed both with ADHD and with Asperger’s disorder. This may suggest that the complexity of the combination of these disorders presented multiple concerns that warranted immediate focus, as opposed to the other cases that did not have a comorbid
ASD diagnosis. For example on Case #6, behavioral symptoms typical of children with ADHD (i.e. Off-Task behavior) (Barkley, 1998) were tracked along with Asperger’s specific behaviors (i.e. Self-Stimulatory behaviors) (Goldstein, Naglieri, Ozonoff, 2009). Thus, the complexity of these cases may be related both to the targeting and to the tracking of multiple behaviors as well as some of the varying progress observed on Case #6 specifically.

Data from the present study clearly indicate that acquiring self-management interventions were associated with a large shift in the average occurrence both of challenging behaviors and of prosocial skills across the majority of the cases in the project. This was reflected in the large amount of difference in such behavior during the implementation/intervention phase, compared with baseline. The self-management focused model that was utilized included a functional-based, multi-element approach with the focus of a self-management intervention, based on the work of Shapiro & Cole (1984) and consistent with the intervention used by Guresko-Moore et al., (2006 ) & Guresko-Moore et al., (2007) in utilizing self-management to improve behavior in children with ADHD.

Ultimately the self-management interventions utilized in the current study reflected teaching self-monitoring and self-evaluative skills as outlined in the steps on the procedural integrity checklist for training and implementation (see Appendix B). Key elements of the self-management intervention included a training component in which the child was to set goals, the child and BSC/MT reviewed behavioral expectations, reviewed the importance of self-regulation, determined reinforcement, created a self-monitoring checklist and engaged in opportunities for practice and assistance in utilizing the sheet.
During implementation, key components included prompting and reinforcement for self-monitoring, review and feedback from professional/parent of the self-monitor sheet, parameters for adjusting goals, and prompt fading procedures.

It should be noted that the following study followed an AB design on each case; therefore, causal relationships cannot be made; however, an association can be made in the behavioral progress achieved on each case following the implementation of the self-management intervention over time. In this type of setting clinical significance is of chief importance and withdrawal or reversal procedures to examine causal relationships would be impractical and unwarranted, given the context.

It is also useful to examine the effectiveness of the intervention across varying demographics because this provides information to directly inform future implementation of this approach across cases of varying demographics. Indeed the positive effects on behavior reduction across cases did not appear to be influenced by of such variables.

Demographic variables among the cases in the project varied across age, gender, setting, comorbid diagnosis, and the presence of medication. In the current project, self-management interventions were associated with improvement across these different variables. For example, the current study included children and adolescents, younger than 7 years of age, both male and female. Current literature reviews regarding the efficacy of self-management interventions with children and adolescents with ADHD have noted limitations of existing studies with children and adolescents, both male and female, under 7 and over 13 years of age (i.e. Reid et al., 2005). It may be worthy to note that one of the cases in which the intervention was not implemented was in the case of a 16 year old girl, who refused to participate in the intervention and any intervention,
which eventually led to a service recommendation for a higher level of service because of continued escalation of risky behavior.

Settings for intervention implementation from case to case were, for the most part, split between home and school; one setting included a day-care (see Table 1). Positive outcomes observed in the home in particular help to expand on the current literature, which had demonstrated positive intervention outcomes chiefly in school settings only (Reid et al., 2005; Barry & Harraway, 2005).

The current study also addressed limitations within the literature regarding questions of the official diagnosis of ADHD among participants in some of the studies (as reviewed in Barry & Haraway, 2005). All twelve cases in the current project had a current diagnosis of ADHD from a PA licensed psychologist as documented in a psychological evaluation within the past 12 months.

In addition to ADHD comorbid axis I diagnoses were apparent on all but 1 of the cases in the project. As previously mentioned, multiple axis I diagnoses are quite often the norm for cases receiving community behavioral health, because the program represents a higher intensity of service for complex cases in which the child or adolescent is at-risk for out-of home placement. As such the positive outcomes on the current cases also illustrate a relation between self-management interventions and cases which have co-occurring disorders such as autism, and emotional behavioral disorders. For example, 2 of the 10 case which showed clinical improvement following the self-management intervention included diagnoses of autism (specifically Asperger’s disorder); 3 of 10 cases had a disruptive behavior disorder (i.e. oppositional defiant disorder), and 5 of 10 an affective disorder (see Table 1). Clinical improvement for individuals with these types
of diagnoses is also consistent with the general and specific literature on the efficacy of self-management interventions for children with emotional and behavioral issues (Reid et al., 2005; Maggin et al., 2012) as well as with autism (Lee, Simpson, & Shogren, 2007).

In regard to medication, at least 4 of the 10 cases with positive outcomes were on some form of psychostimulant medication for ADHD with an additional 2 cases on a non-stimulant medication (i.e. Straterra). These positive outcomes are consistent with current literature, which has documented the effectiveness of self-management interventions for children with ADHD both of whom were taking (Ajibola & Clement, 1995; Guresko-Moore et al., 2006) or not taking psychostimulant medication (Guresko-Moore, et al., 2007).

Program service levels and length of stay also did not appear related to case outcomes because these also tended to vary across cases. For example, cases in the current project showed improvement despite differing amounts and types of services. For example, some cases had BSC services only, yet others had MT and/or TSS as well. Also, some cases had been receiving services more than 6 years, but others had been in the program for only about 1 year (see Table 2). Thus, this approach was able to be effective regardless of scope and intensity of services recommended.

**Significance of the Results**

The current outcomes indicate the effectiveness of self-management interventions integrated into an existing clinical model in a community behavioral health program. In addition, a review of the phases, process and barriers related to program implementation, presents a model to an existing program to enhance clinical outcomes for children with
ADHD as well as directly addressing self-regulatory behavioral skill deficits, which are at the heart of the disorder (Barkley, 1998).

Principal barriers were also identified and means of addressing such barriers were discerned and examined; these included: having the clinical resources available to offer support to BSC/MT staff on individual cases for the project, BSS/MT motivation to integrate an additional intervention approach on their existing cases, securing “buy in” and intervention consistency among change agents such as parents, teachers and other staff.

Due to the pre-existing systems already in place in the community behavioral health program in general, clinical supervisors were able to capitalize on existing resources to help address these barriers. Some of these included utilizing weekly clinical supervisor meetings and monthly BSC/MT meetings to focus on the project; motivating and training BSC/MT staff and continually offering support training and consultation to BSC/MT staff, specifically regarding an increase in change agent “buy in” and consistency. Psychoeducation was identified by many BSC/MT staff as a chief contributor to increased consistency with many cases, specifically in regard to the neurobiological nature of the disorder. Given this information, other, similar mental health programs will be able to review the current project and anticipate how existing structures in their programs may aid in the integration of self-management interventions into their intervention approach and also to consider those systems and structures that may need to be created prior to implementation.

Successful case outcomes in the current study also indicate that the relevant literature, training and procedural aspects of self-management interventions are not only
grounded in the current research, but also carry external validity as demonstrated in the current study. Indeed, successful individual outcomes were noted on all cases in which the intervention was implemented along a wide-range of demographics. Current positive behavioral outcomes in the present study demonstrate, at the least, an association between the use of self-management interventions in combination with a function-based multi-element intervention approach for children and adolescents with ADHD across different settings, sex, comorbid diagnosis, with and without medication in children, 5-13 years of age.

**Contribution to the field**

Again, a review of literature documented the paucity of research indicating the effectiveness of self-management interventions with children with ADHD along some specific demographics. Specifically, this included: females, children younger than 5 and over 13 years of age, interventions in the home setting, including individuals with a formally documented ADHD diagnosis, and intervention approaches incorporating self-management in a multi-element intervention approach (Reid et al., 2005). Indeed data from the current project provide evidence for the association between self-management interventions combined with a functional-based multi element approach and positive behavioral outcomes for children with ADHD which fit each of these underrepresented demographics. Further, the current study also represented cases in which children diagnosed with ADHD improved with and without medication as well as with comorbid mental health and/or a developmental disability such as Asperger’s disorder/Autism Spectrum Disorder. Finally, literature does exist highlighting the efficacy of self-management interventions with children with ADHD (Reid, et al., 2005); however, no
studies exist of which this author is aware, in which there is focus on the integration of this approach within the preexisting system of a community behavioral health program. Thus, both the qualitative and quantitative data presented in the current outcomes study provide strong evidence for the viability and potential efficacy of such an approach within similar contexts.

The intervention approach in the current study also highlights the importance of a more effective use of resources in the ever-changing world of behavioral healthcare. As state and federal social service budgets for children’s mental health shrink, clinical operations directors should be more inclined than ever to focus on utilizing interventions that provide the greatest effectiveness with the least amount of resources. Indeed self-management interventions fit this goal perfectly because their chief aim is to have the individual self-manage and evaluate his or her behavior, as opposed to relying on costly extra staff to constantly evaluate behavior and enact external contingencies. This is particularly true with individuals with ADHD because the current literature has documented the fact that such individuals will regress when behavior improvement is gained through a focus only on external methods of behavior management (Barkley, 1998). Thus, acquiring self-management interventions for a child with ADHD, may reduce the need for perpetual, external contingencies to be enacted artificially within a child’s future settings. Instead the focus can expand explicit teaching of criterion-based self-regulatory behaviors which build on previous skills.

Managed care funders, in particular, place heavy emphasis on effective service with minimal resources due to financial and to clinical concerns. For the current program, this is manifested as an emphasis on decreasing service and expediting
discharge to lower levels of care. Thus, it is noteworthy that 5 of the 10 cases in the current project were recommended to or have already decreased service levels following the intervention. Of the other 5 remaining cases in which intervention was successfully implemented, services were recommended to stay the same or they have done so already, indicating that no cases in which the intervention was implemented regressed to the point of needing additional levels of service or a more restrictive program placement altogether (i.e. residential placement).

**Study Limitations**

Again, the present outcomes represent archival data and reflect the implementation of the intervention in a very specific, applied setting, representing high external validity. The present study also provides an outline for the process and specific themes and barriers that can guide the integration of self-management into other community behavioral health programs. However, due to the nature of the study being action-based, the positive results and other related outcomes are best interpreted in the specific context of the current community behavioral health program in the study. Further, because the principal investigator interpreted much of the qualitative data in the current study, based on program documentation, some of this data may be less objective and open to varying interpretations by other professionals, especially from other disciplines.

Also, in regard to the more quantitative behavioral outcome data, it cannot be determined if progress was really the result of the intervention package (including self-management) because there was no comparison group or formal withdrawal or reversal procedures. Because the case data represent a series of single case (A-B) designs, they
are therefore subject to related methodological limitations. These include criticisms that methodology is considered quasi-experimental because there is no withdraw procedure to baseline and then back to treatment (ABAB) and thus can demonstrate only a correlational relationship as opposed to a causal relationship (Barlow and Hersen, 1984). The lack of removing the intervention in an AB design leaves the question of whether the intervention caused the client improvement or whether the client would have improved naturally or whether the improvement was due to a corresponding source of variance which occurred at the same time as the intervention implementation. Thus, it could be hypothesized that the children in the current study would have made progress with the previous clinical model in the absence of self-management interventions or perhaps that their behavioral reduction and skill acquisition would have occurred, regardless of any intervention at all through the passage of time.

Limitations of single-case design research in general (as opposed to group comparisons) include: an inability to generalize results from a single case without attempting to aggregate multiple studies; an inability to compare interventions (especially considering carry-over effects), and limited ability to uncover client/environment by treatment interactions in order to produce treatment information to match clients/environments to specific treatment interventions. (Nugent, 1996). The visual analysis methodology for results interpretation for single-case design has also been criticized for lacking established standards and for leading to high Type I error rates (Matayas & Greenwood 1990).

Of course, establishing rigorous experimental control was not in line with the purpose of the current study because self-management interventions with and without
function-based interventions and procedures have already been established in many more controlled studies as an effective intervention (i.e. Hinshaw & Melnick, 1992; Barry & Haraway, 2005; Reid et al., 2005 & Kern et al., 2001). Also, the current study did not hypothesize that self-management would be superior in terms of behavioral improvement, compared with the current generic behavioral intervention model in the current program. Instead it was postulated that self-management interventions would not only be as effective clinically to a model based traditionally on external contingencies only, but also ultimately be least restrictive, promote more conservation of resources and ultimately conclude with children on the cases acquiring increased self-regulation skills as a direct counter-point to the neurobiological deficits, which represent the hallmark of their disorder.

Another limitation of the current study includes a lack of data on data reliability. During implementation of the interventions on each case, BSC/MT staff reported anatomically that they engaged in reliability probes with change agents (parents, TSS, teachers, etc.) in regard to data collection and use of the self-management sheets. However, without tangible data, the reliability of such data can be called into question.

Finally, there was no implementation or data to demonstrate generalization of behavioral for the same case across multiple settings. It is important to remember that there was relatively little data on generalizability of treatment outcomes in studies demonstrating the efficacy of self-management for behavioral problems in children with and ADHD diagnosis (Reid et al., 2005).
Future Directions

Expansion of the integration of self-management interventions into the existing program was always a long-term goal of the current project. The information from the current study will be utilized to further increase the number of cases which include this intervention approach. Again, a difficulty during the implementation of the current study was the time and resources of BSC/MT staff who are independent practitioners and ultimately determine on a case by case basis what interventions to implement. As mentioned, it is possible that BSC/MT staff did not elect to utilize the intervention due to existing barriers or anticipated barriers. Given this reality it seems that a follow-up survey to all BSC/MT staff who did not implement this intervention on their cases would also yield helpful information regarding future implementation.

Data from the current study will also be utilized to increase ongoing support to BSC/MT staff through clinical supervision, through consultation and support meetings to utilize self-management on their cases when appropriate. Further, training on self-management interventions will be specifically integrated into the existing BSC/MT clinical orientation training they receive when starting to work with the program. During such training it will be highlighted as the recommended evidence-based practice for populations including children with ADHD. Recommendations will include the use of this intervention approach as early in a case as possible as well as the generalization programming for acquired skills across multiple settings. Positive outcome data from the current study will also be utilized and shared with BSC/MT staff and other families in order help articulate the rational for this approach.
As previously mentioned, self-management has robust treatment effects with other clinical populations including emotional behavioral disorders in general (Maggin et al., 2012) and autism spectrum disorders (ASD) (Lee et al., 2007). These findings are consistent with several of the cases in the current study which had comorbid ASD and emotional behavioral diagnosis (i.e. ODD, Mood disorder NOS, etc.). Thus, an expansion of this intervention approach would likely benefit cases with the current behavioral health program as well. Indeed, at the conclusion of this study approximately 6 ASD cases had already begun to implement or had been implementing self-management intervention in combination with other function-based behavioral interventions.

Because it is apparent that self-management intervention are so vital in teaching self-regulatory skills to individuals struggling with mental health issues and/or developmental disabilities, future work within the program should focus on developing criterion-referenced self-management skills directly tailored to the needs of the individual. This type of assessment to intervention methodology should help to ensure successful functioning in all environments, with the absence of challenging or maladaptive behaviors. Planning at the assessment phase could help determine such specific skills to acquire and self-manage, and progress could also be tracked at a larger level in terms of criterion-based acquisition of multiple self-management skills.

Current Status of the Program

At of the conclusion of the current project it is also worthy to note that BSC/MT staff from approximately 15 additional cases were in the process of utilizing some form of self-management interventions within the existing intervention plan on their cases.
Barriers to intervention continue to be similar to all cases within the program including contextual fit of the intervention, change agent consistency of parents, teachers and other professionals, BSC/MT motivation and resources and the availability of clinical supervisory support to help guide intervention plans across individual cases. Psychoeducation for parents and schools on ADHD and other mental health disorders and developmental disabilities have also been planned and increased because this was highlighted as an important intervention in increasing treatment consistency. Future outcome data will continue to be summarized and utilized to help make ongoing improvement to the overall clinical model of the program and ensure that the program continues to improve its clinical services and consumer outcomes.
References


Shifting from process goals to outcome goals. *Journal of Educational Psychology, 89*(1), 29-36.


**Appendix A**

Self-Management and ADHD Master Archive Data Form

Case #___________ Age:_____ Sex:___

Diagnosis: Axis I___________ Axis II___________ Axis III:___________

Service Setting(s):_________

Length of service:___________
Staff Changes (during time of baseline and intervention data collection):

Behavioral consultant training in self-management:

Behavioral consultant supervision meetings:

Challenging/Replacement Behavior: 1:__________

Baseline data points:
1.____
2.____
3.____
4.____
5.____
6.____
7.____

Intervention data points and/or Self-Management Data Sheet

1.____ 16.____
2.____ 17.____
3.____ 18.____
4.____ 19.____
5.____ 20.____
6.____ 21.____
7.____ 22.____
8.____ 23.____
9.____ 24.____
10.____ 25.____
11.____ 26.____
12.____ 27.____
13.____ 28.____
14.____ 29.____
15.____ 30.____

Challenging/Replacement Behavior: 2:__________

Baseline data points:
1.____
2.____
3.____
4.____
5.____
6.____
7.____

Intervention data points
1.____ 16.____
2.____ 17.____
3.____ 18.____
4.____ 19.____
5.____ 20.____
6.____ 21.____
7.____ 22.____
8.____ 23.____
9.____ 24.____
10.____ 25.____
11.____ 26.____
12.____ 27.____
13.____ 28.____
14.____ 29.____
15.____ 30.____

Challenging/Replacement Behavior: 3:_______________

Baseline data points:
1.____
2.____
3.____
4.____
5.____
6.____
7.____

Intervention data points
1.____ 16.____
2.____ 17.____
3.____ 18.____
4.____ 19.____
5.____ 20.____
6.____ 21.____
7.____ 22.____
8.____ 23.____
9.____ 24.____
10.____ 25.____
11.____ 26.____
12.____ 27.____
13.____ 28.____
14.____ 29.____
15.____ 30.____

Challenging/Replacement Behavior: 4:_______________

Baseline data points:
1.____
Intervention data points
1.____  16.____
2.____  17.____
3.____  18.____
4.____  19.____
5.____  20.____
6.____  21.____
7.____  22.____
8.____  23.____
9.____  24.____
10.____ 25.____
11.____ 26.____
12.____ 27.____
13.____ 28.____
14.____ 29.____
15.____ 30.____

Interobserver Agreement Checks
1.____
2.____
3.____
4.____
5.____

Procedural Integrity Checklist Data
1.____
2.____
3.____
4.____
5.____

Functional Behavior Assessment Summary:
Methods utilized:___________________________________________________
Functions described for target behaviors:________________________________
Antecedents identified for target behaviors:______________________________
Setting events identified for target behaviors:_____________________________
Functionally Equivalent responses______________________________________
Intervention Plan Summary:
Proactive Interventions: ______________________________________
Reactive Interventions: ______________________________________
Teaching Strategies: ______________________________________
Self-Management Intervention: ___________________________

Barriers to Treatment:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Ratings of social validity___________________________________________________

Appendix B

Self-Management Procedural Integrity Checklist (Training)

Client Name:
Observation Date/Time__________________________
Observee:__________________________ Observer:__________________________

+Correct Step Observed
-Incorrect or omitted step observed

<table>
<thead>
<tr>
<th>Training Steps</th>
<th>Performance</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Review with child current functioning in environment.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
B) A description of the importance of self-regulation

C) Discuss specific behaviors/responsibilities that are to be exhibited in the target setting.

D) Set up behaviors/goals with parent/professional and child’s feedback

E) Develop a menu of reinforcement when goals are met.

**Day 2**

F) Behavioral consultant creates a self-monitoring form reflecting target behaviors and goals

G) Behavioral consultant reviews with client -- operational definitions and corresponding examples for each item and how to total up the items on the sheet.

H) Consultant asks the child to generate examples of items on the checklist to assist the child in practicing using the form.

---

**Self-Management Procedural Integrity Checklist**

Client Name:

Observation Date/Time__________________________

Observee:__________________________  Observer:_____________________

+Correct Intervention Observed

-Incorrect Intervention Observed

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Performance</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acquisition/Implementation:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A) Child receives prompts as needed and is reinforced with verbal specific praise and desired items for accurate self-monitoring based on comparison to</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
parent or professional data collection for approximately 2 sessions or until there is 100% agreement with recording.

B) Parent/professional meets during a specified time interval with the child regarding the sheet in relation to the goals set and receives feedback and offers assistance.

C) Once goals are met for three consecutive sessions, they will be changed until all items on the checklist are completed at 100% for at least 4 consecutive days.

D) Following this criteria, the professional /parent will fade meetings to review the sheet to every other session and then to 1 time per week after 4 consecutive weeks of 100% completion of behaviors on the checklist.

E) Child turns in the self-monitoring sheet at the end of the session independently and receives verbal specific praise/desired tangible.

### Appendix C

**Intervention Rating Profile**

The purpose of this questionnaire is to help up evaluate the Self-management intervention. Please circle the number which best describes your agreement or disagreement with each statement.

1 = Strongly disagree  
2 = Disagree  
3 = Slightly disagree  
4 = Slightly agree  
5 = Agree
6 = Strongly agree

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<tbody>
<tr>
<td>1.</td>
<td>The Self-management intervention is a good way to manage behavior in the home.</td>
<td>1 2 3 4 5 6</td>
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<td>2.</td>
<td>Most families would find the Self-management intervention good to use for managing home behavior.</td>
<td>1 2 3 4 5 6</td>
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<td>3.</td>
<td>The Self-management intervention is effective in changing home behavior.</td>
<td>1 2 3 4 5 6</td>
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<td>4.</td>
<td>I would suggest the Self-management intervention to other families.</td>
<td>1 2 3 4 5 6</td>
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<td>5.</td>
<td>The behavior in the home is bad enough to use the Self-management intervention.</td>
<td>1 2 3 4 5 6</td>
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<td>6.</td>
<td>Most families would find the Self-management intervention good to use for managing behavior at home.</td>
<td>1 2 3 4 5 6</td>
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<td>7.</td>
<td>I am willing to use the Self-management intervention in the home.</td>
<td>1 2 3 4 5 6</td>
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<td>8.</td>
<td>The Self-management intervention does not have negative side-effects for children.</td>
<td>1 2 3 4 5 6</td>
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<td>9.</td>
<td>The Self-management intervention is good to use with a variety of children.</td>
<td>1 2 3 4 5 6</td>
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<td>10.</td>
<td>The Self-management intervention is similar to ways I have used before with my child at home</td>
<td>1 2 3 4 5 6</td>
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<td>11.</td>
<td>The Self-management intervention is a fair way to handle behavior problems at home.</td>
<td>1 2 3 4 5 6</td>
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<td>12.</td>
<td>The Self-management intervention is reasonable for managing home behavior.</td>
<td>1 2 3 4 5 6</td>
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<td>13.</td>
<td>I like the procedures used in the Self-management intervention.</td>
<td>1 2 3 4 5 6</td>
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<td>14.</td>
<td>The Self-management intervention is a good way to handle home behavior.</td>
<td>1 2 3 4 5 6</td>
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<td>15.</td>
<td>Overall, the Self-management intervention is helpful for the for use in the home</td>
<td>1 2 3 4 5 6</td>
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<td>16.</td>
<td>It is easy to use the Self-management intervention everyday.</td>
<td>1 2 3 4 5 6</td>
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</table>
17. The Self-management intervention has made it easier for me to manage my child’s behavior.

18. I would like to continue to use the Self-management intervention.

Appendix D
Tell Us What You Think!!!

1. The Self-monitoring Checklist is fair.
   I agree (1 2 3 4)  I do not (5 6)

2. The Self-monitoring Checklist may cause problems with my friends.
   1 2 3 4 5 6

3. There are better ways to deal with behavior than the Self-monitoring Checklist.
   1 2 3 4 5 6

4. The Self-monitoring Checklist is good to use with other kids.
   1 2 3 4 5 6

5. I like the Self-monitoring Checklist.
   1 2 3 4 5 6

6. I think the Self-monitoring Checklist helps me to do better at home.
   1 2 3 4 5 6

Figure 1. Case #1: Frequency of tantrum behaviors at home during a two-hour-interval (parent collected data).
Figure 2. Case #2: Inability to wait at home during a 1-hour interval (parent collected data).
Figure 3. Case #3: Intervals of on-task behavior at school (data collected by TSS).
Figure 4. Case #3: Intervals of arguments and tantrums per day at school (TSS data).
Figure 5. Case #4: Independent task completion per day at home (collected by client).
Figure 6. Case # 5: Inappropriate expression of feelings per day (data collected by TSS).

Figure 6. Case # 5 Inappropriate Expression of Feelings per Day

Baseline

Intervention

TP's Inappropriate Expression of Feelings per Day

Linear (TP's Inappropriate Expression of Feelings per Day)
Figure 7. Case #6: Average daily frequency per week of calling out behaviors at school for 5.5 hour intervals (TSS data).
Figure 8. Case #6: Daily average frequency per week of on-task behaviors at school for 5.5 hour intervals (TSS data).
Figure 9. Case #6: Daily average daily frequency per week of self-regulation behaviors at school for 5.5 hour intervals (TSS data).
Figure 10. Case #7: Average daily frequency of replacement behaviors in school per 2-hour interval (client/BSC data).
Figure 11. Case 8: Self-management percentages of prosocial behaviors per day for 2-hour intervals (Client data).
Figure 12. Case #9: Frequency of off task behavior and noncompliance during 2 hour sessions (MT data).
Figure 13. Case #10: Frequency of tantrums per day at home for two-hour intervals (BSC/parent data).