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Self-Management as an Evidence-Based Practice for Students with Autism Spectrum Disorder

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Abstract

Individuals with autism spectrum disorder (ASD) have difficulty generalizing learned behavior to varied environments with independence. Self-management for students with ASD is important both as a management tool and as a means to enhance students' quality of life by empowering them to control their own behavior. This paper reviews the effects of self-management as a positive intervention used to improve the social, behavioral, and academic performance of children diagnosed with ASD from early childhood through high school.

Keywords: Autism Spectrum Disorder, Self-Management, Evidence-Based Practice, Generalization, Behavior

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الإدارة الذاتية كممارسة قائمة على الأدلة للطلاب ذوي اضطراب طيف التوحد

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الملخص باللغة العربية

يواجه الطلاب المصابون باضطراب طيف التوحد (ASD) صعوبة في تعميم السلوك المكتسب على بيئات متنوعة تتمتع بالاستقلالية. تعد الإدارة الذاتية للطلاب المصابين بالتوحد مهمة كأداة إدارية ووسيلة لتحسين جودة حياة الطلاب من خلال تمكينهم من التحكم في سلوكهم. تستعرض هذه الورقة آثار الإدارة الذاتية كتدخل إيجابي يستخدم لتحسين الأداء الاجتماعي والسلوكي والأكاديمي للطلاب المصابين بالتوحد من الطفولة المبكرة حتى المرحلة الثانوية.

الكلمات المفتاحية: اضطراب طيف التوحد، الإدارة الذاتية، الممارسات القائمة على الأدلة، التعميم، السلوك.

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Introduction

Autism spectrum disorder (ASD) is one of the most frequently diagnosed disorders in the United States (US). According to the Center for Disease Control and Prevention 1 in 68 children who are 8-years-old are on the autism spectrum in the US; moreover, gender differences exist in that 1 in 42 boys and 1 in 189 girls have been diagnosed with ASD (Facts About ASD, 2016). As technology and diagnostic assessments are developed and refined, and an increasing number of parents seek answers to their children's limitations in emotional and social development, early diagnosis is even more common (Suma, Adamson, Bakeman, Robins, & Abrams, 2016). Increased levels of diagnosis have been accompanied by increased levels of research aimed at determining the most effective intervention programs to assist in the development of children with ASD (Alberto, & Troutman, 2006; Lindgren & Doobay, 2011; Rogers & Vismara, 2008). In the field of special education, evidence-based practices have been created to foster a means to promote the development of play, social, adaptive, behavior, independence, and communication skills for children with ASD (AFIRM Team, 2016; Neitzel & Busick, 2009). As this paper outlines, self-management (SM) is one such practice.

Autism Spectrum Disorder

To better understand the impact of a SM system on the development of children with ASD, it is important to first define ASD and self-management. ASD is a set of developmental conditions characterized by impairment in three areas: communication, social interaction, and repetitive behavior patterns in activities and interests (Fuentes, Bakare, Munir,

Aguayo, Gaddour, Öner & Mercadante, 2012). Adjustments in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) focused on eliminating the division that exists in DSM-IV between Asperger syndrome, Pervasive Developmental Disorder (PDD), Rett's disorder, Childhood Disintegrative Disorder (CDD), and autism (Fuentes et al., 2012). In its latest edition, the DSM-5 provides another definition of autism. In the DSM-5, Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS), Asperger syndrome and autistic disorder have been replaced by the diagnosis of Autism Spectrum Disorder. In addition, the DSM-5 separates the social aspects of ASD into repetitive behavior and social-communication impairment. Children with ASD have challenges with skills such as social interaction, interest in non-preferred items and activities, expressive communication, regulating emotions, and socially appropriate behaviors (American Psychological Association [APA], 2013). Specifically, restricted and repetitive behaviors as well as issues with social communication emerge as the two core deficits of ASD. Self-management is a strategy proposed to help address these deficits.

Self-Management

Despite the dearth of evidence behind many common interventions for students with autism, several researchers have emphasized the positive influence of self-management strategies, which helps validate such interventions' importance for improving overall performance. Carr, Moore, and Anderson (2014) supported this notion, suggesting that although no single effective intervention exists, positive strategies such as self-management show significant potential for tackling issues regularly experienced by either teachers or caregivers of students with autism (such

as responsiveness, concentration, and poor interaction). This suggestion echoes Singh et al.'s (2011) perspective that students with autism can benefit from self-management strategies by reflecting upon their emotional conditions and responding suitably. Cheung, Schulze, Leaf, and Rudrud, (2016) stated that self-management strategies for students with autism are a management tool and an important means to enhance their overall quality of life by empowering them to change behavior in a desired direction. Finally, Schulze (2016) argues that children with autism may benefit from self-management by promoting their independence, competence, self-reliance, and self-awareness.

SM can be used with children from early childhood to high school to support their ability to initiate and maintain conversations and reduce disruptive behaviors. Self-management strategies can be applied across environments such as in school, home, and the community (AFIRM Team, 2016; Aljadeff-Abergel, Schenk, Walmsley, Peterson, Frieder, & Acker, 2015; Neitzel & Busick, 2009). A self-management strategy provides specific guidelines that educators can teach students as a way to support behavior changes. Self-management techniques can be used to help children with ASD to observe, assess, and modify their own behaviors. Self-management involves self-identifying and observing target behaviors and developing an objective to change them (Neitzel & Busick, 2009).

Key components of self-management systems are monitoring, performance recording, and reinforcement. Busick and Neitzel (2009) articulate four steps in self-management implementation, which include (1) preparation of the particular system demanding execution, (2) instructing students to utilize the system, (3) applying the system, and (4) prompting students' independence with the plan.

Step 1: Self-Management Preparation

First, the collaborative team discusses diverse activities for effective and efficient implementation of the SM strategy. The team should include teachers, specialists, and parents who identify and develop target behaviors (Busick & Neitzel, 2009) which can be done through goal setting. Goal setting involves coming up with a target for changing behavior (Schulze, 2016) and enables children with ASD to motivate themselves to work toward an important skill through organizing, planning, and using skills associated with executive functioning.

Step 2: Teaching the Self-Management System

Next, the system must be introduced to the learner. Teachers instruct students on the vital elements of the system. Students should undertake accurate records concerning the occurrence of target behaviors or lack of them, and effectively manage the reinforces (Busick & Neitzel, 2009). In this stage, students are encouraged to internalize the steps of the system in their own words to check for comprehension. Using a self-instruction strategy is one way to measure comprehension which entails students verbalizing the steps of a given task to be completed (Schulze, 2016). Teachers can also support students to use self-statements to prompt them to promote a positive behavioral change. This approach gives students with ASD the ability to perform tasks independently.

Step 3: Implementation of the Self-Management Strategy

During the implementation phase, teachers provide students with the necessary materials to implement the SM strategy, in addition to enabling students to get necessary materials independently. Teachers provide cues

during implementation to scaffold students through the learning process. For instance, teachers may use visual aids and verbal cues as well as physical prompts or on-the-spot instruction to teach students to self-record target behaviors. Moreover, during this step, teachers introduce ways to acquire access to reinforcements by following the self-management strategy and performing the target behaviors (Busick & Neitzel, 2009).

Step 4: Evaluating Performance with the Self-Management System

Finally, the last stage is to allow students to work independently and measure their development. In such instances, practitioners use check-ups to determine whether students are consistent in self-recording and reinforcement. After students experience success with the self-management system, the next step is for teachers to gradually heighten specified criteria while continuing to assess students' success (Busick & Neitzel, 2009).

Students can measure outcomes through self-charting, which empowers them to determine how effective they were with the system. Self-charting works hand-in-hand with goal setting and self-monitoring to monitor progress on behavioral change and increase time-on-task, academic performance, and accuracy (Schulze, 2016).

The unique benefits of a self-management strategy include improved skills such as self-monitoring, setting goals, self-instruction, and self-charting that students can use across activities and settings (Schulze, 2016). As a result, self-management has become a unique tool that allows teachers, parents, caregivers, and students with ASD the means to independently increase positive behavior. Thus, self-management should be considered a means of enhancing social behaviors, task engagement, academic performance, and on-task behavior (AFIRM Team, 2016; Busick & Neitzel, 2009; Schulze, 2016).

Early Intervention

If self-management interventions are implemented, it is important to begin them in the early stages of a child's development. Studies have shown positive effects of early intervention for both short- and long-term interventions, with findings indicating that early treatment programs are imperative for children with autism to improve their developmental functioning (Rogers & Vismara, 2008). Moreover, they decrease maladjusted behavior and severity of the symptoms at a group analysis level. However, the effects of SM are unknown for vocational and social functioning later in adulthood (Rogers & Vismara, 2008). Additionally, the tested models, and research findings indicate the field has yet to determine some factors. These include the most effective interventions people can achieve in early intervention and factors that positively impact gains. Finally, researchers have to consider the anticipated short and long-term improvements. In responses, publications since 1998 have focused on the various treatments for young children with autism (Rogers & Vismara, 2008).

Research by Lovaas and his colleagues was based on 50 percent of children who have autism. The report showed there was hope for improvements in behaviors associated with autism as long as proper intervention measures were applied (Rogers & Vismara, 2008). Hence, many parents spend a lot of time and money to purchase and implement services for their children's treatment plans. On the other hand, government agencies set up panels to review the available literature to develop proper intervention approaches. Despite the conclusions of the governmental review boards, there was a greater need to conduct further research to develop independent findings (Rogers & Vismara, 2008). The findings suggested children with

autism need consideration in educational planning. Additionally, interventionists should individualize treatment methods, integrate developmental and behavior practices, and develop empirically supported interventions for children from two years old since it is possible to diagnose autism early (Rogers & Vismara, 2008). What is clear, however, is that self-management interventions are useful in helping individuals with autism improve social skills if implemented as an early intervention.

School Setting

Quality of life benefits stem from children with autism being able to apply self-management strategies in multiple settings, including schools, offering children instant self-reinforcement and the ability to change undesirable behaviors (Yucesoy Ozkan & Sonmez, 2011). Koegel, Matos, Freden, Lang, and Koegel, (2012) argued that self-management has been successfully applied in inclusion settings to improve schoolwork by increasing independence and reducing the time school personnel must devote to a student. Therefore, teachers can help students with autism choose appropriate self-management strategies that fit their ability, demonstrate how to practice the strategies, and provide support and reinforcement (Singh et al., 2011). In other words, teachers may generally act as mentors, ensuring autistic students learn, practice, and appropriately use the selected strategies. Students with autism can use self-management strategies to decrease challenging behaviors in full-inclusion settings without interference (Koegel et al., 2012).

An earlier study by Koegel and colleagues (Koegel, Harrower, & Koegel, 1999) concluded that placing children with disabilities in full-

inclusion classrooms without appropriate support structures has always been unsuccessful. The authors summarize data collected over a period of nine months showing that if implemented, self-management enhances the abilities of children with disabilities similar to those of their typically developing peers. Different studies elaborate on this with some the investigations focusing on the effects of assessment and intervention during structured and unstructured play periods (See Goldstein, English, Shafer, & Kaczmarek, 1997; Pierce & Schreibman, 1997). The objective of Koegel et al.'s (1999) study was to find out if these effects impacted the social behaviors of children with disabilities when they interacted with their typical peers.

Other studies revealed the effectiveness of implementing positive behavior intervention techniques as a way to provide support to students with disabilities in inclusive classrooms with other students without disabilities (See Dunlap, Foster-Johnson, Clarke, Kern, & Childs, 1995; Kern, Childs, Dunlap, Clarke, & Falk, 1994). The authors discuss how self-management has been used to improve the engagement of children with disabilities in classrooms.

Self-management has been proposed as a practical method that can be used to promote the independence of children with disabilities in classrooms. Different studies have shown that self-management shifts responsibility for behavior management from the teachers to the student. It accomplishes this through reducing the need for constant surveillance and provision of support to children, allowing teachers to concentrate on academics (Koegel, Harrower, & Koegel, 1999). Koegel and colleagues' (1999) research evaluated the effectiveness of a temporary support person for teaching children with disabilities the use of self-management

procedures in full inclusion classrooms. The support person's involvement was faded to determine children's independence and their ability to effectively manage themselves. The results of this study show substantial improvement in the participation of children with disabilities during the use of temporary support structures (Koegel, Harrower, & Koegel, 1999). These improvements remained stable when the support structures were withdrawn from the children, providing evidence that children with disabilities can learn to manage their own behaviors and allow teachers to concentrate on academics.

Because self-management skills are usually associated with promoting generalization and independence among students with autism spectrum disorders, Newman, Reinecke, and Meinberg (2000) conducted a study where they followed two six-year-olds and a preschooler in order to teach self-management skills to increase play and social language variability. The end results revealed all three students were able to manage their behaviors, resulting in an increase in behavior variability during self-management phases.

In the Newman et al. (2000) study, sessions were conducted as part of each student's discrete trial teaching program, with the experimenter sitting across a table from the student to carry out procedures. Students were asked to vary their responding across baseline and self-management conditions, and they were reminded to not be "boring" during the outset of each session. Ten opportunities to respond were provided. For instance, Dan was verbally prompted to respond about his robot, Evan was worked with during social conversation drills, and Nancy was asked to "draw anything you like" (p.148).

Reinforcements were given via verbal phrase rewards that could be traded for a selected item. All three students were familiar with token economies from other treatment plans and programs. But during the baseline, tokens were given non-contingently, so ten tokens were given at the end of the session regardless of the student's displayed level of variability. At the outset of self-management, students were told to take a token whenever they displayed a variation in target behavior. For the first six days, students were verbally prompted to take a token when the experimenter observed a variation in target behavior; they were also stopped from taking tokens if they didn't display a variation in target behavior.

A month later, follow-up data was collected to assess whether or not target behavior variability was maintained. Conditions for the follow-up were similar to the self-management phase. The results showed that students with autism are able to use the self-management system to increase variability in responding, and the effects were powerful. For example, Evan's variability rose from 30% to 40-80% during self-management and follow-up while Dan's variability increased from 10-30% to 20-80%. Accuracy of self-management varied for each student, but never exceeded 60%. This result is consistent with trends relating to children with autism, because while students didn't take all earned tokens, target behavior was still positively affected.

Furthermore, as the use of technology has increased in the classroom, self-management intervention has also expanded. Cructhfield, Mason, Chambers, Wills, and Mason, (2015) explore the relationship between using the self-monitoring program, I-Connect, and the decrease in stereotypical behavior in schools. The researchers conducted this study

over the course of seven weeks doing observation sessions and recording observations. All the sessions took place in the same setting. The researchers started by collecting data on the stereotypical behavior during the first five minutes of the interaction.

The results showed that the use of I-Connect self-monitoring helped reduce stereotypical behavior among participants. The second intervention helped decrease stereotypical behavior with both participants. The use of I-Connect also led to increases in productivity and assignment completion, and the teacher mentioned that it was, "more socially acceptable than bulky paper/pencil self-monitoring checklists" and the students needed "less adult support" when using the application (p. 1152).

Additionally, technological devices have also been introduced to assist students in being self-aware and motivated. One particular self-management study focused on the impact of self-regulation on on-task behaviors as carried out by children with disabilities using a device called MotivAider as their support structure. This device was set to vibrate and remind children to self-record if they were still concentrating on a task or not (Legge, DeBar, & Alber-Morgan, 2011). Legge, DeBar, and Alber-Morgan, (2011) explain that multiple results showed a relationship between the children's ability to self-monitor and an increase in on-task behavior. These children remained on task when the support structure of self-monitoring was removed. The investigation also examined the effects of self-monitoring scholarly productivity and self-monitoring on-task behaviors. The authors concluded that children with disabilities who monitored their on-task behaviors performed better than those who self-monitored their scholarly productivity.

The study was undertaken to determine this effect involving the use of three boys with disabilities, who were attending a rural school district. The study required students to wear the MotivAider device on their wrist or waist (Legge, DeBar, & Alber-Morgan, 2011). This device was pre-set to remind children every two minutes to self-record whether they were still on task or not. The children were provided with self-recording forms where they recorded their behavior every time the motivator vibrated. These forms were used to collect data during the minute free seatwork sessions (Legge, DeBar, & Alber-Morgan, 2011). The time lapse was based on reports provided by the classroom teachers. The accuracy of the students self-recording was measured by using the observer's data sheet against the student's forms. With all these controls in place, the study found that the motivator helped students to improve their on-task concentration significantly. The motivators were then withdrawn to assess student's independent ability to self-monitor. The result was that students managed to self-monitor without the motivator. The study concluded that once students with disabilities learned to respond in a given manner (i.e. provided self-management tools), they easily maintain appropriate behaviors in the classroom and manage themselves to be at par with other students.

Home Setting

Scholars have not only examined the use of technology to teach self-management skills, they have also examined the role that parents play in teaching self-management to children with special needs. According to Lee, Poston and Poston (2007), the behaviors of an individual with autism influences their learning at school and affects their wellbeing at home as well as their relationships with family members. Problematic and inappropriate

behaviors can become a significant stressor to their families or caregivers and negatively impact their emotional and physical wellbeing. Because of this, positive behavior supports (PBS) have been given a lot of attention by families as a means of reducing problem behavior of children with autism (Lee, Poston, & Poston, 2007). Partnerships between parents and professionals have been acknowledged as a catalyst and key to implementing positive behavior support. It is advised for families to embed Positive Behavior Supports (PBS) within their daily routines and activities, therefore, enabling a good contextual fit with the standard family life. Professionals are required to understand the different family contexts and circumstances in developing a partnership on implementing PBS with families.

One form of PBS that is recommended for use by parents is the use of self-management, which is based on the concept of self-control. In order to help families raise individuals with autism, they should help with the process of self-monitoring, instructing, assessing, recording, and reinforcing their behavior. Self-management was found to empower the individuals to control their own behaviors without relying on others. SM also helps integrate what has been learned into various natural settings, thereby addressing the desire for similarity with others among individuals with autism (Lee, Poston & Poston, 2007). Self-management also allows caregivers to concentrate on providing instruction rather than concentrating on behavior management. It also gives individuals with autism a sense of self-worth, which is a core component of quality of life. Self-management techniques support families that include individuals with autism, and helps them understand accommodations these individuals may need.

Hampshire, Butera, and Bellini (2011) while working with Tom who is an eighth grader, his mother, and a special education resource teacher, examined the important role parents can play in helping with their children's homework routines. Intervention sessions took place in Tom's home, and with the help of his mother, a specific area was designed for the purpose of this intervention. The researchers provided Tom with a folder that contained a self-monitoring form, his reinforcer, a sheet used to document the points he earned, and a list of individualized tasks designed for the purpose of the intervention. The researchers met with Tom to help him learn the different self-management skills and provided his mother with a folder that would aid her in helping Tom stay on task.

Results of this study demonstrated that parents play a significant role in assisting their children in developing and maintaining effective homework routines. Researchers pointed out that collaboration with professionals is essential in ensuring the overall success of self-management interventions (Hampshire et al., 2011). Understanding and acknowledging the role the family involvement is critical. Equally important also is the identification of interventions that aid students whose life circumstances can make it difficult for them to establish a consistent homework routine.

Social Settings

Parents play a critical role in helping with their children's learning, as well as the overall monitoring of their social behavior. Liu, Moore, and Anderson (2015) conducted a study that examined the effect of a self-management intervention with self-recording on students' social skills, self-motivation, and parental management reinforcement. The primary purpose of this study was to examine the effect of parent monitored self-

management systems through use of video modeling to help children with ASD to learn and generalize social skills.

Working with a 9-year old diagnosed with ASD, videos were used to teach the child to discriminate between appropriate and inappropriate behavior. The child's favorite candy was used as reinforcement and video recording was utilized to track appropriate behavior displayed for three target behaviors (i.e., refraining from interrupting others, asking for opinions, and appropriately greeting unfamiliar adults). The findings supported the hypothesis that (1) the application of the procedure would increase the rates of three social skills in the training setting, (2) these improvements would generalize to non-training settings, (3) the observed improvements would continue to be noticed in the follow-up phase 1 month later, and (4) the social validity of the procedure. Because the self-management intervention in this study was parent-implemented, the study demonstrated that parents could easily implement these procedures to benefit their children.

Koegel, Koegel, Hurley, and Frea (1992) explored the use of self-management to "produce extended improvements in responsiveness to verbal initiations from others in the community, home, and school settings without the presence of a treatment provider" (p. 341). They worked with four children between 6 and 11 years old who demonstrated characteristics associated with ASD, who had language skills at least at the 3-year-old level, and whose parents and teachers reported their typical response to verbal initiations of others was disruptive. Self-management was used, along with reinforces to reward students for correct responses. The results showed that "lack of social responsivity, which is characteristic in ASD, could be successfully intervened upon with self-management procedures in the children's natural environment" (p. 350).

Similarly, Stamher and Schreibman (1992) explored the effects of a self-management treatment package (i.e., differential reinforcement of appropriate play, prompts, self-monitoring, and self-delivery of reinforcement) to teach appropriate play. Working with three children, diagnosed with autism, the researchers found that the introduction of a self-management treatment package resulted in an increase in appropriate play. Children engaged in appropriate play in the absence of a supervisor, and maintained gains one month later during unsupervised play activities and generalized behaviors across settings and toys.

Self-management is also effective in the context of conversation as a social skill. In their study, Koegel, Park, and Koegel (2014) examined the role that self-management strategies could play in improving, sustaining, and generalizing social interactions among students with ASD. Koegel et al. (2014) worked with two children of both Asian and Caucasian origin: one a 14-year-old and the other a 4-year-old. While the intervention was completed in a specific room of their homes, different probes were carried out in different settings around the house for the purpose of generalizability and maintenance. The results showed the intervention increased social responsiveness, reciprocating questions, and social competence, which are all important social skills for children and adolescents (Koegel et al., 2014).

In a similar vein, Mancina, Tankersley, Kamps, Kravits, and Parrett, (2000) examine the effects of a self-management program designed to decrease incidences of inappropriate vocalizations. As previously stated, the procedures used in self-management have components of self-evaluation, self-recording, and self-reinforcement (Mancina et al., 2000). The self-management strategies used with children with autism have been expanded to include children

diagnosed with cognitive delays, learning disabilities, and behavior disorders. The focus includes decreasing disruptive and inappropriate behaviors. Macina and colleagues worked with a 12-year-old girl with autism. The participant was taught self-management procedures and researchers measured the rate at which the targeted behaviors decrease. The observer recorded three behaviors including vocalizations, facial expressions, and physical movements made by the student during the ten-second interval in a period of five minutes (Mancina et al., 2000). The researchers ensured reliability by recording all the sessions using videotape. The observer and treatment provider watched the tape at the same time while making independent observations and in the case of a difference, the two parties reached an agreement on the best approach to deal with the issue (Mancina et. al, 2000). The researchers implemented the self–management program using an alarm clock and used rewards for self-reinforcement. The study concluded that when applying self-management strategies, vocalizations reduced considerably.

Conclusion

Self-management strategies have a demonstrated positive effect on the social, behavioral, and academic performances of children diagnosed with ASD from early childhood through high school (AFIRM Team, 2016; Neitzel & Busick, 2009). Additionally, researchers report a significant difference in the motor and verbal behaviors of children with ASD when self-management practices are introduced at an early age (Rogers & Vismara, 2008). The earlier interventions are introduced in social, academic, and home settings, the greater the chance of achieving the ultimate goal of students becoming as independent as possible in their natural environments.

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