# Self-Management Skills and Applied Behavior Analysis

**Patricio Erhard, Travis Wong, Monique Barnett, Terry S. Falcomata, and Russell Lang**

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According to Cooper et al. (2020), self-management is "the personal application of behavior-change tactics that produces a desired change in behavior" (p. 683). Through self-management interventions, individuals learn to identify occurrences of their own target responding; accurately self-record the target response with a predetermined recording system; self-evaluate their behavior according to a prearranged standard; and self-deliver reinforcement as a consequence (e.g., Maag, 2004; McConnell, 1999; Myles & Simpson, 2003; Reid et al., 2005). Research has demonstrated that self-management interventions can improve various adaptive behaviors, such as academic and social skills, across a variety of populations, from preschool to adulthood, and in community and vocational settings (Maag, 2004). Further, self-management strategies have been demonstrated to reduce problem behaviors, such as restricted/repetitive behaviors (Southall & Gast, 2011), tantrums (Lui et al., 2014), and aggression (Miranda & Presentación, 2000).

Although some of the literature base has used the terms self-management and self-control analogously, recent research has emphasized important distinctions (e.g., Cooper et al., 2020; Epstein, 1997). This chapter is aligned the Cooper et al. (2020) conceptualization, wherein self-management is referred to as the application of behavior change tactics to oneself, and self-control is referred to as the allocation of responding to larger delayed reinforcement rather than small immediate reinforcement.

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## Components of Self-Management

Self-management interventions generally involve a combination of components including self-monitoring, goal setting, self-evaluation, self-reinforcement, self-instruction, and/or strategy instruction (Otero & Haut, 2016). Intervention research has considered varying sets of components when defining and implementing self-management strategies. For instance, there are some distinctions between studies that have omitted the use of self-instruction or strategy instruction (e.g., Dalton et al., 1999; Maggin et al., 2013), while others have indicated the use and importance of self-instruction and strategy instruction in self-management (i.e., Asaro-Saddler, 2016; Rafferty, 2010). The same is true for studies that have emphasized the use of self-reinforcement (i.e., Bandura, 1976; Busacca et al., 2015) and those that have not (i.e., Mooney et al., 2005; Rafferty, 2010). This chapter provides a definition of all the components presented in previous literature.

**Self-monitoring.** Self-monitoring is a combination of self-observation and self-recording, wherein the individual observes their own behavior and notes occurrences (or lack thereof) of target behavior(s). To implement self-monitoring, several essential steps must be included. First, a behavior is identified and defined in an objective and measurable way (i.e., operationally defined). For example, math problem completion might be targeted and operationally defined as "percentage of math problems completed correctly during a daily quiz." Second, caregivers collect baseline data to examine the individual's responding prior to the introduction of a self-monitoring strategy, which are helpful for goal setting (discussed below). Third, an appropriate method of self-monitoring is determined. Individuals with an advanced skill repertoire can use complex systems (e.g., checking boxes, tallying marks in a to-do list, and filling histograms) while individuals with few emerging skills may need to use less intricate methods, such as token systems (e.g., coins and stickers). Fourth, the individual is trained to self-monitor with the identified method, which may be done in a variety of ways. For example, Ganz (2008) noted individuals can be taught using modeling and role play, whereby examples and non-examples of the target behavior are presented to the individual, followed by the rehearsal of the behavior by the individual. When the individual begins self-monitoring independently, it may be necessary, at least initially, for the caregiver to also collect data to ensure ongoing accuracy. If numerous mistakes are observed, role playing or modeling for practice purposes can be resumed. When the individual is proficient in self-monitoring, the caregiver systematically fades the monitoring.

**Goal setting.** Goal setting involves selecting a specific metric that establishes a point of reference for tracking performance (Mooney et al., 2005). Teaching how to set goals can be accomplished in various ways. For example, Delano (2007) taught three participants with autism to set goals to increase written language using video modeling and scripting. Specifically, the participants created a video, read a script, counted the number of the words in their essay, recorded the number on a bar chart, and set a new goal to increase their next word output by 10% in the following essay. Results showed that each participant increased the number of words they wrote, as

well as the amount of functioning essay elements. Because behaviors vary in form, length, and intensity, goals are created using measurement approaches that align with key characteristics (dimensions) of the target behavior (Alberto & Troutman, 2017). For example, the goal of completing math problems correctly should involve a measurement system that represents both accuracy and opportunity; in this case percentage (i.e., the number of correct responses divided by the total number of problems answered correctly). However, if the number of opportunities is held consistent (e.g., 10 math problems a day), a simple frequency (total count) of correct problems would be more efficient.

**Self-evaluation.** Self-evaluation, commonly referred to as self-assessment involves (a) comparing the performance of the individual to the goals established and (b) making decisions on whether the individual is progressing towards the criteria or if changes improve responding performance are necessary (Lee et al., 2007). For example, the individual can examine the data regarding their own math problem completion (e.g., check his/her grades) and (a) compare it to the goal that was established (e.g., determine if he/she attained the percentage of correct problems solved) and then (b) decide whether their performance met the goal or if changes should be made to improve performance (e.g., choosing to study more). A study by Glomb and West (1990) illustrated how an individual can be taught to use self-evaluation through textual prompts. The researchers embedded prompts specific to writing completeness, accuracy, and neatness within the self-evaluation procedure. As a result of the intervention, both participants increased the percentage of words completed on writing assignments and the percentage of accurate sentence production as well.

**Self-administered consequence.** Self-monitoring and self-evaluation are often used in conjunction with self-administered consequences that are aimed at increasing the target behavior (i.e., self-administered reinforcement). With self-administered reinforcement, the individual may deliver or remove stimuli (i.e., positive or negative reinforcement) when self-monitoring reveals that reinforcement contingencies have been met.

Bandura (1976) identified three conditions for self-reinforcement to be effective. First, a clear operationally-defined target behavior is identified. For example, an appropriate standard for improving math problem completion might be "80% of math problems answered correctly on a daily quiz" (i.e., a specific criterion for accurate responding identified and provided). Second, the person must control the reinforcers. The individual should have direct access to reinforcing stimuli or be empowered to ask another person to administer reinforcement. Self-management (along with other forms of behavioral intervention) tend to be more effective when the individual utilizing the self-management intervention is involved in the reinforcer selection process (e.g., Apple et al., 2005; Lovitt & Curtiss, 1969). Therefore, a preference assessment or reinforcer assessment should be incorporated (DeLeon & Iwata, 1996). Third, the reinforcers are delivered only on a conditional basis (i.e., contingent on predetermined measure of target behavior). If the individual fails to meet the goal, the reinforcer is denied (Bandura, 1976). However, the initial performance standard (i.e., reinforcement contingency) is typically set at a level that

allows frequent self-administered consequences. The reinforcement contingency can be gradually made more stringent as the individual's performance improves. If the initial criteria are too challenging or effortful, the individual will not contact reinforcement and the target behavior will not be maintained (Ganz, 2008).

**Self-instruction.** Self-instruction is characterized as a prompt or mediator that occurs before engagement in the target behavior (Hughes & Agran, 1993). Self-instruction has been characterized as a self-guided behavior (Bryant & Budd, 1982; Fish & Mendola, 1986) and, in cases where self-instruction results in reinforcement, self-instruction may come to function as a discriminative stimulus (Hughes et al., 1993; Meichenbaum & Goodman, 1971). For example, if a math quiz is approaching, the student may say "the quiz is next week, I should study." Studying for the math quiz results in a passing score which reinforces the self-instruction (i.e., "I should study"). For self-instruction to be effective, the individual must be able to engage in some level of verbal behavior such that they are able to identify what to do and how to do it. Thus, after identifying that studying should occur, the individual must have the ability to identify what studying consists of (e.g., materials needed, discrete behaviors involved and duration) and have necessary skills in repertoire.

Meichenbaum and Goodman (1971), identified four components of self-instruction including (a) defining the task; (b) planning how to complete the task; (c) providing self-instructions during the task; and (d) self-reinforcing when contingency is met. Following the steps proposed by Meichenbaum and Goodman (1971), Davis and Hajicek (1985) used self-instruction and strategy training to increase the responding accuracy and attending (i.e., on-task behavior) of seven individuals with conduct disorder when completing math worksheets. The self-instruction training involved (a) establishing the reason for conducting self-instruction, (b) modeling how to complete the math worksheet using their strategy while also talking out loud to himself, (c) providing participants with an opportunity to practice the strategy with prompts, (d) contriving opportunities for the participant to perform the same task while talking out loud, followed by (e) whispering the task, and finally (f) having the participant give self-instructions "silently." The study resulted in an increase in responding accuracy with math problems across all participants, and some increase in attending for five of the seven participants.

**Strategy instruction.** Strategy instruction (or cognitive strategy instruction) is a technique that involves teaching individuals to follow a sequence of steps to solve problems or achieve outcomes independently (e.g., Mooney et al., 2005; Graham & Harris, 1989). Based on cognitive and behavioral theories, strategy instruction includes the use of instruction with cognitive processes (e.g., visualizations) and metacognitive processes (e.g., self-questioning), such that the individual is taught how to solve problems proficiently (Montague & Dietz, 2009). For example, if an individual is having difficulties improving their math problem solving skill, that individual could be taught to (a) ensure they understand the problem they are completing, (b) visualizing the use of the numbers and symbols, (c) identify a sequence of steps for computing the numbers, (d) predict whether the math problem will be completed, (e) conduct the computation, and (f) confirm if the math problem was

completed correctly. Training individuals to use strategy instruction can take many forms, especially considering that strategy instruction involves the comprehensive use of many complex skills. For example, in a study by Hughes et al. (1993), six individuals with emotional behavioral disorder (EBD) were taught to engage in strategy instruction by following a first-letter mnemonic device to improve their test-taking skills. The individuals were taught to follow the mnemonic device PIRATES by (a) preparing to succeed, (b) inspecting the instructions, (c) reading, remembering, reducing, (d) answering or abandoning, (e) turning back, and (f) estimating, and (g) surveying. Individual were taught to follow this mnemonic device by establishing the participants' commitment to learn the strategy, providing a rationale for using the strategy, modeling, engaging in verbal rehearsal, completing partial practice with the first four steps in the mnemonic device; all followed by a complete practice with all the steps in the mnemonic device. After the introduction of strategy instruction, all six participants showed improvement with their test-taking skills. A similar study also found this specific strategy useful with participants with learning disabilities (LD; Hughes & Schumaker, 1991). Strategy instruction is regularly referenced when individuals are trained with Self-Regulated Strategy Development (SRSD; Graham & Harris, 2003), which incorporates cognitive and metacognitive processes as well.

## Historical Background

The extant literature provides differing theoretical frameworks that influence the implementation procedures of self-management techniques. Specifically, two theoretical models have been posited to account for the positive outcomes of self-management interventions; an operant model and a cognitive model (Mace et al., 1987).

**Operant Theory.** Among other conceptualizations, the operant model asserts that behaviors are learned and maintained due to contact with environmental contingencies (Maag, 2004; Skinner, 1953). In this context, self-management outcomes are attributed to the changes in environment with an emphasis on changes in reinforcement contingencies. An operant model of self-management was first posited by B.F. Skinner in *Science and Human Behavior* (Skinner, 1953) wherein Skinner offered techniques for self-management, such as presenting oneself with discriminative stimuli, or with specific consequences, that appear in commonly used components of self-management in current research, such as self-monitoring and self-reinforcement.

Skinner's ideas of self-reinforcement were later reiterated and expanded upon by Albert Bandura (1976), who identified the previously mentioned criteria for self-reinforcement (i.e., control of reinforcers, conditional self-administration of reinforcers, and the adoption of performance standards; p. 136). Skinner (1953) and Bandura identified reinforcement as a primary factor in changing behavior via self-management; however, they also noted that self-reinforcement alone cannot account

for all behavior change and other consequences (self-administered or not) likely play a role in changing the frequency of a target behavior. Since then, researchers have emphasized that performance-management strategies should be considered "rule-governed analogs of reinforcement […] contingencies" (Cooper et al., 2020, pp. 700), especially when there is a delay between the target response and the consequence.

**Cognitive Theory**. In contrast, the cognitive model describes self-management as the process by which established, automatic responses become manipulated through a specific kind of cognitive functioning, referred to as controlled processing in early texts (Kanfer & Gaelick-Buys, 1991). According to this model, automatic responses that involve little attention, such as habitual nail-biting, can be manipulated so that nail-biting increases or decreases based on the controlling cognitive function (Fisk & Schneider, 1984; Posner & Snyder, 1975; Schneider & Schiffrin, 1977). Early authors have characterized this process through self-monitoring, self-evaluation, and self-reinforcement, where an individual's emotional and cognitive responses increase or decrease target behaviors based on an individual's attention to their own behavior, their comparison to a set of standards, and the provision of self-feedback (Kanfer, 1970). Later cognitive theorists made distinctions between various forms of cognition, such as the cognitive, and metacognitive processes. Thus, cognitive and cognitive-behavioral models appear to align best with strategy instruction and SRSD.

## Evidence-Based Status

Many research councils have reviewed the self-management literature and identified self-management interventions as evidence-based for people with ASD. For example, the National Clearinghouse on Autism Evidence and Practice (NCAEP; Steinbrenner et al., 2020) reviewed a total of 26 studies between 1990–2017 with individuals 3–22 years of age and found that self-management was effective for increasing social skills (e.g., communication, play), school readiness, academic skills, adaptive daily-living skills, and vocational skills. The NCAEP also found that self-management was effective in managing challenging/interfering behaviors. A separate review of 14 studies by the National Professional Development Center on ASD found that self-management strategies are effective for supporting individuals 3–5 and 15–22 years of age (Sam & AFIRM Team, 2016). Similarly, The National Autism Center (NAC) reviewed 31 studies and reported that self-management helped adolescents and young adults improve academic, interpersonal, and communication skills as well as reduce restrictive and repetitive, behaviors, interests, or activities (National Autism Center, 2015).

Several reviews have also found strong support for the use of self-management strategies for academics. For example, Carr et al. (2014) reviewed 23 self-management studies involving academic goals to evaluate effects with individuals with ASD and reported that self-management was an effective intervention for

promoting academic and social skills across individuals with ASD across a wide range of skill levels. However, they also noted that the magnitude of treatment effects differed such that individuals with advanced skills experienced better outcomes than individuals with emerging skills. Specifically, Carr et al. conducted a quality assessment on all 23 studies using What Works Clearinghouse's (WWC) guidelines. Of the 23 studies (involving 70 participants), Carr et al. reported 12 peer-reviewed studies that met WWC's research quality standards. Because those studies were conducted across eight different research groups and included 34 participants, Carr et al. concluded that adequate empirical evidence exists supporting self-management as an effective intervention for people with ASD. Similarly, Lee et al. (2007) reviewed 11 studies to examine the effects of self-management strategies among individuals with ASD. Each examined study sought to increase desirable behaviors among participants (e.g., social and play skills) and concluded that self-management strategies were effective. Taken together, these systematic literature reviews provided substantial evidence that self-management strategies are effective at increasing a variety of target behaviors among individuals with ASD.

## Treatment Populations

In addition to individuals with ASD, self-management has also been used to address behavior change goals for people with other developmental and intellectual disabilities as well as for typically-developing individuals.

***Typically-Developing Individuals.*** Self-management interventions have been shown to be effective for addressing various issues in typically developing individuals across age groups. For example, Hughes and Hendrickson (1987) used self-monitoring strategies to increase on-task behaviors in typically developing elementary school individuals. Compernolle et al. (2019) demonstrated that self-monitoring interventions can reduced sedentary time among typically developing adults. In another study (i.e., Tomasone et al., 2018), the implementation of self-management intervention led to a significant increase in leisure time physical activity adults with spinal cord injuries demonstrated.

***Individuals with Developmental and Intellectual Disabilities.*** In addition to ASD, research has demonstrated that self-management interventions can be effective with individuals diagnosed with other developmental disabilities; for example, increasing on-task behavior among individuals with cognitive impairment (O'Reilly et al., 2002), attention deficit hyperactivity disorder (ADHD; Harris et al., 2005), EBD (Rafferty, 2012), and LD (Dalton et al., 1999). Research has also shown that self-management can help individuals with ADHD and LD improve their reading and writing (Shimabukuro et al., 1999) and completion of math problems (Uberti et al., 2004). Further, self-management interventions have been implemented with children diagnosed with various intellectual and developmental disabilities in general education classrooms (Busacca et al., 2015).

***Individuals with Autism Spectrum Disorder.*** The literature on self-management provides abundant evidence supporting effectiveness with individuals with ASD. For example, self-management has been successful with preschoolers (e.g., Koegel et al., 2014; Reinecke et al., 1999; Shogren et al., 2011) through young adults (e.g., Dipipi et al., 2001; Palmen et al., 2008). The implementation of self-management among individuals with ASD has improved (a) social communication skills (e.g., Loftin et al., 2008; Strain et al., 1994), (b) daily living skills (e.g., Pierce & Schreibman, 1994), (c) academic performance (e.g., Holifield et al., 2010; Shimabukuro et al., 1999), (d) on-task behavior (e.g., Coyle & Cole, 2004; Cihak et al., 2010), and (e) appropriate play skills (e.g., Stahmer & Schreibman, 1992).

Finally, self-management interventions have been shown to lead to decreases in (a) inappropriate vocalizations (e.g., Kern et al., 1997; Mancina et al., 2000), (b) self-stimulatory behaviors (e.g., Stasolla et al., 2014), (c) aggression and tantrum behaviors (e.g., Lui et al., 2014), and (d) self-injurious behaviors (e.g., Koegel et al., 1992) among individuals with ASD.

## Areas of Intervention

The benefits of self-management interventions can be considered to fall into two main categories: (1) maintaining positive behaviors and (2) decreasing problem behaviors.

**Maintaining positive behaviors.** Self-management can be used to maintain target behaviors (i.e., continuing to perform the target behavior after acquisition) and improve behavior fluency (i.e., performing the target behavior at an increased rate; e.g., Agran, 2003). Newman and Eyck (2005) taught social initiation skills to three children with ASD via positive reinforcement. After the participants demonstrated mastery of the targeted social skills, the researchers transitioned to the self-management phase where the participants monitored their own social initiation and self-reinforced through token economy. Results illustrated that the levels of social initiation were maintained after switching to self-management. In fact, two of the three children with ASD increased social initiation during the self-management condition (Newman & Eyck, 2005). Holifield et al. (2010) examined the effectiveness of self-monitoring on academic accuracy and on-task behavior exhibited by two individuals with ASD. Their findings suggested self-monitoring was effective as both participants demonstrated immediate increases in academic accuracy and on-task behavior during the self-monitoring phase. Similarly, Shogren et al. (2011) combined a token economy with self-management and successfully increased appropriate classroom behavior and academic engagement (i.e., following teacher instructions) in two elementary individuals with Asperger syndrome. Pierce and Schreibman (1994) combined self-management with picture prompts to teach daily-living skills (e.g., getting dressed, making lunch, doing laundry) to three children

with ASD and reported that all individuals successfully used the picture prompts to self-manage their behavior in the absence of supervision. Moreover, the individuals generalized their skills across settings, tasks, and maintained high levels of completion at follow-up.

**Decreasing problem behaviors.** Research has also demonstrated that self-management interventions can reduce problem behaviors such as inappropriate vocalizations and tantrum behaviors (e.g., Carr, 2016). Previous research has suggested self-management can address the skill deficit(s) that underlie problem behaviors by increasing appropriate behaviors that compete with problem behaviors to occasion their reduction (Carr, 2016). Additionally, self-management interventions have been shown to be more effective when practitioners assess the functions of the targeted problem behavior and then adapt reinforcement contingencies and other environmental changes to align with the function(s) (Hansen et al., 2014). For example, Ingram et al. (2005) compared two approaches to the use of self-management. One self-management intervention aligned with the function of the participants' problem behavior, whereas the other self-management intervention did not include function-aligned components. Results indicated that the function-based self-management intervention was more successful, as evidenced by lower problem behaviors, when compared to the non-function-based intervention. Furthermore, the results underscored the importance of conducting a functional behavioral assessment (FBA) when developing a self-management intervention (Ingram et al., 2005). Specifically, when the purpose for engagement in a problem behavior is identified, a self-management strategy can be implemented that addresses the specific function of the behavior. Further, a self-management strategy that includes function-based components will likely be more effective than one that does not.

Besides identifying the function of problem behaviors, it may also be important that self-management interventions are used for dual purposes (e.g., to increase an appropriate replacement skill while decreasing a problem behavior). For example, Brooks et al. (2003) identified attention as the function of a participant's problem behavior and subsequently taught the participant socially appropriate ways to obtain peer and teacher attention. After the participant learned how to discriminate appropriate behavior and problem behavior, the researchers implemented self-management wherein the participant self-monitored and evaluated her behavior. Appropriate behaviors increased and problem behaviors decreased. More to the point, the positive alternative behavior identified via FBA was necessary to decrease the problem behaviors (Brooks et al., 2003). Similarly, Lui et al. (2014) incorporated instructional stories to teach appropriate replacement behaviors and self-management in which the participants self-monitored and evaluated their behaviors. Results indicated that the combination of instructional stories and self-management was effective at increasing compliance and decreasing problem behaviors (Lui et al., 2014).

## Supplemental Teaching Strategies

Various strategies have been incorporated with self-management interventions to further enhance effectiveness (e.g., token economies; visual schedules). Methods that have been successfully integrated with self-management strategies may be categorized as (a) antecedent-based strategies (i.e., the use of behavioral strategies prior to the occurrence of behaviors) and (b) consequence-based strategies (i.e., the use of behavioral strategies after the occurrence of a behavior).

**Antecedent-based strategies.** According to Harchik et al. (1992), antecedent-based strategies are incorporated with self-management to cue or guide the individual's behavior by using stimuli, such as picture or audio cues, that precede occurrences of the target behavior. Research has suggested that antecedent prompts can increase an individual's ability to respond independently without waiting for caregiver's guidance (e.g., Riffel et al., 2005), which can also be effective when presented via computers (Lancioni et al., 1999). Consequently, antecedent self-management prompts may further increase fluency of the target behavior and promote maintenance of the self-management skills (Mechling, 2007).

Picture prompting is one of the most common antecedent-based strategies within the self-management literature (Lancioni et al., 2001). Pierce and Schreibman (1994) incorporated picture cues to prompt participants through task analyzed daily-living tasks. For example, each task was broken down into smaller steps and depicted in pictures that represented the sequence of steps required to complete the entire task. Participants then observed each picture prior to or during each step. Pierce and Schreibman's reported that all participants were able to follow the picture prompts and complete the daily-living tasks in the absence of supervision. Further, these improvements generalized across different settings and tasks.

Picture prompts may also be integrated with self-management procedures using picture activity schedules. Picture activity schedules display activities or tasks in sequence to the individual to improve the likelihood of independent transitions across steps and engagement (Lancioni & O'Reilly, 2001). Irvine et al. (1992) combined a picture activity schedule with self-management to promote independence among participants with intellectual disabilities. To individualize a picture activity schedule for each participant, the researchers consulted with caregivers and teachers and gathered information on tasks participants were not consistently performing without prompts. Participants were taught that each picture represented a step in the activity schedule and to follow the schedule. They were then taught to self-monitor behaviors by placing their initials next to the picture after completing the corresponding activity. Findings suggested that the combination of a visual schedule and self-management was effective in improving independent initiations and completions of tasks among all participants. In addition, the participants' parents reported that their children performed more autonomously without being nagged which led to improved parent-child interactions (Irvine et al., 1992).

Another common antecedent-based strategy used with self-management is auditory prompting. Briggs et al. (1990) combined auditory prompts and

self-management techniques to teach daily living tasks to individuals with intellectual disabilities. Specifically, the researchers recorded a vocal script of 22 steps for operating a washing machine so the individual could listen to the instructions step-by-step. Self-evaluation questions that required individuals to pause and self-monitor to determine if all previous steps had been performed correctly (e.g., "Are all the supplies in the basket?") were included in the scripts. The auditory prompts paired with self-monitoring was effective. All participants performed the targeted task accurately, maintained performance at follow-up, and the prompt system generalized successfully to another setting.

**Consequence-based strategies.** As described above, self-administered consequences are often used in tandem with other self-management interventions. One of the most common is a token economy system. Specifically, when an individual learns to self-evaluate, he or she then self-delivers a token as reinforcement. Tokens can then be exchanged for reinforcing items or activities. Newman and Eyck (2005) combined token economy and self-management to increase social initiations exhibited by individuals with ASD. The individuals were trained to self-monitor and self-evaluate their social initiation behavior. For example, when the individual independently initiated an appropriate request to play with a toy (e.g., "Can I play?") or asked a question (e.g., "What's that?"), a token was self-administered. The tokens earned were exchanged for time playing on the computer or with a toy train set.

Shogren et al. (2011) also combined token economy and self-management to successfully increase appropriate classroom behaviors exhibited by participants with Asperger syndrome. The participants were initially trained to discriminate between examples and non-examples of appropriate classroom behaviors. After the participants demonstrated mastery with the classroom rules, a teacher-implemented token economy was introduced in which the participants could exchange tokens for a preferred reinforcer (i.e., they could trade three earned smiley faces on their behavior sheets for preferred objects/activities). After participants were familiarized with the token economy system, they were told that they would be responsible for making their own smiley face marks on their behavior sheets. If inaccurate, the participant did not earn access to the preferred item. Results showed appropriate classroom behavior and academic engagement increased with the introduction of a token economy and improvements maintained at high levels when self-management components were included. As evidence of social and ecological validity, the classroom teacher maintained the self-management system following the study and generalized the self-management system across all the individuals in class (Shogren et al., 2011).

## Conclusion

With an increase in the number of individuals diagnosed with ASD and an increase in online (often self-guided) instruction in school systems, it is critical that parents, teachers, and clinicians implement evidence-based practices to promote growth

among individuals with ASD. Self-management is a set of procedures with a supportive scientific evidence base that can promote adaptive skills development (e.g., improved social skills and increased task engagement) and reduce problem behaviors. Research has demonstrated that self-management is a pivotal skill that can generalize across behaviors and improve autonomy across various skills and contexts for individuals with ASD (e.g., Koegel et al., 1992). In addition to the direct benefits of the procedures, social validity has also been well-documented consistently in the self-management literature. Many participants have reported that self-management interventions are easy to design and implement and are practical for teachers and parents (Cooper et al., 2020). Given the strong peer-reviewed efficacy and feasibility, self-management interventions should be promoted among individuals with ASD.

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