Autism in the Workplace
Self-Management

Overview

Self-management interventions help children and youth with autism spectrum disorders (ASD) learn to independently regulate their behaviors and act appropriately in a variety of home-, school-, and community-based situations. Self-management interventions can be used to target skills in all domains, including language/communication, social, behavioral, and adaptive. Self-management interventions are both a system to teach learners specifically targeted skills (e.g., hand-raising, on-task behavior) and a bridge to teach learners the principles of self-regulation. Because self-management is a skill in itself, once learners acquire self-management, other skills can be targeted using the self-management approach. This makes self-management not only an intervention, but a foundational skill that can make it easier to teach learners with ASD a variety of other skills.

What Is Self-Management?

To be successful in life, we all have to learn to manage our behavior. We tailor our behavior to different situations based on the unspoken rules and social norms that govern those situations. While the strategies we use to regulate our behavior are often not readily apparent to others, we devise ways to monitor our behavior, reflect upon our behavior, and adapt our behavior when we recognize that we are not as successful and/or acting as appropriately as we would like. We also learn that behaviors that are appropriate in one context may not be appropriate in another.

Self-management interventions systematize these self-regulation strategies (e.g., self-monitoring, self-reflection, and adapting to a given context) so that individuals with ASD can learn the rules

and norms needed to act appropriately in a given situation. In this sense, self-management is both a tool to teach other skills and an important skill in itself. Self-regulation teaches learners to discriminate between appropriate and inappropriate behaviors, to accurately monitor and record their behaviors, and to reward themselves for behaving appropriately. As learners with ASD become increasingly successful with these tasks, more of the implementation responsibilities shift from teachers, families, and other practitioners to the learners themselves. Not only is this new-found independence and ability to self-regulate beneficial to the learners, it also benefits the adults around them because they save time that would otherwise have been spent managing the individual learner's behavior.

Self-Management Across the Age Span

Self-management is considered pivotal to the development of other skills (Koegel & Koegel, 2006). It is a highly generalizable, foundational skill that can be used in many contexts to teach a number of other cascading skills. In other words, once an individual learns the process of self-management, any skill in any domain for which a viable self-management system can be conceived can be targeted. Hence, it is never too late or too soon (aside from developmental constraints) to learn how to self-manage.

Self-management meets the criteria for being an evidence-based practice within early childhood, elementary, middle, and high school age groups. Self-management interventions can be used across ages starting in early childhood through high school to help learners with ASD acquire key skills related to interacting with others, initiating and maintaining conversations, developing self-help skills, and reducing interfering behaviors (e.g., stereotypic, disruptive).

Goals of Self-Management

Self-management interventions are flexible. They can be used to target skills in all domains, including behavior, social, adaptive, and language/communication. Examples of specific skills that have been the focus of interventions in the evidence-based studies include:

- giving compliments to others (Apple, Billingsley, & Schwartz, 2005)

- responding to others (Newman, Reinecke, & Meinberg, 2000)

- sharing (Reinecke, Newberg, & Meinberg, 1999)

- increasing on-task behavior (Coyle & Cole, 2004; Newman et al., 1995)

- initiating interactions (Kern, Marder, Boyajian, Elliot, & McElhattan, 1997)

- reducing the occurrence of interfering behaviors (Koegel, R. L. & Koegel, L. K., 1990; Koegel, L. K., Koegel, R. L., Hurley, & Frea, 1992; Mancina, Tankersley, Kamps, Kravits, & Parrett, 2000)

- promoting daily living skills (Pierce & Schreibman, 1994)

- increasing play skills (Stahmer & Schreibman, 1992)

- conversing with others (Koegel, R. L. & Frea, 1993; Newman, Buffington, & Hemmes, 1996)

Who Can Implement Self-Management?

Self-management interventions can be developed and used by a variety of adults, including parents, teachers, special educators, therapists, and paraprofessionals. Furthermore, self-management interventions can be incorporated into a variety of contexts such as home and educational and community-based settings.

Who Would Benefit Most from Self-Management?

Learners with ASD across the age range from preschool to high school can benefit from self-management interventions. The use of self-management interventions is not limited to a particular skill domain; hence, virtually any skill and/or behavior that can be increased (e.g., social, communication, adaptive skills) or decreased (e.g., disruptive, stereotypic behaviors) can serve as the target of this intervention as long as a feasible and appropriate self-management system can be conceived and designed.

While self-management systems can be adapted to suit learners' needs across a range of ages and abilities, at a minimum, learners must be able to accurately self-monitor their behaviors for at least a short time (e.g., 5-10 seconds) and remember how they performed during that time period so that they can accurately self-record their performance. Hence, very young learners (i.e., 3 years and younger) or learners with severe co-occurring cognitive disabilities may not have the abilities needed to benefit from self-management interventions.

How Is Self-Management Implemented?

Self-management systems can be used to increase desired behaviors and/or decrease interfering behaviors by teaching learners how to (a) monitor their behavior, (b) record their performance, and (c) obtain reinforcement when their performance meets a pre-established behavior criterion.

The steps for implementing a self-management system include:

- o preparing the specific system to be implemented,

- o teaching the learner to use the system,

- o implementing the system with adult support, and

     o   promoting learner independence with the system.

The step-by-step instructions that follow provide an in-depth description of each step needed to implement a self-management system effectively.

Step-by-Step Instructions

Step-by-step instructions are provided for preparing the self-management system, teaching learners to use the self-management system, implementing the self-management system, and finally, for prompting independent use of the self-management system. Within each topic area, sub-topics are also identified to further clarify the self-management procedure.

Step 1. Preparing the Self-Management System

Before implementing a self-management system, a collaborative team engages in several activities to ensure the system will be implemented effectively and efficiently. Members of this team may include teachers, parents, specialists, and any other individual who provides services or spends a significant amount of time with the learner in the setting where the intervention will be implemented.

Identifying and Describing the Target Behavior

To prepare the self-management system, teachers/practitioners and other collaborative team members engage in the following activities:

     o   identifying the target behavior to be increased or decreasedan

     o   developing a clear description of the target behavior that adults agree upon and presenting it in a format that learners are able to comprehend.

The target behavior must be clearly defined so that teachers/practitioners can easily observe and measure the difference between the occurrence and the non-occurrence of the behavior. In addition, a clearly defined target behavior helps learners make these discriminations. An observable and measurable description of the behavior should include what the behavior looks like (e.g., the body parts, movements, materials involved) and the setting(s) or context(s) in which it occurs, or is expected to occur. If more than one adult will be observing the learner, the description must be clear enough so that all team members who work with the learner with ASD in the intervention setting agree on when the behavior occurs and when it does not.

The description developed for the learner may be identical to the description the team uses, or it may be simplified to make it more comprehensible to the learner. For example, for a younger or less verbal learner, a pictorial depiction of the behavior description may be developed. For a learner who can read, the description of the target behavior can be written in language the learner understands. Such pictorial or written versions of the behavior can then be used as reminders to learners as they use the self-management system (e.g., taped to the learner's desk or made small enough to carry in his pocket and refer to as needed).

Before implementing a self-management system with interfering behaviors (i.e., behaviors that the team desires to decrease), the team should first conduct a functional behavioral assessment(FBA). The FBA process provides information that is important when developing the self-management system, including (a) the function(s) of the interfering behavior, (b) potential replacement behaviors, and (c) potential reinforcers related to the function of the behavior being targeted in the self-management system.

Choosing Reinforcers

Teachers/practitioners identify reinforcers that reward the learner by:

- o **asking family members,**

- o **asking or formally assessing the learner, and**

- o **using any other knowledge about the learner.**

It is best to identify a variety of reinforcers as opposed to a single reinforcer so that learners do not become dependent upon a particular type of reinforcement. Reinforcers can be identified in a number of ways. First, caregivers (e.g., child care providers, parents) who are familiar with the learner can identify toys, edibles, activities, and/or materials that the learner prefers. Learners themselves also may identify reinforcers that they are likely to be motivated to earn. Learner input can be obtained informally (e.g., by asking learners what they would like to earn) or more formally through preference assessments).

When possible, it is best to use natural reinforcers; that is, reinforcers that are logically related to the target behavior. For example, if the target behavior is to remain seated during circle time (a nonpreferred activity), a logical reinforcer would be for the teacher to present the child with a favorite or preferred activity. Or, if the target behavior is to raise one's hand to get the teacher's attention, the natural reinforcer is obtaining the teacher's attention. Natural reinforcers have been found to be stronger than artificial reinforcers and are best at maintaining behavior in the long run; however, some situations it may be difficult to use natural reinforcers, such as during non-preferred activities.

Developing a Data Collection System

Teachers/practitioners develop a data-collection system by identifying:

- o **the type of data-collection system (interval or frequency) and**

- o **the initial criterion for the target behavior. The initial criterion for the target behavior should be based on a learner's performance before the intervention begins and should be set sufficiently low to increase the likelihood that the learner will successfully use the target skill.**

There are two types of self-management systems. One is focused on the duration (**interval system**), the other addresses the frequency (**frequency system**), of the behavior. Both of these systems are explained further in the sections that follow.

Interval systems.

A criterion using an interval system (i.e., the learner must/must not demonstrate the behavior for X number of Y-second intervals) is appropriate in cases where one wishes to increase the duration for which a desired behavior occurs (e.g., remaining in seat, staying on task, conversing with peers) or an interfering behavior does *not* occur (e.g., flapping hands, chewing shirt, hitting peers). If an interval system is used, the initial length of the interval should be set so that there is a high likelihood that the learner will be successful.

The best way to determine the initial length of the interval is to observe the learner before the intervention begins and determine the average length of time the learner can be successful without support from others. The initial interval length should be equal to, or slightly less than, that average.

For example, suppose the goal is to increase the length of time a learner sits in his seat without getting up. If it is determined that, on average, the learner stays in his seat for 1 minute before getting up, then beginning the self-management system with a 1-minute interval or slightly less

(e.g., 45 seconds) makes sense. After the interval length has been determined, the initial session length during which the self-management system will be used should be determined and divided into intervals of the predetermined length. The initial number of intervals during which the learner must be successful also should be set.

Continuing with the sitting example, if the self-management system will initially be used for a 6-minute session, and these 6 minutes are divided into six 1-minute intervals, the initial criterion could be set such that the learner must stay sitting in his seat for three of the six (50%) 1-minute intervals.

Frequency systems.

When the goal is to increase or decrease the frequencyof a behavior, a frequency criterion should be considered. Examples of frequency criteria for behaviors that need to be increased and decreased are provided below.

EXAMPLE #1: Frequency Criterion for Increased Behavior

The learner must demonstrate the behavior X number of times to earn the reinforcer.

EXAMPLE #2: Frequency Criterion for Decreased Behavior

The learner must demonstrate the behavior no more than X number of times within a given period to earn the reinforcer.

If the goal is to increase a desired behavior, the initial criterion (i.e., the number of times the learner must demonstrate the behavior) should initially be set low enough so that the learner rapidly earns the reinforcer. For example, if the goal is to increase hand-raising in class and the

learner rarely raises her hand, the initial criterion may be set at one hand raise to earn the reinforcer.

If the goal is to decrease an interfering behavior, the initial criterion (i.e., the number of times that the learner can demonstrate the behavior within the given time period) should initially be set high enough so that the learner is likely to be successful. For example, if a learner with ASD hits his peers an average of five times during free play, the initial criterion may be set at five or fewer hits during free play to earn the reinforcer. Similar to the interval system, information obtained from observing the learner's performance before the intervention begins should guide the selection of the initial criterion.

Selecting Self-Monitoring Recording and Cueing Devices

Teachers/practitioners select self-monitoring recording and cueing devices (if interval system is used) that are appropriate based on learner characteristics and the setting in which the self-management system will be used.

For learners to monitor their behaviors, a self-recording device must be selected. Paper-and-pencil systems are the most common choices. If an interval system is used with paper and pencil, the intervals should be clearly delineated on the paper and it should be easy for learners to record their behaviors for each interval (e.g., checking yes or no; circling a smiley face or a frown face). With a frequency criterion, it is helpful to make it clear on the paper how many times learners must demonstrate target behaviors to earn the reinforcer (or alternatively, the maximum number of times they are allowed to demonstrate an interfering behavior). For example, if a learner must raise her hand five times to earn the reinforcer, a piece of paper with five boxes drawn with a picture depicting the behavior in each box may be used. Once the learner has checked off all five

boxes signifying that she had raised her hand five times, she earns the reinforcer. Similarly, a learner must remove toys from his peers five times or less during free play time to earn the reinforcer, a piece of paper with five boxes drawn with a picture depicting him hitting may be used (perhaps also with a "no" symbol to indicate to the learner that this behavior is undesirable). In this case, as long as he has at least one box left unchecked, he earns the reinforcer. Sample self-recording data sheets are provided in the Resources section of the lesson.

Paper-and-pencil systems are not the only options. Be creative in identifying the self-recording device so that it best fits the situation and the learner. Other examples of self-recording devices include:

- o using clicker devices

- o using token boards

- o moving paper clips from one pocket to another each time the learner demonstrates the behavior

- o moving rubber bands from one wrist to the other each time the learner demonstrates the behavior

If an interval system is used, an additional device should be selected that cues the learner when each interval ends. The cueing device should prompt learners that they need to self-record their behavior. Examples of cueing devices include:

- o alarm clocks

- o kitchen timers

- o stopwatches

- o teacher tapping the learner's desk

- o wristwatches with beeping alarms

- o wristwatches with vibrating alarms

Another factor to consider when selecting recording and cueing devices is how intrusive and/or covert they are. This can be an especially important factor as peers get older and become more aware of things that make the learner "stand out." For example, moving paper clips from one pocket to the other may be a more covert way for a learner to self-record than using a paper-and-pencil system that remains on the learner's desk and is obvious to peers. Likewise, a wristwatch with a vibrating alarm to cue the end of the interval may draw less attention from peers than a wristwatch that has a beeping alarm.

Step 2. Teaching Learners to Use the Self-Management System

Learners should be able to demonstrate three elements of the self-management system before implementing it in the setting where it will be used. First, learners should demonstrate the target behaviors (or *not* demonstrate if the behaviors are targeted for reduction) and discriminate between when the target behaviors have occurred and when they have not. Second, learners should be able to accurately record when they have and have not demonstrated the target behaviors. Third, learners need to manage the reinforcers.

Instructing Learners in Correct Behavior

Teachers/practitioners instruct learners to demonstrate the correct behavior by:

- o **providing learners with a description of the target behavior in a comprehensible form (e.g., a simply written description, a pictorial depiction),**

- o **prompting learners to demonstrate correct behavior upon request (as needed),**

- o **reinforcing all correct demonstrations of behavior (prompted and unprompted), and**

- o **fading prompts until learners consistently and independently demonstrate correct behavior upon request.**

When trying to increase a behavior, "correct" is defined as the target behavior itself. On the other hand, when trying to decrease behaviors, "correct" is defined as appropriate, alternative behaviors and/or not demonstrating the target behavior.

When learners understand target behaviors, they are able to demonstrate them on request. To evaluate learners' understanding of target behaviors, teachers/practitioners should ask them to demonstrate target behaviors. For example, a student who throws toys instead of playing with them appropriately should be able to demonstrate both keeping the toy in his hands (the correct behavior) and throwing them (the incorrect behavior). Being able to demonstrate examples of correct and incorrect behaviors indicates that learners can discriminate between the two. This is important when learners use the self-management system to self-monitor and self-record their behaviors.

If learners are unable to demonstrate the target behaviors upon request, teachers and other practitioners provide the necessary prompts to help them complete the task. Reinforcement (e.g., verbal praise, edibles) should be provided for all prompted and unprompted demonstrations of correct behavior. Learners should practice the target behavior until they can reliably demonstrate correct behavior independently without any additional prompting.

Once learners independently demonstrate correct behavior upon request, they are taught to discriminate between the occurrences of correct behavior versus incorrect behavior. For desired behaviors, the correct behavior is demonstration of the target behavior itself, whereas incorrect behavior is demonstration of any behavior other than the target behavior (i.e., any behavior that does not meet the clear, observable, and measurable description of the target behavior that was developed). For example, if the target behavior is greeting friends by name when they join in play (a desired behavior), saying "Hello, (friend's name)" is an example of correct behavior. Saying the wrong name or saying nothing when a friend joins in play are examples of incorrect behavior.

For interfering behaviors, the correct behavior is the absence of the interfering behavior (as defined by the description that was developed early in the process). The incorrect behavior, on the other hand, is any behavior that fully or partially meets the description of the interfering behavior that was developed by the team. For instance, if the target behavior is hitting and/or kicking other students while walking in line (an interfering behavior), an example of the correct behavior is walking quietly in line with hands and feet to oneself. An example of incorrect behavior would be doing any parts (i.e., talking, hitting, or kicking) of the target behavior.

Discriminating Between Correct and Incorrect Behaviors

Teachers/practitioners instruct learners how to discriminate between correct versus incorrect behavior by:

- o **modeling examples and non-examples of the behavior;**

- o **prompting learners as needed to identify whether each modeled behavior is an example or a non-example;**

- o **reinforcing all correct identifications of examples and non-examples (prompted and unprompted); and**

- o **fading prompts until learners can consistently and independently identify examples and near-, but still non-examples.**

The teacher begins discrimination teaching by modeling examples of correct and incorrect behavior and having the learner identify whether each modeled behavior is correct or incorrect. The learner is prompted as necessary to accurately identify whether a modeled behavior is correct or incorrect and then reinforced for all accurate identifications (prompted and unprompted).

Initially, the differences between the examples of correct and incorrect behavior must be very obvious. As learners become more successful at identifying behaviors, the examples of correct and incorrect behavior should become more similar so that learners must make crisper discriminations. For example, if the goal is to increase hand-raising, the teacher might model a full hand raise as an example of correct behavior versus hands by one's side as an example of incorrect behavior. Once the learner can independently discriminate between these two, the teacher might model a full hand raise as the correct behavior versus a half hand raise as incorrect.

As another example, if the goal is to decrease hitting peers, the teacher might model keeping hands to oneself when next to a peer as an example of correct behavior versus hitting a peer on the shoulder as an example of incorrect behavior. Once the learner can independently make the discrimination between the two, the teacher might model tapping the peer on the shoulder as an example of correct behavior versus hitting a peer on the shoulder as an example of incorrect behavior.

When learners consistently demonstrate the target behaviors and make discriminations between examples of correct and incorrect behavior, the next step is to teach them to use the recording system that was selected in Step 1.

Using Self-Recording Systems

Teachers/practitioners teach learners how to use self-recording systems by:

- o **modeling examples of correct and incorrect behavior and prompting learners as needed to record accurately at the appropriate time,**

- o **reinforcing all accurate recordings at the appropriate time (prompted and unprompted), and**

- o **fading prompts until learners independently and accurately record behaviors 80% of the time.****

**This criterion was selected because it gives teachers/practitioners a clear criterion for evaluating learner progress with the self-management system. Furthermore, this criterion is commonly used in the literature to determine acquisition of skills.

Learners need to be taught how to record at the appropriate time and to do so accurately. An effective strategy to teach appropriate and accurate recording is for teachers to model examples of correct and incorrect behavior (similar to the models used in Step 2a) and then assist the learner (via prompting) to record whether the modeled behavior she observed was an example of correct or incorrect behavior.

If an *interval system* is used, the appropriate time to record is when the cueing device signals the end of an interval. Accurate recording means learners can correctly indicate whether they

demonstrated correct behavior for the entire length of a given interval. For instruction, the teacher might model an example of either correct or incorrect behavior during the interval. When the cueing device signals the end of the interval, the teacher prompts learners as necessary to record whether the modeled behavior should be counted as an example of the behavior or not. If necessary, teachers prompt learners to record their behavior at the appropriate time with accuracy.

If a *frequency system* is used, the appropriate time to record is whenever the target behavior is demonstrated. Accurate recording means learners correctly indicate when they have demonstrated their target behaviors. For instruction, the teacher models an example of either correct or incorrect behavior. After the model is demonstrated, the teacher prompts learners to record that a correct behavior occurred (or refrain from recording if an example of incorrect behavior was modeled).

Reinforcement should be provided for all instances (prompted and unprompted) of recording accurately at the appropriate time. Prompts should be faded until the learner can independently (i.e., without adult prompting) record behaviors at the appropriate time with at least 80% accuracy. Please refer to the AIM lessons on reinforcement and prompting.

Once learners are fluent at the skills taught in Step 2 (i.e., demonstrating and discriminating the target behaviors, using the recording system), it is time to implement the self-management system in the targeted setting.

Step 3. Implementing the Self-Management System

Teachers/practitioners:

- o **provide learners with the materials needed to use the self-management system at the appropriate time *or***

- o **teach learners to independently gather the necessary materials.**

When the appropriate setting/context presents itself, the teacher/practitioner can either set up the self-management system or teach the learner to gather the necessary materials and independently initiate the use of the self-management system. While the former choice involves less teaching, the latter results in more independence for the learners. To teach the learner to independently gather the necessary materials, the teacher/practitioner uses prompting/prompt fading and reinforcement strategies similar to other steps in this lesson. Physical guidance will likely be needed initially to help learners get their materials and set them up. As learners become more successful, prompts can be faded to less intrusive forms such as gestural and verbal prompts. As with other steps, the teacher/practitioner reinforces (e.g., with verbal praise that is behavior-specific) the learner for all correct instances, both prompted and unprompted.

Teachers/practitioners provide learners with cues (e.g., verbal instruction, visual aid) that signal them to begin using self-management systems.

Teachers/practitioners teach learners how to self-record their behavior in the target setting by:

- o **prompting them (as needed) to self-record accurately at the appropriate time,**

- o **reinforcing all accurate self-recordings at the appropriate time (prompted and unprompted), and**

- o **fading prompts until learners self-record (without prompts) with accuracy 80% of the time.****

**This criterion was selected because it gives teachers/practitioners a clear criterion for evaluating learner progress with the self-management system. Furthermore, this criterion is commonly used in the literature to determine acquisition of skills.

Teachers provide prompts to ensure that learners accurately self-record. Reinforcement is provided for all instances of self-recording at the appropriate time and with accuracy. Prompts are faded until the learner is able to independently record behaviors at the appropriate time with at least 80% accuracy.

Consider an example in which the goal is to decrease hitting during transitions. The initial criterion is five or fewer hits during a transition. That is, the learner must not hit more than five times during the transition to earn the reinforcer. The recording device is a system in which the learner wears rubber bands on his left wrist. Each time he hits someone during a transition, the learner is supposed to record this behavior by moving a rubber band from his left to his right wrist. Hence, as long as there are no more than five rubber bands on his right wrist at the end of the transition, he earns the reinforcer.

But suppose that during a particular transition, he hits someone five times, yet only moves a rubber band to his right wrist four times. In this case, he would be recording his behavior with 80% accuracy, which is still acceptable. If he hit someone five times, yet only moved a rubber band to his right wrist three times, he would be recording his behavior with 60% accuracy, which would be unacceptable. The teacher should provide the learner with prompts to accurately self-record his hitting (that is, prompt him to move a rubber band from his left wrist to his right wrist each time he hits someone during a transition) until he can consistently do so independently with at least 80% accuracy.

Teachers/practitioners teach learners to gain access to reinforcement when the criterion is reached by:

- o **prompting learners (as needed) to acquire reinforcement when the criterion is reached, and**

- o **fading prompts until learners consistently and independently acquire reinforcement when the criterion is reached.**

In addition to teaching learners to self-record independently, they may need instruction to reinforce themselves or request reinforcement when they reach the criterion for the targeted behavior. For example, a self-management system may be used to teach the learner to stay seated. The session in which the system will be used is 5 minutes long divided into five 1-minute intervals, and the learner must accurately record that he stayed sitting for three of the five (60%) intervals to receive the reinforcer. The learner may independently record his behavior at the appropriate time (i.e., each time the cueing device signals the end of a 1-minute interval), and he may be accurate in doing so. However, even if he meets the reinforcer criterion (i.e., 3 out of 5 intervals in which he stayed sitting), he may not know to request the reinforcer or reinforce himself for meeting the criterion. Therefore, if learners meet the criterion for reinforcement, but do not independently request/self-deliver reinforcement, the adult should prompt them to do so. Prompts should be faded until learners independently acquire the reinforcer (through requesting or self-reinforcing) whenever they meet the criterion.

Step 4. Promoting Independent Use of the Self-Management System

Once learners are accurately self-recording and independently requesting/self-delivering reinforcement when they meet their criterion, steps should be taken to promote further independence using the system.

Teachers/practitioners conduct ongoing, intermittent checks to determine whether learners continue to accurately self-record and acquire reinforcement when the criterion is met.

Initially, these checks should be frequent. Once learners are fluently using the self-management system and accurately recording, teachers/practitioners need to check learners' self-recording and acquisition of reinforcement to make sure they continue to do so accurately. Such monitoring should be done during about 20% of all sessions. If the self-management session is used once a day, five days a week, this would mean conducting a check once a week.

To conduct a check, teachers/practitioners observe learners while they are using their self-management systems and record data on the target behavior exactly as the learner does. If a frequency system is used, teachers/practitioners record each time learners demonstrate the target behavior. If an interval system is used, teachers/practitioners record at the end of each interval whether target behaviors were correctly demonstrated. After the session is over, teachers/practitioners compare their data to learners' self-recording data. If the learners' data are less than 80% accurate for three consecutive sessions, teachers/practitioners go back and reteach them how to accurately self-record.

Teachers/practitioners gradually increase the criterion by ensuring that learners are successful at the current criterion before increasing it further.

When learners are consistently earning reinforcement at the initial criterion, the criterion should be gradually increased. By making the reinforcement opportunities more intermittent, learners are encouraged to sustain and maintain their use of target behaviors. For example, if a learner was initially required to raise his hand five times to ask for help during independent work before earning a reinforcer, the adult could increase the criterion to six hand raises, then seven, and so on. Teachers/practitioners should ensure that learners are consistently earning reinforcers at the new criterion before moving on to the next.

Teachers/practitioners gradually increase the session length while simultaneously increasing the criterion.

Increasing the session length while simultaneously increasing the criterion ensures that learners are successful at the current session length and criterion before these varoables are further increased. Whether an interval criterion or frequency criterion is used, teachers/practitioners will reach a point where it is impossible or unfeasible to increase the session length and/or criterion further. For example, if an interval system is used, and the session consists of 5 minutes broken down into 1-minute intervals, the number of successful intervals required to receive reinforcement cannot be increased beyond five.

If a frequency criterion is used, continuing to increase the criterion without increasing the session length eventually leads to unnatural and/or inappropriately high rates of the target behavior. Imagine continuing to increase the number of hand raises required to receive the reinforcement in a 5-minute session. Increasing the criterion to 10 hand raises would require a hand raise every 30 seconds, on average. At some point, the learner would be demonstrating the target behavior more frequently than desired.

To further promote independence, the length of the session during which the self-management system is used should be gradually increased while simultaneously increasing the criterion for reinforcement. As with increasing the criterion, the learner should be consistently earning the reinforcer with the new session length and criterion before further increasing the criterion and/or the session length.

Teachers/practitioners gradually increase the interval length as the session length increases.

Gradually increasing the interval length ensures that learners are successful at the current interval length before it is increased further. This procedure can only be used to promote independence with interval-based self-management systems. Within an interval system, the criterion should first be increased. When the session length is increased, the length of the interval can be increased as well. This is a very important step to promoting independence because it requires learners to accurately monitor and manage their behaviors for longer and longer periods of time before they self-record their performance.

Case Study Examples

This lesson provides two case study examples. Nathan is a 4-year old with ASD working on sitting quietly in circle time with his legs crossed and his hands in his lap. Kayla is a 13-year-old working on raising her hand without talking out in math class.

Nathan - 4 yrs. old

Case Study: Nathan

Nathan is a 4-year-old with ASD who receives services in an inclusive preschool class. His teacher, Ms. Williams, has noted that Nathan's expressive verbal skills are limited primarily to one- or two-word requests, but his receptive language skills are much better. He understands and is able to follow most of Ms. Williams' verbal instructions (e.g., "Clean up," "Wash hands," "Sit down," "Stand up," "Go play").

Because Nathan has been exhibiting some interfering behaviors during circle time, Ms. Williams has requested that a functional behavioral assessment (FBA) be conducted to determine why Nathan is engaging in these behaviors. During circle time, Ms. Williams expects children in her classroom to sit quietly with their legs crossed and their hands in their laps. However, Nathan has difficulty sitting still, often uncrosses his legs, tries to leave the circle time area, and throws tantrums.

After conducting the FBA, the behavior specialist, Mr. Kline, and Ms. Williams agree that these behaviors are evidence of Nathan's desire to escape circle time. They also agree that Nathan's desire to escape circle time is largely because the activities are not adequately engaging. Furthermore, Nathan's limited receptive and expressive language skills make it difficult for him to comprehend much of what goes on during circle time.

Mr. Kline and Ms. Williams decide that two steps need to be taken to help Nathan stay actively engaged during circle time. First, they address the function of the behavior: Nathan is trying to escape circle time due to lack of interest and an inability to understand much of what is going on. Adaptations to the activities (e.g., visual supports, using choices, incorporating preferred materials) are needed to make it more appealing to Nathan. Second, a self-management system should be implemented to teach Nathan how to sit appropriately during circle time for longer and longer periods of time without demonstrating any interfering behaviors. By addressing both the

function of the behavior and the behavior itself, Nathan will be more likely to have long-term success, and it will easier to eventually fade the self-management system. When planning an intervention for an interfering behavior, it often makes sense to combine a self-management system with another intervention that addresses the function of the interfering behavior.

Ms. Williams and Mr. Kline work together to write a clear description of the target skill (sitting) that they want to increase, as follows:

Nathan will sit quietly during circle time with his legs crossed and his hands in his lap.

The adults agree that this description clearly defines the behavior and allows any other adults who might monitor Nathan during circle time to accurately record the occurrence/non-occurrence of these behaviors. If he were to demonstrate any of the interfering behaviors (e.g., crying, uncrossing his legs, trying to leave, throwing a tantrum), he would not be in compliance with the target skill. However, they decide that this description must be depicted in another form for Nathan because he has not yet learned to read. Ms. Williams finds a cartoon picture of a boy sitting in exactly the same manner as their written description indicates. This picture is used as a pictorial representation of the target skill for Nathan.

Since Nathan displays interfering behaviors during circle time because he wants to leave circle time, the adults decide that they will reinforce Nathan for sitting appropriately by allowing him to take a 1-minute break from circle time, during which time he is allowed to play with one of his favorite toys of his choosing. Ms. Williams and her classroom aide, Ms. Reese, will offer a selection of toys based on the toys he most often plays with at other times of the day.

Before intervening with the self-management system, Ms. Williams observes Nathan during circle time and determines that, on average, he sits appropriately for approximately 1 minute at a

time without demonstrating any of the interfering behaviors. Ms. Williams decides the initial criterion for success will be the following:

Nathan will sit quietly during circle time with his legs crossed and his hands in his lap for one 30-second interval.

In other words, if Nathan can sit appropriately for an entire 30-second interval, he will be rewarded with a break from circle time in which he gets to play with a preferred toy for 1 minute. Ms. Williams chose an initial criterion of 30 seconds of appropriate sitting because this is a length of time in which Nathan is likely to be successful since he can sit appropriately, on average, for 1 minute at a time prior to intervening. Because she does not want Nathan's self-management system to distract the other students during circle time, Ms. Williams decides to use a vibrating watch as the cueing device to signal to Nathan when an interval has ended and it is time to self-record his behavior. For Nathan's initial self-recording device, she devises a 3x5" notecard with a single box on it and a piece of Velcro in the middle of the box. Then, she makes small pictures of the cartoon boy sitting appropriately and attaches pieces of Velcro to them.

To teach Nathan how to use the self-management system, Ms. Williams sets up a mock circle time with just her and Nathan. She puts the vibrating watch on Nathan's wrist, set to vibrate at 30-second intervals. She tells him "It's time for circle" as she normally would announce to the entire class when it is circle time. Then, she hands Nathan the 3x5" notecard and one of the picture cards (of the boy sitting). She points to the boy sitting and tells Nathan, "Sit and listen." Ms. Williams waits for approximately 5 seconds for Nathan to comply with this instruction independently. If he does not do so within 5 seconds, she physically prompts him to sit so that he is sitting according to the description that was developed.

Once Nathan is sitting appropriately, she hand-over-hand prompts him to push the button on his timer while simultaneously giving him the instruction, "Start your watch." She then starts to read a book (a common circle time activity). Because Ms. Williams is teaching Nathan how to sit and listen, and to use the self-management system, she wants him to be successful right away. Therefore, during this stage, she provides physical prompts as quickly and as often as necessary to ensure that Nathan sits appropriately. If he moves his hands or uncrosses his legs, she immediately returns them to their correct position. However, there is nothing Ms. Williams can do to prompt Nathan to stop if he throws a tantrum or cries, so she ignores such behaviors, makes sure he continues to sit criss-cross with his hands in his lap, and waits for another opportunity for him to be successful after he stops crying.

When Nathan's watch vibrates to indicate the end of a 30-second interval, Ms. Williams asks Nathan, "Did you sit and listen?" She then gestures the appropriate response either by nodding her head "yes" or shaking it "no" (both of which Nathan understands). If Nathan did sit appropriately for the entire 30-second interval (regardless of whether it is prompted or independent), Ms. Williams verbally praises him for doing so and immediately prompts him by using hand-over-hand assistance to self-record his appropriate behavior by attaching the cartoon picture to the notecard. If Nathan does not sit appropriately for the entire 30-second interval, Ms. Williams tells him, "Try again" and continues reading the story.

If Nathan is not successful at sitting appropriately, but tries to attach the cartoon picture to the notecard (which would be inaccurate self-recording), Ms. Williams blocks him from doing so and says, "Maybe next time" and repeats, "Try again." If Nathan is successful at sitting appropriately, as soon as he attaches the cartoon picture to the notecard, Ms. Williams teaches

him to request the reinforcement that he has earned by prompting him to raise his hand and ask for "Break, please."

Ms. Williams then leads Nathan to a separate area in which an array of his favorite toys are provided. Once he selects a toy, Ms. Williams allows Nathan to play with it for 1 minute. After 1 minute, Ms. Williams initiates a new teaching trial with the verbal cue "All done with break. Come back to circle." She then physically guides Nathan back to the circle time area to go through the sequence again. She repeats this sequence, continually reducing the level of prompting and assistance she provides Nathan, until he is able to consistently complete all steps of the sequence independently, including (a) sitting down appropriately in the circle time area, (b) starting the timer on the watch, (c) accurately self-monitoring and self-recording his behavior, (d) requesting a break if he earns it, (e) trying again if he does not sit appropriately, (f) leaving the circle time area for the break area when he has earned a break, and (g) returning to the circle time area when Ms. Williams tells him his break time is over and starting the sequence over again.

When Nathan can consistently demonstrate these steps independently in the mock situation, Ms. Williams transfers the self-management system to the actual circle time. Because she is responsible for all of the students, her aide, Ms. Reese, will be responsible for making sure Nathan is able to complete all of these steps in the actual circle time. Ms. Reese will provide prompts exactly as Ms. Williams did in the mock circle time until Nathan is consistently completing all steps independently.

Once Nathan is consistently successful at the initial criterion - sitting appropriately for one 30-second interval - it is time to start gradually increasing the criterion so that Nathan improves his ability to sit appropriately and becomes more and more independent with the self-management

system. Ms. Williams begins by increasing, one at a time, the number of intervals during which Nathan must be successful before he earns the reinforcer. Hence, the first new criterion will be:

Nathan will sit quietly during circle time with his legs crossed and his hands in his lap for two 30-second intervals.

To accommodate for this new criterion, Ms. Williams redesigns Nathan's self-recording notecard by adding another box and provides him with an additional cartoon picture. From this point on, each time she increases the criterion, she redesigns his self-recording notecard and provides him with additional cartoon pictures. Once Nathan is consistently successful at this new criterion, Ms. Williams increases the criterion to three 30-second intervals during which Nathan must sit appropriately, and so on, until Nathan must sit quietly for ten 30-second intervals before he is allowed to take a break. Because Ms. Williams' circle times are approximately 10 minutes long, this means Nathan must be sit appropriately for at least 50% of all intervals to earn at least one break.

At this point, Ms. Williams decides to further promote Nathan's independence by increasing the length of the interval from 30 seconds to 1 minute so that Nathan must sit appropriately for longer periods of time in order to be successful. She changes the criterion from ten 30-second intervals to five 1-minute intervals in which Nathan must sit appropriately. This way, Nathan still must sit appropriately for at least 50% of all intervals to earn at least one break.

Ms. Williams decides that 1 minute is about as long as Nathan can last and still be able to accurately self-monitor and self-record his behavior. Hence, to improve Nathan's ability to sit appropriately and promote his independence even further, Ms. Williams gradually increases the criterion from five 1-minute intervals in which Nathan must sit appropriately to earn a break to 8

(i.e., at least 80% of all intervals for a 10-minute circle time). She also teaches Nathan to wait until circle time is over to request his break so that he is staying for the entire duration of circle time.

The target behavior of this self-management system was sitting appropriately during circle time. However, Nathan has learned a variety of skills as a result of the self-management system being in place, including how to (a) monitor his behavior, (b) respond to a cue, (c) reflect on and record his behavior, (d) modify his behavior from one instance to the next so that he can successfully earn the desired reinforcer, (e) gain his teacher's attention by raising his hand, (f) verbally request a break, (g) transition from a more preferred (break time with a toy) to a less preferred activity (circle time), and (h) tolerate delayed delivery of the reinforcer until circle time is over. In addition, because Nathan is now able to sit and stay for the duration of circle time, he may enjoy the collateral benefits of learning skills that Ms. Williams teaches during circle time.

Kayla - 13 yrs. old

Case Study: Kayla

Kayla is a 13-year-old middle school student with ASD. She is very verbal and is educated primarily within the general education setting. Although Kayla's verbal skills are highly developed, she has difficulty with certain social behaviors, such as raising her hand in class. Kayla's favorite class is math because she loves numbers. However, recently, her math teacher, Mr. Smith, has talked with Ms. Martin, the autism coordinator who oversees Kayla's educational services about Kayla's behavior during class. He reported that Kayla often talks out in class rather than raising her hand when she wants to contribute or ask a question. Mr. Smith thinks this behavior has become problematic because Kayla's talking out has become so frequent that he has

fallen behind in his instruction to the entire class. After talking with Mr. Smith, Ms. Martin and Kayla's parents decide that a self-management system is appropriate to deal with the situation.

As Ms. Martin begins developing the self-management system, she talks with Mr. Smith and Kayla's parents about the target skill. They identify Kayla's talking out in class as the behavior that they would like to decrease. To accomplish this, they decide to focus on teaching her to raise her hand rather than blurting out answers to questions or other comments. After the target behavior has been identified, they draft a clear description of it so that everyone can observe and monitor the target skill accurately. The following is the description of the target skill the team developed:

Kayla will raise her hand without talking during math class when she wants to ask a question or make a comment.

Because Kayla is so verbal and understands written language well, the team decides that this description of the target behavior is appropriate for Kayla when teaching her to raise her hand without talking during class.

After the team has adequately identified and described the target behavior, they identify potential reinforcers that can be used to motivate and reward Kayla for using the target skill. Kayla's parents tell Ms. Martin that Kayla loves getting new school supplies, such as notebooks with flowers on them and colorful pencils. They also note that Kayla likes to listen to her favorite music when she is at home. Because Kayla is so verbal, Ms. Martin also asks her what she would like to work for during math class. Kayla tells Ms. Martin that she would like "cool pencils and erasers." When asked what else she would like, Kayla responds, "Reading my books." After talking with Kayla, Ms. Martin and the rest of the team determine that pencils, erasers, extra time

at the end of class to read her books, and listening to music will serve as reinforcers. At the beginning of each class, Mr. Smith will ask Kayla to identify the reinforcer she will be working toward during that class period. Kayla will receive the identified reinforcer after she raises her hand a certain number of times.

The next step is for Ms. Martin to develop the data-collection system that will be used to monitor Kayla's progress. She determines that a frequency system will be most appropriate because the team would like to increase the number of times that Kayla raises her hand without talking during class. To determine the initial criterion, Ms. Martin observes Kayla in math. She notes that Kayla spoke out eight times during class, but was able to raise her hand three times when she was reminded to do so by Mr. Smith.

Based on her observation, Ms. Martin decides that an initial criterion of three prompted hand raises during class would be appropriate. Because Kayla needed prompting to raise her hand three times, Ms. Martin feels that this criterion would help her be successful initially. The following is the initial criterion for Kayla's target skill:

Kayla will raise her hand three times without talking during math class with prompts (if necessary).

Next, Ms. Martin selects a self-monitoring device. She is particularly thoughtful about this step because Kayla receives services within an inclusive setting. Because Kayla loves colorful school supplies and her cognitive abilities are quite advanced, Ms. Martin decides that Kayla will move colorful rubber bands from one wrist to the other each time she raises her hand independently during math class. Ms. Martin hopes that the colorful rubber bands will also be reinforcing and motivating to Kayla.

After the initial planning is complete, Ms. Martin teaches Kayla how to use the self-management system. During a free period, Ms. Martin takes Kayla to the resource room and sits with her at a table. Ms. Martin has written the description of the target behavior on a small piece of paper. She also laminated it so that Kayla can carry it with her from class to class to serve as a reminder.

As they sit at the table, Ms. Martin shows Kayla the description of the target behavior and reads it to her. She also explains that Kayla should raise her hand each time she wants to make a remark or ask a question during class. Ms. Martin then asks Kayla to demonstrate the target skill. Kayla responds by holding her hand up and saying, "Like this?" Ms. Martin says, "That's right, Kayla. But I want you to raise your hand without talking." Ms. Martin then says, "Okay, Kayla. Now you show me how to raise your hand." Kayla then raises her hand and does not talk. Ms. Martin says, "Great, Kayla! That's exactly how I want you to raise your hand in math class when you have something to say or if you know the answer to a question." Ms. Martin then asks Kayla five more times to show her how she is going to raise her hand during math class. Each time, Ms. Martin says, "Great job, Kayla" and gives her a colorful sticker when she uses the behavior correctly.

After Kayla has demonstrated the behavior correctly without additional prompting five times, Ms. Martin teaches her how to discriminate between correct and incorrect hand-raising. Ms. Martin does this by modeling examples and non-examples of the behavior. To model the example, Ms. Martin raises her hand and does not talk. To model the non-example, Ms. Martin loudly makes "in-class" comments without raising her hand (e.g., "The answer is 25!"). Ms. Martin then alternately demonstrates the example and non-examples and asks Kayla to identify correct hand-raising. Ms. Martin prompts Kayla when needed, but after a few demonstrations, Kayla is able to consistently identify the example and the non-examples.

Now that Kayla is able to demonstrate how to raise her hand during math class, and correctly discriminate between correct and incorrect use of the behavior, Ms. Martin begins teaching her how to use the self-recording system. Mr. Smith comes to the resource room to watch Ms. Martin as she conducts the training. To teach Kayla how to use the self-management system, Ms. Martin places colorful rubber bands on her own wrist, shows them to Kayla, and says, "Each time you raise your hand in math class without talking, you can move one rubber band to your other wrist. Watch me." Ms. Martin then raises her hand without talking and says to Kayla, "Did I raise my hand without talking?" Kayla nods her head yes. Ms. Martin then says, "That's right. I did. Now I can take one rubber band and put it on my other wrist. Now watch me again." Ms. Martin does not raise her hand, but instead blurts out an answer. She then asks Kayla, "Did I raise my hand without talking?" Kayla says, "No. You didn't raise your hand and you talked." Ms. Martin replies, "That's right, Kayla. Good job. So, can I move a rubber band to this wrist?" Kayla shakes her head no. Ms. Martin replies, "That's right. I can't move a rubber band because I didn't raise my hand without talking. Now I want you to try."

Ms. Martin then places several colorful rubber bands on Kayla's wrist and says, "If you have a question, please raise your hand." Kayla raises her hand, but asks Ms. Martin a question at the same time. Ms. Martin asks, "Kayla, did you raise your hand without talking?" Kayla responds, "No, I did not raise my hand without talking." Ms. Martin now asks Kayla, "Can you move a rubber band then?" Kayla shakes her head no. Ms. Martin tells Kayla to try again. This time Kayla raises her hand and does not talk. Ms. Martin repeats this process until Kayla is able to raise her hand correctly for five consecutive times without any prompting. Ms. Martin then explains to Kayla that she needs to start raising her hand without talking in math class the next day. She tells her that she will receive one of the identified reinforcers if she raises her hand

three times without talking. Kayla is excited about the rubber bands and the list of reinforcers from which she can choose.

The next day, Ms. Martin meets Kayla as she is coming out of English class on her way to math. As they are walking down the hall, Ms. Martin places five rubber bands on Kayla's wrist and reminds her to raise her hand without talking when she wants to ask a question or make a comment in math class. Ms. Martin also makes sure that Kayla has her reminder card and tells her to place it at the top of her desk. Mr. Smith greets Kayla and Ms. Martin as they enter the room. Mr. Smith then says to Kayla, "Kayla, you need to raise your hand without talking three times during class today. If you do this, do you want pencils, erasers, or free time to read your book?" Kayla chooses the pencils.

Ms. Martin has decided to sit in on the math class because it is the first time that the self-management system is being used. She would like to be there in case Mr. Smith needs additional help. The day before, Ms. Martin met with Mr. Smith after school to coach him through the process of teaching Kayla to raise her hand. When Kayla talks out in class rather than raising her hand, Mr. Smith will not respond to this behavior. By doing so, Mr. Smith only will reinforce the target behavior, which is the goal of the self-management intervention.

Ms. Martin will sit next to Kayla on the first day so that she can provide reminders about moving a rubber band to her other wrist each time she raises her hand (both prompted and unprompted). When Kayla has moved three rubber bands, she will receive the reinforcer that she identified as she came into math class. Ms. Martin also will be available to remind Kayla to ask for the reinforcer if necessary.

During the first class, Kayla talks out eight times; however, she raises her hand three times when prompted by Mr. Smith. At the end of class, she can choose two pencils. By the end of the week, she has met the initial criterion and has begun to raise her hand independently. She also is able to monitor her behavior with very little support from Mr. Smith. The following week, Kayla will need to raise her hand three times without prompting to receive a reinforcer. As Kayla becomes increasingly independent, the reinforcers and self-management system will be faded out. This will be accomplished by gradually increasing the number of times Kayla has to raise her hand before acquiring a reinforcer. Eventually, the target behavior will become naturally reinforcing and artificial reinforcers will not be needed to maintain the target behavior.

Summary

- Self-management interventions are a way of systematically teaching individuals with ASD how to self-regulate their behavior.

- Self-management interventions can be used with individuals with ASD across the age range to increase desired behaviors and decrease interfering behaviors in a variety of domains, including behavioral, social, adaptive, and language/ communication.

- If the goal of self-management is to decrease an interfering behavior, a functional behavioral assessment should first be conducted to determine the reason(s) why the interfering behavior is occurring.

- A clear description of the target skill should be developed so that all adults who will be using the self-management system can distinguish between correct and incorrect demonstrations of the target skill based on the description.

o   The description of the target skill should be adapted, if necessary, into a form that the learner can comprehend.

o   The adult should select self-management materials that are appropriate for the individual learner. These include (a) a cueing device (for interval-based systems), (b) a self-recording device, and (c) reinforcers that the learner can earn for meeting the behavior criterion.

o   Effective implementation of self-management interventions involves teaching learners how to independently (a) self-monitor and discriminate between appropriate and inappropriate behavior, (b) accurately self-record whether they have behaved appropriately or inappropriately, and (c) self-reinforce or request for reinforcement when they have met a predetermined behavior criterion.

o   To promote independence with the self-management system and further improve the leaner's behavior, the behavior criterion and session length should be gradually increased over time.

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Quiz

1. Self-management can be used to target skills in which domains?

   Social

   Communication

   Behavioral

   Adaptive

   All of the above

2. Reinforcement is an important part of any well-designed self-management system.

   True

   False

3. Some learners, such as very young learners or learners with severe co-occurring cognitive disabilities, may not benefit from self-management strategies.

   True

   False

4. Self-management is only useful for increasing desirable skills

   True

   False

5. This is a recommended self-management practice: Set the initial learning criterion for the targeted skill higher than what the learner is capable of doing before intervening.

   True

   False

6. This is a recommended self-management practice: Create a definition of the target behavior that is in a form that the learner can understand.

   True

False

7. This is a recommended self-management practice: For interval-based self-management systems, use a cueing device that alerts the learner when each interval has ended.

   True

   False

8. This is a recommended self-management practice: If the learner is unsuccessful at a current criterion level, make the criterion level more difficult to encourage the learner to try harder.

   True

   False

9. The learner recording a tally on a piece of paper each time she demonstrates the appropriate behavior is an example of a good self-recording device.

   True

   False

10. The adult recording a tally on a piece of paper each time the learner demonstrates the appropriate behavior is an example of a good self-recording device.

    True

    False

11. The learner putting a token in her pocket each time she demonstrates the appropriate behavior is an example of a good self-recording device.

    True

    False

12. The learner independently taking a piece of candy as reinforcement whenever she reaches the criterion goal is an example of a good self-recording device.

    True

    False