Use of Technology-Based Self-Monitoring Interventions for Adolescents with ASD

Stephanie A.C. Kuhn, Ph.D., LP, LBA, BCBA-D

Overview

1. Key features of a self-monitoring program.
2. Considerations for evaluating the effectiveness of self-monitoring interventions.

Introduction

• Many benefits to inclusion (e.g., Harrower and Dunlap, 2001).
• Many challenges – for students, educators, and support staff
• One challenge – problematic behavior
Challenging behavior

- Challenges present in earlier grades can become more of a disruption in middle and high school.
- Problem behavior not present before adolescence may emerge or worsen.
- Can lead to alternative school placements.

Challenging Behavior

- General education classroom – Least Restrictive Environment (LRE)
- Some students
  - Level of instruction in general education class is appropriate
  - Problem behavior exceeds what can be tolerated in a general education setting.

Challenging Behavior

- Many cases
  - Behavioral interventions can be effective in managing the problem behavior in the general education classroom for these students (Koegel, Matos-Fredden, Lang, & Koegel, 2012; Shapiro, Duman, Post, & Levinson, 2002).
Self-monitoring

Challenging Behavior

- Assessment and treatment
  - Functional behavioral assessment (FBA)
    - Identify environmental events that occasion and maintain problem behavior
  - Function-based interventions
    - Extinction
      - Reinforcer maintaining behavior no longer delivered following problem behavior
      - Very effective
      - Very difficult to implement in situations where the implementers do not have control over the delivery of the reinforcers

Challenging Behaviors

Example: Difficulty with extinction in inclusive settings

- An individual screams or throws materials in order to gain access to attention or escape tasks
- Extinction would involve no longer providing attention or escape from tasks following screaming or throwing materials
- In inclusive settings attention may be delivered inadvertently by peers
- Escape extinction may not be possible given the disruption to the other students when screaming or throwing occurs (i.e., making it difficult or impossible to maintain the task demand when these target behaviors occur)
- If the target behaviors continue to result in reinforcement it is likely that the behaviors will continue to occur. In these situations, strategies that do not rely on the reinforcer being withheld should be considered

Alternatives?

Strategies that do not rely on the reinforcer being withheld should be considered
Considerations

- Especially important to teach adolescents with ASD strategies that don’t rely on external agents (e.g., teaching assistants, teachers, or parents) to implement the treatment
- Can more independently reach their goals

Self-monitoring

An intervention that has been demonstrated effective in improving student academic and behavioral outcomes along with maintaining and generalizing these gains is self-monitoring or self-management (Harrower & Dunlap, 2001).

- Students are involved in setting goals for themselves
  - Taught to
    - Identify appropriate and inappropriate behaviors
    - To record those behaviors
    - To evaluate the data
    - To deliver rewards to his/herself when certain criteria are met (Harrower & Dunlap, 2001)
  - The effectiveness of self-management strategies has been demonstrated in full-inclusion classrooms (Callahan & Rademacher, 1999; Frea & Hughes, 1997.)
Self-monitoring

- The effectiveness of self-management strategies has been demonstrated in full-inclusion classrooms (Callahan & Rademacher, 1999; Frea & Hughes, 1997).
- Self-management programs demonstrated to
  - increase independent functioning while reducing reliance on a one-to-one aide
  - maintaining effectiveness over long periods of time in a full-inclusion classroom setting (Koegel, Harrower, & Koegel, 1999).

Technology

- Studies examining the use of technology-based self-monitoring interventions have produced promising results (Clemons, Mason, & Garrison-Kane, 2015; Crutchfield et al., 2015).
- Applications (i.e., "apps" on mobile devices) have been
  - Demonstrated to increase task completion and decrease challenging behavior (Clemons, Mason & Garrison-Kane, 2015)
  - Demonstrated as effective in high school settings with students with disabilities (Wills & Mason, 2014).

- Pencil and paper and technology based self-monitoring applications have been demonstrated as effective in increasing independence in task completion
- Some evidence that students preferred the technology based option (Bouck et al., 2014).
Self-monitoring Apps

- Several commercially available
- Example of how to use:
  - Students can rate if an antecedent for challenging behavior was present
  - If they responded with challenging or appropriate behavior
  - Apply consequences based on the response that occurred (i.e., access reinforcement such as a break or withhold reinforcement)

I-Connect

- Self-monitoring application with a web application to set up users, customize monitoring settings and to view data over time
- Encourages active class participation, assignment completion, engagement in appropriate help-seeking behavior, adherence to rules, and attention to the teachers, supervisors, or parents
- Enables students and users to set achievable self-monitoring goals and to monitor behavior aligned with success

Apps

- I-Connect
- Alarms
- Calendars
- Checklists
- Prompts
(Crutchfield et al, 2014)
- Evaluated the functional relationship between I-Connect and decreases in the level of stereotypy for two students with ASD School setting

- Withdrawal design with an embedded multiple baseline across participants
- Both students demonstrated a marked decrease in stereotypy with the introduction of the self-monitoring application
Self-monitoring

Score It

- Self-monitoring involves teaching students to think about and be aware of their behavior, and then record if the behavior is occurring.
- Students rate their behavior on a scale of 0-4 after each instructional activity.
- Teachers can rate students on these same behaviors using the same scale.
- Teachers can see visual comparisons of their ratings with student ratings, which provides a touchstone for providing students powerful feedback.
- Teachers and students can set behavioral goals and track student progress with easy-to-read, attractive graphs.

Touch an activity to score.

Touch the scores for Whole Group.
(Bruhn, et al., 2016)

- Two middle school students with disabilities used an app on an iPad during their reading classes.
- Using a data-based individualization approach, teachers worked with the primary investigator to monitor students' response to the intervention and adapt the intervention accordingly.
- Single-subject design was used to test the effects of the intervention.
- Both participants improved their academic engagement and decreased their disruptive behavior.
Summary

• Combination of technology, self-management procedures, and effective function based treatment procedures is promising
• Preliminary evidence suggests that the student prefers the technology
• Use of the program on a personal device may be less stigmatizing than other interventions
• Technology-based self-monitoring interventions may allow the student greater independence

Summary

• Use of function-based technology-based self-management interventions may result in greater benefits to the student and the classroom as a whole
• As applications continue to be developed, researched, and become more widely used they will provide teachers and support professionals new and innovative ways to not only include students in the general education classroom, but to enable them to be more independent and successful