Improving the Behavior of Children With Fetal Alcohol Spectrum Disorders

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John is a junior in high school. John's teachers describe him as likeable, but his classmates describe him as "weird" and "babyish." Although he did well in elementary school, he began to struggle as he aged. While his academic skills are close to grade level, he is in danger of failing several classes because of missing assignments and low test scores. He has also received numerous office referrals for impulsive and attention-seeking behavior. John is one of many children in the United States whose brains were negatively impacted by prenatal alcohol exposure.

Students with FASDs frequently break rules, behave aggressively, abuse drugs and alcohol, steal, and run away.

Prenatal exposure to alcohol causes both gross structural brain anomalies (Donald et al., 2016; Dudek et al., 2014; Wozniak et al., 2019) and more subtle neural abnormalities (Paolozza et al., 2014; Wozniak et al., 2019). These structural changes result in a range of neurocognitive deficits, including difficulties with executive function, emotional control, and behavior regulation (Jirikowic et al., 2012; Khoury & Milligan, 2019; Tremblay et al., 2017; Wells et al., 2012; Wozniak et al., 2019). Individuals who are prenatally exposed to alcohol often struggle with impulsivity, inattention, and anxiety (Chasnoff et al., 2015; Kambeitz et al., 2019; Petrenko et al., 2014; Sayal et al., 2014; Wozniak et al., 2019). Disorders caused by prenatal exposure to alcohol are collectively referred to as fetal alcohol spectrum disorders (Centers for Disease Control and Prevention, n.d.).

Fetal alcohol spectrum disorders (FASDs) are common but frequently go undiagnosed (May et al., 2018; Montag et al., 2019; Poitra et al., 2003; Ryan & Ferguson, 2006; Wozniak et al., 2019). Studies using active case ascertainment, where all children within a group are evaluated for FASDs, result in the highest, and likely most accurate, prevalence estimates. Numerous studies have been completed in locations throughout the United States using active case ascertainment. These studies indicate that between 1 in 50 and 1 in 20 students have an FASD (May et al., 2009, 2018; Montag et al., 2019; Poitra et al., 2003; Popova et al., 2014). At these rates, every teacher has probably taught children who were negatively impacted by prenatal exposure to alcohol.

Although prenatal exposure to alcohol significantly impacts development and learning, the lack of a separate category in the Individuals With Disabilities Education Improvement Act (IDEA, 2004) means that many children with FASDs do not receive special education services (Brownell et al, 2019; Gralton, 2014; May et al., 2018; Mukherjee et al., 2017; Petrenko et al., 2014; Ryan & Ferguson, 2006; Streissguth et al., 2004; Streissguth & Kanter, 1997). About half of children with FASDs do qualify under a comorbid condition (Brownell et al., 2019; Streissguth et al., 2004). Prenatal exposure to alcohol is associated with lower IQ scores; intellectual disabilities are far more common among children with FASDs than among the general population (Kambeitz et al., 2019; Khoury & Milligan, 2019; Petrenko et al., 2014; Wozniak et al., 2019). Children with FASDs are also likely to have learning disabilities or emotional and behavioral disorders (Kambeitz et al., 2019; Petrenko et al., 2014; Richer & Watson, 2018; Wozniak et al., 2019).

Although disabilities included in IDEA may be caused by prenatal exposure to alcohol, these diagnoses do not fully describe the behavioral profile of children with FASDs (Petrenko et al., 2014). Compared with other students identified as having a learning disability, intellectual disability, or emotional disability, individuals with FASDs are much more likely to have sensory issues (Abele-Webster et al., 2012; Quan et al., 2019; Wells et al., 2012). The struggles of students with FASDs also tend to increase as they age, with behavioral challenges particularly likely to worsen (Kambeitz et al., 2019; Ryan & Ferguson, 2006; Streissguth et al., 2004; Streissguth & Kanter, 1997). The neurocognitive nature of FASDs makes the behavioral challenges exhibited by this population particularly resistant to change (Jirikowic et al., 2012; Richer & Watson, 2018; Wells et al., 2012).

It is important for educators to recognize the behavioral profile associated with prenatal exposure to alcohol and to implement interventions known to be successful with individuals with FASDs (Quan et al., 2019; Tremblay et al., 2017). Special educators can facilitate the success of students not yet identified by sharing these strategies with general education teachers, but it is also important to encourage families to pursue an evaluation for an FASD when a disorder is suspected. Early diagnosis and intervention serve as a protective factor for children with FASDs (Kambeitz et al., 2019; Mukherjee et al., 2017; Petrenko et al., 2014; Richer & Watson, 2018; Streissguth et al., 2004; Streissguth & Kanter, 1997). Schools can facilitate diagnosis by screening children for FASDs and referring them to clinicians qualified to evaluate and diagnose FASDs (Poitra et al., 2003). Once diagnosed, children with FASDs, if not already receiving special education services for a comorbid condition, could qualify for special education and related services under the category of other health impairment.

Common Behavioral Characteristics of Children With FASDs

Behavior problems are common among children with FASDs (Coles et al., 2015; Hannigan et al., 2010; Jirikowic et al., 2012; Wells et al., 2012; Wozniak et al., 2019) and can start in infancy (Donald et al., 2016). Students with FASDs frequently break rules, behave aggressively, abuse drugs and alcohol, steal, and run away (Hannigan et al., 2010; Richer & Watson, 2018; Ryan & Ferguson, 2006; Streissguth et al., 2004). Rates of involvement with the criminal justice system are disturbingly high (Brownell et al., 2019; Gralton, 2014; Richer & Watson, 2018; Streissguth et al., 2004; Streissguth & Kanter, 1997), with one study finding that 60% of adults with a FASD have had encounters with the

Table 1 **Modifying the Environment to Accommodate for the Neurobehavioral Challenges of Children With Fetal Alcohol Spectrum Disorders**

Neurobehavioral challenge	*Potential environmental modification*
Lack of cause-and-effect thinking	Organize the environment to make challenging behavior more difficult Increase adult supervision
Impulsivity	Organize the environment to make challenging behavior more difficult Increase adult supervision
Poor emotional regulation	Teach students to take a break when agitated
Memory deficits, particularly with short-term memory and working memory	Use written directions and expectations Increase structure and consistency
Sensory processing deficits and poor inhibition	Reduce environmental stimulation
Distractibility	Reduce environmental stimulation
Difficulty switching gears	Provide visual schedules and checklists
Anxiety	Increase structure and consistency

criminal justice system and 35% had been incarcerated (Streissguth et al., 2004).

Neurocognitive Impact of Prenatal Exposure to Alcohol

Behavior problems are associated with a diagnosis of an FASD because of the neurocognitive impact of prenatal exposure to alcohol (Petrenko et al., 2014; Tremblay et al., 2017). Throughout the life span, individuals with prenatal exposure to alcohol may struggle with planning, cause-and-effect thinking, organization, attention, inhibition, anxiety, transitions, memory, generalization, and abstract thinking (Brownell et al., 2019; Chasnoff et al., 2015; Jirikowic et al., 2012; Mukherjee et al., 2017; Sayal et al., 2014; Tremblay et al., 2017; Wozniak et al., 2019). These difficulties exist even in individuals with average IQ scores (Gralton, 2014; Jirikowic et al., 2012; Tremblay et al., 2017; Wells et al., 2012). Although children with other disabilities, such as attention-deficit hyperactivity disorder (ADHD), demonstrate deficits in executive function, the severity of these deficits is significantly greater in children with FASDs (Khoury & Milligan, 2019). In addition, both the pharmacological and behavioral interventions typically used for individuals with ADHD or emotional and behavioral disorders tend to be less effective with children with FASDs (Brownell et al., 2019; Gralton, 2014; Petrenko et al., 2014). In order for students with FASDs to be successful, teachers must understand the neurocognitive impact of prenatal exposure to alcohol, modify the environment to support appropriate behavior, and explicitly teach metacognitive strategies.

Modify the Environment to Support Appropriate Behavior

A special educator observes John's behavior. She notices John engages in the most challenging behavior during less structured settings, like class changes and lunch. Although he is not as disruptive in class, he tends to talk to classmates instead of working independently. His materials are constantly falling off his desk, and he never seems to have paper or pencils. The special educator also notices that John's difficulties increase on days when there are special events or unexpected disruptions to the schedule.

The special educator recommends that John be paired with a positive peer role model to walk from class to class. In the cafeteria, she advocates for him to be moved to the table closest to the cafeteria monitor and be seated with students who generally have good behavior. When John is working independently in class, the special educator suggests that he be allowed to sit slightly apart from the other students and listen to music with headphones to help him block out distractions. She asks that most of his work be completed on the computer to minimize the supplies needed for class. Last, she recommends that he be given a daily schedule. She asks the teacher to briefly review the schedule with John during homeroom and highlight any planned changes.

The most effective way to solve a problem is to prevent it. This is particularly true in regard to the behavioral difficulties often exhibited by children with FASDs (Quan et al., 2019; Richer & Watson, 2018; Tremblay et al., 2017). Brain-based challenges with cause-and-effect thinking may result in individuals with FASDs repeating the same difficult behavior without understanding why they keep getting the same result (Richer & Watson, 2018). Anxiety and overstimulation detrimentally impact the ability of individuals with FASDs to consider their options before acting (Wells et al., 2012). These characteristics, along with significant impulsivity, result in those with FASDs failing to respond consistently to the rewards and consequences used by many teachers (Richer & Watson, 2018). Changing the environment is a more effective way to foster desired behavior in children with FASDs. Simple, proactive environmental changes, like those

described in ***Table 1***, can result in significant improvements (Abele-Webster et al., 2012; Quan et al., 2019; Richer & Watson, 2018; Tremblay et al., 2017).

Modify the Classroom

Due to the combination of sensory processing difficulties, challenges with inhibition, and distractibility, children with FASDs often struggle to focus attention (Abele-Webster et al., 2012; Jirikowic et al., 2012; Wells et al., 2012). Reducing the amount of environmental stimulation decreases distractibility and may improve behavior (Bohjanen et al., 2009; Quan et al., 2019; Wells et al., 2012). Consider minimizing classroom decorations and storing equipment not being used out of sight (Quan et al., 2019). To cut down on auditory distractions, encourage students to use headphones or earplugs, particularly when working with classmates who are noisy (Carpenter, 2014; Quan et al., 2019). Try to avoid the use of fluorescent lights and bright colors (Quan et al., 2014).

General education teachers may find it challenging to reorganize their entire room but can still take steps to decrease distractions. Solid-colored curtains can be used to cover open shelves. Content displayed on some posters can be replaced with flip charts so that only the information pertinent to the current lesson is displayed. Teachers should focus particularly on the wall in front of which they plan to teach and remove as many decorations as possible from that space. Careful planning of the physical environment will result in a work space that is calming and can improve student behavior (Bohjanen et al., 2009; Quan et al., 2019; Wells et al., 2012).

Another way to improve behavior by manipulating the environment is to make it more difficult for the child to engage in challenging behavior (Quan et al., 2019; Richer & Watson, 2018). The few seconds of additional processing time that is created this way provide the child with time to think of better options. Placing distracting and potentially dangerous objects out of reach makes using them inappropriately less likely. Bathroom caddies can be used to hold a student's supplies. Placing supplies in a caddy instead of in the student's desk allows them to be kept handy but out of reach. A file folder crate filled with the student's books can be placed on a windowsill or table near, but a bit apart from, the student's seat. Taking these steps prevents objects the student is not currently using from providing a distraction.

> Providing an environment with high levels of structure can also improve the success of individuals with FASDs.

In addition to removing unnecessary objects and minimizing distractions, consider increasing students' personal space. Seating the student with an FASD at the end of a row of desks or next to an empty desk increases personal space. Teachers who have children sit on the rug may find it helpful to have the child with an FASD sit in a chair or on a carpet square. The goal of these changes is not to isolate the child with an FASD but rather to provide visual cues as to where the child is supposed to be while minimizing the likelihood of accidental bumps and altercations with other students.

Even in the most well-thought-out classroom, many students with FASDs benefit from a separate location where they can take a break (Abele-Webster et al., 2012; Bohjanen et al., 2009; Carpenter, 2014). Having the ability to retreat from a frustrating situation reduces emotional outbursts, but children with FASDs may find it particularly difficult to spontaneously ask for a break. In addition to challenges with impulsivity (Jirikowic et al., 2012; Tremblay et al., 2017; Wells et al., 2012), subtle difficulties with language are common among children with FASDs (Thorne & Coggins, 2016).

Requiring children to raise a hand and wait to verbally request to take a break may be unrealistic. Instead, create procedures that allow children to immediately remove themselves from a frustrating situation with minimal effort. One way to do this is to create a calm corner in the classroom to which children can withdraw whenever needed (Carpenter, 2014). A fast pass allowing a child to go to a safe location, like the guidance office, is also an option. The key is to design a way for the child to obtain a break quickly and without having to use language. Even with these supports in place, students with FASDs may need prompting to use breaks effectively (Carpenter, 2014; Mukherjee et al., 2017; Petrenko et al., 2014).

Provide High Levels of Structure

Providing an environment with high levels of structure can also improve the success of individuals with FASDs (Quan et al., 2019; Richer & Watson, 2018). Structure can be enhanced by making rules and expectations clear. Because many individuals with FASDs have difficulty with memory and attention, expectations should be written simply using concrete words or pictures and placed where they can be easily accessed by the student (Carpenter, 2014; Tremblay et al., 2017). Putting expectations in writing allows students to refer to the written document when needed. Due to difficulties with abstract thinking, students with FASDs may not understand expectations such as to "respect others." Clarifying this type of abstract rule with concrete statements, such as "Ask before touching," may increase compliance (Richer & Watson, 2018; Ryan & Ferguson, 2006; Tremblay et al., 2017).

Structure can also be increased by preteaching and providing reminders. Preteaching occurs when the instructor anticipates difficulties that the student is likely to have in a particular situation and reviews the expectations in advance. In addition to providing reminders of expectations through preteaching, teachers should provide reminders of due dates and goals to help students with FASDs compensate for issues with memory (Tremblay et al., 2017).

Teachers can also increase structure by maintaining predictable, consistent routines (Carpenter, 2014; Quan et al., 2019) and by providing visual cues

(Bohjanen et al., 2009; Quan et al., 2019). Being able to predict what will happen next lowers the anxiety faced by many of those with FASDs and often results in behavioral improvements (Carpenter, 2014). Written or pictorial schedules will help students with FASDs understand the plan for the day. Writing special events on a calendar can help students anticipate and adjust to schedule changes. These types of visual cues not only decrease anxiety but serve as memory aids.

Providing checklists is another way to support memory. If a student has difficulty completing a regular routine, such as unpacking in the morning or completing and turning in written work, consider creating a checklist of the necessary steps. Once created, the process necessary to use the checklist must be explicitly taught. Teaching students to use written expectations, checklists, schedules, and calendars will help them understand and adhere to expectations (Quan et al., 2019).

Increase Adult Supervision

Providing adult supervision throughout the school day is important to help a student with an FASD avoid the often high-stakes consequences of misbehavior. The need for high levels of supervision is not limited to young children or those with severe disabilities. The neurocognitive damage caused by prenatal exposure to alcohol results in a need for high levels of supervision even among many individuals with normal IQs (Mukherjee et al., 2017; Petrenko et al., 2014; Richer & Watson, 2018). This can be challenging to provide in a general education setting but is possible with careful planning. For example, a student with an FASD may be assigned a locker next to the classroom door so that teachers can easily supervise transitions. The student's desk can be placed near the teacher's desk. During less structured times, like recess and physical education class, and in places like the locker room and the cafeteria, staff can make a habit of walking near the student during routine travel throughout the space. Pairing a student with an FASD with a peer with appropriate behavior can have the dual effect of increasing levels of supervision and reaping the benefits of a positive peer role model (Richer & Watson, 2018).

Emerging research shows that children with FASDs can also learn to use metacognitive skills to compensate for deficits in executive function.

Most educators desire to withdraw supervision as children age and demonstrate success, but this may not be a realistic goal for students with FASDs (Mukherjee et al., 2017; Petrenko et al., 2014; Quan et al., 2019; Richer & Watson, 2018; Streissguth et al., 2004; Streissguth & Kanter, 1997). Even when students with FASDs are successful with one-on-one support, they may not be able to maintain this level of success once supports are withdrawn (Mukherjee et al., 2017; Petrenko et al., 2014; Richer & Watson, 2018). Be particularly cautious about decreasing supervision if the challenging behavior that appears to have been eliminated is dangerous or carries a risk of significant consequences. Maintaining high levels of supervision can serve as a protective factor against involvement with the criminal justice system (Richer & Watson, 2018; Streissguth et al., 2004; Streissguth & Kanter, 1997). Teachers of transition-age youth with FASDs should advocate for ongoing support through adult services. For many adults with FASDs, interdependence is a more appropriate goal than independence (Mukherjee et al., 2017; Petrenko et al., 2014; Quan et al., 2019).

Explicitly Teach Metacognitive Skills

Although John's behavior has improved after changes were made within the school environment, he continues to have periodic altercations with peers. The guidance counselor brings John into his office once a week for 6 weeks to teach John a metacognitive strategy called STAR. When John encounters a problem with a classmate, he is directed to "Stop and breathe, Think, Act, then Reflect." The guidance counselor uses role-playing to provide John with practice using the STAR strategy. This strategy is then shared with all the staff who work with John so that they can prompt him to use it throughout the school day. Each morning John stops by the guidance office. The counselor poses a scenario that is likely to occur during the day and asks John to rehearse how to use the STAR strategy to respond. At the end of the day, John also stops by the guidance office and the counselor helps John reflect on times during the day he used STAR effectively.

Environmental changes have been recommended to improve the success of individuals with FASDs for decades (Streissguth & Kanter, 1997), but emerging research shows that children with FASDs can also learn to use metacognitive skills to compensate for deficits in executive function (Coles et al., 2015; Jirikowic et al., 2012; Makela et al., 2019; Nash et al., 2015; Wells et al., 2012). Because executive-function deficits are an underlying cause of the behavioral difficulties exhibited by individuals with FASDs, learning compensatory techniques can help improve children's behavior (Coles et al., 2015; Jirikowic et al., 2012; Khoury & Milligan, 2019). Metacognitive strategies effective with students with FASDs include teaching self-regulation, teaching students to stop and think, encouraging rehearsal and self-talk, and using memory strategies (Dudek et al., 2014; Makela et al., 2019; Wells et al., 2012).

Teach Self-Regulation

One area of executive function that is often impacted by prenatal exposure to alcohol is self-regulation (Jirikowic et al., 2012; Nash et al., 2015; Wagner et al., 2019; Wells et al., 2012). Self-regulation can be defined as the ability to alter one's level of arousal to fit environmental demands (Wagner et al., 2019). Children with FASDs may act "wild" and "out of control" or may be sluggish and slow to respond (Jirikowic et al., 2012; Richer & Watson, 2018). Overarousal can lead to behavioral difficulties; when overaroused,

Table 2 **Examples of Interventions to Address Problem Behaviors**

Problem behavior	*Effective intervention*
Child plays with belongings during instruction.	Provide the child with a special place out of reach in which to keep belongings.
Child invades other children's space while sitting on the rug for group instruction.	Give the child a visual reminder of their space by having the child sit on a carpet square or a chair.
Child engages in difficult behavior during class changes.	Have an adult or responsible peer accompany the child during class changes.
Child has difficulty moving from one task to the next.	Provide a visual schedule or task list.

people tend to overreact to small problems (Nash et al., 2015; Richer & Watson, 2018). Helping children with FASDs recognize when they are under- or overaroused and then alter their level of arousal helps them more effectively respond to environmental demands and reduces behavior problems (Jirikowic et al., 2012; Nash et al., 2015; Wagner et al., 2019; Wells et al., 2012).

The first step to teaching self-regulation is to have students identify their level of arousal. At first, teachers may need to label a child's arousal level for them. A teacher might say, "John, you look like you are feeling very energetic" or "John, you look like you are feeling lethargic." Once a child has begun to associate their internal states with a label, they can begin to independently label their states.

After labeling their level of arousal, students need to take steps to adjust their state to one that is ideal for the situation. The goal is not to teach students that a particular state is good or bad but to encourage the child to adjust their state based on environmental demands. High levels of energy are ideal for a soccer game, whereas low levels are better for reading a book. When children's arousal levels are too high for the upcoming activity, deep breathing, meditation, yoga, and mindfulness training can help the child attain optimal arousal (Sprengel & Fritts, 2012). When children's arousal levels are too low for the upcoming activity, movement breaks, jumping, and physical exercises can help increase them (Thompson & Raisor, 2013). Create one choice board with options of activities that can help raise a child's arousal level and another choice board with options of activities to help lower it. Once a child's level of arousal has been identified, show the child the choice board and ask them to choose an activity to attain the desired result.

Teach Students to Stop and Think

Individuals with FASDs may know the expected behavior but respond impulsively with inappropriate behavior (Richer & Watson, 2018; Wells et al., 2012). Teaching children to stop and think before acting can result in significant behavioral improvements (Coles et al., 2015; Makela et al., 2019). The vignette at the beginning of this section demonstrated a strategy designed to help a student stop and think before acting.

The first step to implementing a stop and think strategy is to stop before acting. During this pause, the student should be taught use a self-regulation strategy, such as deep breathing, to lower arousal level. Doing this will help the student be in an ideal state to calmly select a response appropriate to the situation.

The next step in a stop-and-think strategy is to brainstorm possible responses to the situation at hand. During brainstorming, all potential responses should be accepted. Especially in the beginning, the student may need assistance brainstorming potential responses.

Next, the child should think about the likely results of each potential response and select the best option. When students are learning to use this strategy, the thinking step should be done collaboratively aloud or in writing. Over time, students' ability to consider possible responses to challenging situations quickly and silently will improve. However, many students will continue to need assistance with this step in situations that are novel or emotionally laden.

Once the best option has been selected, the student should implement that response. Afterward, the effectiveness of that response should be evaluated. Reflecting on how well a response worked will help the student determine whether or not to use that response in the future. Explicitly teaching students these, or similar, steps and then cuing them to use the technique can help improve the executive-function skills and behavior of children with FASDs.

Encourage Rehearsal and Self-Talk

Rehearsal is another technique that is effective with students impacted by prenatal exposure to alcohol (Makela et al., 2019). Rehearsal uses repetition to assist in the mastery of new information. This can be accomplished by having the student subvocalize the content to be learned several times. Rehearsal is an effective strategy to use when small quantities of information need to be memorized, such as when memorizing class rules or procedures for a frequent task.

Self-talk also involves subvocalization but can be used in a greater number of situations. Self-talk involves giving yourself encouragement by thinking or quietly saying statements like "I can do this!" It can also be used to think aloud the steps necessary to solve a complex problem. The steps of a strategy like STAR can be subvocalized as a form of self-talk. The use of positive self-talk has

been found to improve the executive-function skills of children with FASDs (Makela et al., 2019).

Use Memory Strategies

Because of the brain damage caused by prenatal exposure to alcohol, memory is impaired in many students with FASDs. These deficits can negatively impact behavior and social skills (Dudek et al., 2014). Metacognitive strategies can be used to help students with FASDs remember expectations, as well as remember and implement strategies to improve their executive function.

Individuals with FASDs benefit from techniques designed to facilitate recall (Dudek et al., 2014). Mnemonic strategies serve this purpose. Mnemonic devices encode more-difficult-to-remember information using an easier-to-remember word or phrase. This can be done by creating a word using the first letter of each piece of information that needs to be remembered (as was done with the stop-and-think strategy STAR) or by creating a silly sentence or phrase in which the first letter of each word is the same as the first letter of each piece of information needing to be remembered. An example of this type of mnemonic device is the classic phrase "Please excuse my dear Aunt Sally," which helps students remember the order of operations in arithmetic (parentheses, exponents, multiplication, division, addition, subtraction).

Develop a Comprehensive Plan

Although the deficits discussed in this article are common among individuals with FASDs, prenatal exposure to alcohol impacts each child differently (Petrenko et al., 2014; Tremblay et al., 2017). FASDs present differently in different students, and few children will need all the strategies presented. Teachers should evaluate each child's areas of strengths and deficits and develop a unique plan designed to build on existing skills while addressing areas of weakness (Wells et al., 2012). ***Table 2*** provides examples of behavioral interventions designed in this way.

When teaching new metacognitive strategies, children with FASDs need to be provided with sufficient repetition and practice (Bohjanen et al., 2009; Makela et al., 2019; Tremblay et al., 2017). A plan for generalization of taught skills should be developed as children with FASDs are unlikely to spontaneously use learned skills in new environments (Carpenter, 2014). Teaching parents and general education teachers to cue children to use metacognitive skills increases the likelihood that students will use these skills in a variety of settings (Wells et al., 2012). Individuals with FASDs may need ongoing support and cuing to consistently use the skills they have been taught (Makela et al., Tremblay et al., 2017; Wells et al., 2012).

Although accommodating for the neurocognitive deficits of children with FASDs may be easier in a self-contained placement, many students with FASDs are served in general education classrooms. Children with FASDs are particularly likely to struggle to use even the executive-function skills they do have in distracting and stimulating environments (Wells et al., 2012). Given the distractions inherent in a class with 20 or more students, students with FASDs placed in the general education classroom are particularly likely to need environmental modifications and prompting (Tremblay et al., 2017; Wagner et al., 2019; Wells et al., 2012). This need can be met through careful planning, use of positive peers, and support of special education staff.

After several months of consistently implementing the modifications suggested by the special educator and reinforcing the use of the STAR strategy, John's behavior has improved significantly. Although he is still immature and struggles to relate to many of his classmates, his office referrals have stopped and his teachers report that he is much less likely to engage in disruptive behavior in class. In addition, he has developed a friendship with one of the peers selected to be a role model for John, and they have begun to hang out together outside of school.

Conclusion

Prenatal exposure to alcohol causes changes in brain structure (Donald et al., 2016; Dudek et al., 2014; Paolozza et al., 2014; Wozniak et al., 2019) that are associated with significant behavioral challenges (Coles et al., 2015; Hannigan et al., 2010; Jirikowic et al., 2012; Wells et al., 2012; Wozniak et al., 2019). Children with FASDs may be less likely than other children to respond to pharmacological treatments and interventions using rewards and consequences (Brownell et al., 2019; Gralton, 2014; Petrenko et al., 2014; Richer & Watson, 2018). Perhaps because of this, individuals who work with children with FASDs are more effective when they are knowledgeable about the impact of prenatal exposure to alcohol (Quan et al., 2019; Tremblay et al., 2017).

Effective behavioral interventions for students with FASDs take into consideration the unique neurocognitive changes caused by prenatal exposure to alcohol (Petrenko et al., 2014; Quan et al., 2019; Tremblay et al., 2017). The neurobehavioral characteristics discussed in this article are those most common in children with FASDs; however, few children will exhibit all these difficulties (Petrenko et al., 2014). Teachers need to assess a child's behavior to determine which neurocognitive deficits may underlie behavioral challenges and select interventions accordingly.

Some research shows that explicit teaching of executive-function skills results in improvements of disruptive behavior that last beyond the completion of the intervention (Coles et al., 2015; Wagner et al., 2019), but other studies demonstrate an ongoing need for periodic prompting and increased supervision for individuals with FASDs (Petrenko et al., 2014; Quan et al., 2019; Wozniak et al., 2019). Many professionals dedicated to working with those impacted by prenatal exposure to alcohol recommend that individuals with FASDs continue to receive environmental modifications, coaching, and other supports into adulthood (Petrenko et al., 2014; Quan et al., 2019; Wozniak et al., 2019). Because of this, it is important that teachers advocate for ongoing support for students with FASD. Environmental supports and adult supervision should be withdrawn gradually with the understanding that such services may need to be reestablished if challenging behaviors occur. Recognizing the challenges caused by FASDs and intervening appropriately not only minimizes the likelihood that a child with an FASD will experience school failure or become involved with the criminal justice system (Richer & Watson, 2018); it also ensures that the student will reach their potential.

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