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Olivia, a preschooler with autism spectrum disorder and the newest addition to Ms. Andersen’s morning class, was having a difficult time adjusting to the routine of attending school. Although Olivia seemed to enjoy being at school most of the time, Ms. Andersen found that, when asked to transition away from her favorite activities, Olivia would sometimes protest or flop to the floor. Ms. Andersen was optimistic that, with time, Olivia might learn the routine and settle in like her other students. However, morning drop-off was another story. Olivia frequently arrived at the door to the preschool classroom wailing and thrashing, being carried by her patient but exhausted father. Occasionally, the pair would arrive late or fail to make it to school at all. When Ms. Andersen followed up with Olivia’s father, he commented that some days were too much of a struggle to even get Olivia into the car. How can Ms. Andersen use visual supports to help Olivia learn more appropriate behavior?

What Are Visual Supports?

Education researchers define visual supports as “concrete cues that provide information about an activity, routine, or expectation and/or support skill demonstration” (Wong et al., 2014, p. 104). Many of us use our own visual supports as aids in our daily lives. We use maps to traverse an unfamiliar city, grocery lists to remember necessities while shopping, and calendars to organize appointments. Without these supports, we might struggle to meet the expectations of our environment, instead getting lost while driving, or forgetting to bring home the milk. Likewise, visual supports can assist children with autism spectrum disorder (ASD) in coping with new or challenging situations, behaving in a socially appropriate manner, and communicating with others.

Why Use Visual Supports?

Visual supports are an evidence-based practice for supporting learners with ASD in achieving a variety of skills (Wong et al., 2014). Research suggests that many children with ASD are visual learners (Quill, 1997) and may struggle to comprehend expectations...
presented in a verbal mode only. Visually structured interventions present choices, expectations, tasks, and communication exchanges in a way that is appealing and approachable for visual learners (Arthur-Kelly, Sigafoos, Green, Mathisen, & Arthur-Kelly, 2009). Providing persistently available visual cues, rather than transient verbal directions alone, increases independent access to reminders without caregiver prompts, and allows children to review and rehearse behavioral expectations ahead of time (Banda & Grimmett, 2008; Quill, 1997).

Visual supports are important tools within a framework of positive behavior interventions and support (PBIS). PBIS is a person-centered and prevention-oriented model of support that uses socially validated interventions such as choice making, problem solving, and self-management (Bambara & Kern, 2005). Positive behavior strategies approach behavior from a strengths perspective, utilizing individual preferences and goals to develop interventions that support desired behaviors, increase learning, and decrease the effectiveness of previously effective challenging behaviors (Carr et al., 2002). Visual supports align with these ideals as prevention techniques, by increasing communication opportunities and comprehension during antecedent conditions that may be stressful or prone to induce challenging behavior (Buschbacher & Fox, 2003).

For service providers, visual supports may be advantageous as their use may promote teamwork and collaboration across caregivers and natural settings. Due to the focus on visual symbols and simple presentation, expectations can be conveyed clearly to children, caregivers, related servers, and paraprofessionals. Using a nonverbal method of communicating goals and expectations is also useful when collaborating with families for whom English is a second language. Interpreters can aid in developing visual supports with accurate text labels. By representing expectations with pictures or photographs, along with text in the child's home language, all involved parties can feel confident using visual support interventions consistently.

Finally, visual supports are flexible and easy to create. Most visual supports are portable, simple, and inexpensive. For example, it is simple for team members to aid a child in transitions during routines with a small activity schedule in a binder, because the binder can be moved easily from the home to the car, or to and from school on the bus. Visual supports can be quickly and cheaply replaced if they are lost, damaged, or destroyed, and are easy to modify for individual preferences and needs. Visual supports are easily included in augmentative communication devices and other technological tools. The ease of use of visual interventions makes them well suited to the needs of many children, families, and service providers.

Using Visual Supports to Address Challenging Behavior

There are many types of visual supports available to service providers and families. The following is a summary of those interventions that have been specifically shown to reduce
challenging behaviors in children with ASD, based on a review of current research. Methods include activity schedules, contingency mapping, cueing, symbol exchange, and social narratives. For a comparison of each of these interventions, see Table 1.

### Activity Schedules

#### Description

Activity schedules represent a timeline of upcoming events or tasks in the child’s day (e.g., Lequia, Machalicek, & Rispoli, 2012). Visual symbols, such as pictures, photographs, or printed words, communicate a sequence of expectations to the child. Schedules prepare children for upcoming changes and indicate when it is time for preferred activities. The reduced need for caregiver prompting at each step can increase independence and aid transitions (Banda & Grimm, 2008).

There are two types of activity schedules: across-task schedules (see Figure 1) and within-task schedules (see Figure 2). Across-task schedules depict events across a period of time, such as the order of activities in the day. Within-task schedules show each part of a task, such as

<table>
<thead>
<tr>
<th>Type of support</th>
<th>Best for goals regarding . . .</th>
<th>Skills targeted</th>
<th>Information needed</th>
<th>Visual variations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity schedules (across task)</td>
<td>. . . transition skills between activities</td>
<td>Previewing upcoming events</td>
<td>Detailed list of daily routines and occasional events that may change the routine</td>
<td>List Flipbook Removable cards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transitioning between activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activity schedules (within task)</td>
<td>. . . finishing a challenging task</td>
<td>Previews steps in an upcoming complex task</td>
<td>Task analysis of targeted activity</td>
<td>(same as above)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Completing task without adult prompts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contingency maps</td>
<td>. . . learning effects of certain choices</td>
<td>Previewing upcoming choices and outcomes</td>
<td>Pathways for challenging and alternative behavior</td>
<td>Highlighted or colored pathways Photographs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reviewing outcomes of past choice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cue cards</td>
<td>. . . meeting simple expectations</td>
<td>Recalling an expected behavior</td>
<td>Desired behavior (and optionally, the problem behavior)</td>
<td>Single cue Yes/no cue</td>
</tr>
<tr>
<td>Social narratives</td>
<td>. . . understanding expectations of a particular situation</td>
<td>Previewing upcoming situations and expectations</td>
<td>Set of directive, descriptive, perspective, and affirmative sentences</td>
<td>List Comic strip Flipbook</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Understanding the perspectives of others in a given situation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symbol exchange</td>
<td>. . . requesting access to items or activities</td>
<td>Recalling options to request</td>
<td>Items or activities to request</td>
<td>Type of symbol (icon, photograph, text, tangible object)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exchanging symbol to access desired item/ activity</td>
<td></td>
<td>Number of items in array</td>
</tr>
</tbody>
</table>

**Table 1**
Comparison of Features of Visual Supports
the necessary steps to wash hands. Across-task schedules are helpful for children who have difficulty with transitions between activities, and within-task schedules can be used to teach a challenging task or minimize prompting during a long activity. Activity schedules are equally effective with photographs, pictures, printed text, or a combination thereof (Lequia et al., 2012) depending on the needs of the learner. Activity schedules can be developed for an individual child, or posted in the home or classroom for all individuals to use.

When to choose activity schedules

Across-task activity schedules are effective for children with behavior problems during transitions (Lequia et al., 2012). Consider a within-task activity schedule if a child needs support in participating in an activity appropriately. This type of schedule can help redirect a child who might otherwise engage in problem behavior (e.g., Machalicek et al., 2009).

Contingency Maps

Description

A contingency map is a simple flowchart of choices and outcomes (see Figure 3; Brown & Mirenda, 2006). In a contingency map, the consequences of the target behavior and the replacement behavior are shown using picture symbols, photographs, and/or printed text.
The replacement behavior should meet the same function as the challenging behavior, so that using the replacement behavior is a more effective option for the child. When used to complement a behavior intervention plan, contingency maps have the additional benefit of clarifying the appropriate responses to various behaviors for caregivers and teaching staff.

*When to choose contingency maps*

Contingency maps are useful tools to teach choice making. They are a logical option for a student with a behavior intervention plan in place, to help the student understand that the replacement behavior will lead to better outcomes than the inappropriate behavior. Early research suggests that contingency mapping may be well suited to attention-maintained problem behaviors that would not be appropriate to ignore, such as caregiver prompt dependency, by acting as a persistent reminder of expectations and consequences (Brown & Mirenda, 2006).

Caregivers can present verbal directions and the contingency map at the start of an activity, and the visual nature of the contingency map can act as a persistent reminder to the child to continue with the activity without the need for additional adult prompts.

*Cueing*

*Description*

Cueing is a simple strategy that involves providing a prompt or reminder in the form of a symbol...
instead of (or in addition to) a verbal direction (Schmit, Alper, Raschke, & Ryndak, 2000). By displaying a specific picture to highlight transitions or expectations, adults can enhance the child’s understanding of routines and rules, and teach children to become aware of their behaviors in different contexts (see Figure 4). Cueing strategies vary in presentation, but should always communicate to the child when a given behavior should occur or cease. For instance, cue cards may tell a child to get ready for a specific task or transition, such as going to the bathroom (e.g., Schmit et al., 2000), or to stop a specific behavior for a brief period, such as interacting with peers or engaging in self-stimulatory behaviors (e.g., Conroy, Asmus, Sellers, & Ladwig, 2005).

**When to choose cueing**

Cue cards are useful in situations where there is a specific skill being taught, or a context-dependent behavior being addressed. The simplest cueing intervention features a single symbol to represent the desired behavior. This symbol can be paired with a verbal instruction to aid the child in understanding what is being requested. For instance, a single cue card may be paired with a frequently used direction, so that children are given both a verbal and visual cue to follow. For behaviors that may be acceptable during certain times and unacceptable at other times (such as talking with classmates), a dual cue card system, featuring one symbol indicating that the behavior is permitted and one indicating that it is no longer permitted, can help children increase awareness of social expectations so they can modify their behavior accordingly.

**Social Narratives**

**Description**

Social narratives are stories, written from the child’s perspective, that illustrate choices, outcomes, and social cues related to a particular behavior or situation. By presenting information about social situations and behaviors in a simplified, concrete fashion, social
narratives are proposed to increase a child’s understanding of social cues, socially appropriate behaviors, and responses (Gray & Garand, 1993). A complete social narrative should help the child identify the challenging situation, the feelings of others with regard to the situation and the child's behavior, and how and why to engage in the replacement behavior (see Figure 5). Social narratives typically include several sentence types proposed by Gray (as cited in Reynhout & Carter, 2009), including factual statements about the social situation described in the story, descriptions of the feelings of others in the story, statements about common social values or expectations, and directive statements identifying the desired behavior for the child.

**When to choose social narratives**

Social narratives are recommended for specific situations that elicit challenging behavior (Gray & Garand, 1993). For instance, if a kindergartener is experiencing frustration during morning drop-off, a social narrative describing the usual routines and expected behavior may be helpful. In addition, as social narratives are composed of written text, which is most typically read aloud with young children, this intervention is more likely to be successful with children without significant language delays (Kokina & Kern, 2010).

**Symbol Exchange**

**Description**

The use of symbol exchange to increase communication skills is common practice in classrooms. Children with language delays can use visual symbols to convey their wants and needs to those around them. Symbol exchange systems can also be used to decrease challenging behavior, by providing symbols to represent what the child desires. Using symbol exchange to request desired items or activities may improve functional communication and reduce challenging behaviors (Charlop-Christy, Carpenter, Le, LeBlanc, & Kellet, 2002; Hines & Simonsen, 2008).

**When to choose symbol exchange**

Consider symbol exchange for a child with language delays who uses challenging behavior to obtain desired items/activities or escape nonpreferred situations. A child who uses challenging behavior to escape from a demanding task may be able to use a picture symbol to request a break (see Figure 6). Similarly, a child who uses challenging behavior to get preferred items may learn to request those items with picture symbols. Although current research focuses on the effectiveness of this strategy with children with severe language deficits and ASD (e.g., Charlop-Christy et al., 2002), it may also be suitable for children with ASD who are observed to have significant difficulty communicating during situations likely to elicit the challenging behavior.

**Planning for Success With Visual Supports**

How can we create the best visual support for preventing a child’s challenging behavior? Although there are many interventions to choose from, it is possible to identify the most suitable
intervention for the needs of the child and family, and to plan an intervention in such a way that maximizes its chance of success. There are several factors to consider during the planning process.
**Determine the behavior’s function**

Research indicates that some visual support interventions are more successful overall when they incorporate information about the behavior’s function (Kokina & Kern, 2010). The intervention should be suited to incorporating the contingency that motivates the child, as well as the desired replacement behavior and reinforcement strategy. For example, consider the use of an activity schedule to aid in addressing a first grader’s challenging behavior. If the student is using challenging behavior to escape schoolwork, and the team decides to provide periodic break times, those times should be included in the schedule. However, if the student is using challenging behavior to get attention from peers, and the team wishes to teach the student a more socially appropriate way to get attention, an activity schedule may not suit that goal.

**Incorporate the child’s preferences and needs**

It is important to individualize visual supports to each child. Interventions that do not rely heavily on adult prompts are a particularly good fit for children who are highly prompt-dependent or averse to prompting. For instance, a child who may feel frustrated when directed to check a posted activity schedule may feel less upset if he is shown a cue card depicting the next activity instead. Goals that may be supported by these interventions are not limited to challenging behavior. Children who lack motivation to read or who have few books in their home environment may derive additional literacy-related benefits from an appealing social story. Similarly, symbol exchange interventions are typically associated with gains in communication skills (Charlop-Christy et al., 2002).

**Collaborate with caregivers**

Including family members and other caregivers as team members is critical to determining the success or failure of the intervention. To promote generalization, it is important that the intervention can be used both inside and outside the classroom. If the intervention will
require additions or modifications, it should be straightforward enough that families feel capable of making any changes themselves. Likewise, it is important to include families in evaluating the success or failure of the intervention. Identifying a simple system for home use, such as a behavior journal or a daily rating, may clarify whether the intervention is working or not, and may also encourage and empower family members. For linguistically diverse children, labeling key elements of the visual support intervention in their home language may promote its use at home.

Gather information

Before beginning to develop the visual support intervention, gather the necessary information. This varies based on the intervention chosen. See Table 1 for information needed.

Plan ahead for fading

Be sure to outline the process of fading out the visual support once behavior goals have been maintained across several weeks. A common mistake in behavior intervention is for caregivers to use the intervention plan consistently until some amount of noticeable positive change is observed, and then become less consistent until the challenging behavior returns. This may lead team members to conclude that the behavior intervention is ineffective. Preparation for the fading process alerts caregivers to watch for behavior improvement and make planned adjustments to the intervention.

The level of support provided by a visual intervention can be faded in a variety of ways. Most fading methods involve reducing the salience of visual elements, replacing them with more complex elements, or decreasing the frequency with which the prompts or materials are presented. For example, picture symbols can be scaled down or presented in a larger array. If photographs are used initially, these can be replaced over time with line drawings or text labels. If prompts are provided at regular intervals to use the support, these intervals can be slowly lengthened. In addition, not all visual supports need to be removed completely, and may be transformed into more conventional aids for long-term use. For example, an across-task activity schedule with a finished box could gradually be transformed into a more typical daily to-do list.

Create the visual support

Once the planning process is complete, it is time to create the visual support! Visual supports can be put together quickly and easily with common classroom materials, such as construction paper or cardstock, contact paper or lamination film, Velcro, library pockets, and folders or binders. Be sure to determine whether the support will need to be duplicated and/or modified for home use. Consider storing copies of visual elements in case the visual support is lost or damaged. If a fading strategy has been incorporated, it can be very helpful to create the materials for fading in advance. See Table 2 for helpful resources when creating a visual support.

Teach and assess results

Once the intervention is ready, it is time to teach the child to use it.
Caregivers should provide the child with simple, clear directions on how to use the visual support, frequent natural opportunities for practice, and modeling. The visual support should be in a visible and accessible location so that the child is frequently reminded that it is available. Data should be collected on the target behavior over a period of time determined appropriate by the team (typically 2-3 weeks, depending on the nature and frequency of the target behavior). If the visual support is unsuccessful, it is important to use these data and team observations to determine whether modifications can be made to improve the intervention for the child.

Supporting Families of All Cultures

Visual interventions are flexible and nonintrusive tools for behavior change that can support families and children from all cultural backgrounds. Although many of the interventions discussed here target specific behavior needs in the classroom, some visual support interventions for behavior may be used across home and community settings with minimal modifications (e.g., using symbol exchange to request breaks from nonpreferred situations). When developing visual interventions for children from culturally and linguistically diverse households, the following suggestions may be helpful to set the child and family up for success.

Consider home routines and priorities when possible

In cases where an intervention will be used across settings, it is important that the intervention is a good fit with existing routines and does not unnecessarily burden the family. For example, an activity schedule for use at home should include the child’s consistent home

Table 2

Resources for Developing Visual Supports

<table>
<thead>
<tr>
<th>Task</th>
<th>Suggested resources</th>
<th>How to use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locate pictures and photographs</td>
<td>Online image search engines</td>
<td>There are many resources available online for locating royalty-free or inexpensive images. Google's image search allows the user to filter for line drawings, clip art, and photographs. Also available are various online image resources for individuals with disabilities, such as the Aragonese Portal of Augmentative and Alternative Communication (<a href="http://www.catedu.es/arasaac/">http://www.catedu.es/arasaac/</a>) and Do2Learn (<a href="http://www.do2learn.com/">http://www.do2learn.com/</a>).</td>
</tr>
<tr>
<td>Easily collect and access nonsensitive photos</td>
<td>Cloud-based image storage and syncing</td>
<td>Dropbox, Apple, Microsoft, and Google (to name a few) all feature automatic backups of images taken from mobile devices, for easy printing and drag-and-drop into documents. (For privacy reasons, student/family images should not be stored in this way.)</td>
</tr>
<tr>
<td>Print photos for pickup/delivery</td>
<td>Retail- or web-based photo uploading and printing</td>
<td>Many retail chains (e.g., Target, Walgreens) offer photo printing and in-store pickup of user-uploaded images. Several websites (e.g., Shutterfly) also specialize in photo printing and mail delivery.</td>
</tr>
<tr>
<td>Save time cutting/gluing</td>
<td>Sticker paper compatible with inkjet and/or laserjet printers</td>
<td>Select sticker paper that corresponds to the dimensions needed for the visual support. Most manufacturers of sticker paper include word processor templates for easy formatting and printing.</td>
</tr>
</tbody>
</table>
Visual Aids for PBS / Kidder and McDonnell

“Visual interventions are flexible and nonintrusive tools for behavior change that can support families and children from all cultural backgrounds.”

routines (e.g., bath time and bedtime), special occasions or infrequent tasks (e.g., family outings and doctor’s visits), and space for unforeseen activities (e.g., several laminated blank cards that can be drawn on in a pinch). Family members who are comfortable with an intervention are more likely to use it when applicable at home, so make sure that your visual support is acceptable and understandable to the family. Plan ahead for how and when family members will share their experiences with the intervention.

**Collaborate with families and interpreters**

Family members should always be included in the planning and development of any behavioral intervention, so if a language barrier is an issue, arrange for interpretation. Interpreters may also be able to assist families and educators in adapting progress monitoring materials to the family’s home language. Family progress monitoring strategies should be efficient and expedite troubleshooting, so consider using strategies that employ check marks or numerical ratings rather than extensive use of written text.

**Use picture icons, photographs, and/or labeled elements in the child’s home language**

Heavy reliance on English print elements may be challenging for families who do not speak English within the home. It is important for family members to be comfortable with the intervention and fluent in its use. Some software applications include support for multiple languages; however, this is not always reliable. Work with the family and interpreter to create accurate translations of print elements. If this is not possible, consider making symbols or photographs a prominent part of a visual support intervention so that family members who speak different languages are not left out.

Remember Ms. Andersen? Let us see how she used visual supports within an overall plan of positive behavior support to help Olivia become more successful within her preschool class.

Ms. Andersen wanted to support Olivia in transitioning to the classroom in the morning. As the daily struggle of morning drop-off was frustrating and seemed to drain both Olivia and her father, Ms. Andersen could tell this would be a meaningful outcome for everyone. After a few days of observation and a brief information-gathering phone call with Olivia’s father, it was clear that Olivia would often tantrum when asked to do something she did not like. School mornings were particularly grueling, with tantrums at home, in the car, and upon arrival.

Ms. Andersen, the district behavior specialist, and Olivia’s parents met to discuss the idea of an activity schedule to help support Olivia with transitions and remind her of preferred upcoming activities. The team created an activity schedule for Olivia to use each morning, depicting her drop-off routine with her father, and the morning meeting activities awaiting her at school. Because these activities varied, laminated blank cards were used for this part of the schedule so that Ms. Andersen could...
label them for each new day with a wet erase marker. Olivia would be able to take home the upcoming day’s schedule in her backpack each day to review with her parents in the morning. If successful, the schedule would remain in place for Olivia, and her parents’ prompts to review it would be decreased. The team agreed that, after teaching Olivia to use her schedule, they would monitor tantrums at home, in the car, and upon arrival using a simple rating scale over a period of 2 weeks.

Much to Ms. Andersen’s delight, Olivia loved using her new schedule! After several days of pleasant morning drop-offs, Olivia’s father shared that they had incorporated reviewing her schedule into their breakfast routine at home, and that she seemed excited to learn about the engaging activities that awaited her each day in the classroom. The team met after 2 weeks to discuss results. After reviewing the data her parents collected, it was clear that an activity schedule made a difference for Olivia and her family. Her parents felt it helped her comprehension of upcoming events and fit easily into their morning routine, and were already planning to create more schedule cards to use on weekends!

Final Thoughts

Visual supports are a strengths-based, nonintrusive method of addressing behavior problems. Whether implemented as part of a behavior support plan, or included as a part of classroom management, visual supports can be highly effective tools that teach children with ASD to understand the choices and expectations placed upon them. Visual supports are excellent tools to structure the environment, to teach communication skills, and to represent choices, expectations, and outcomes. By providing children with ASD with these tools, service providers and caregivers can prevent many behavior problems before they occur, and empower children to manage their needs independently.

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References


