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How Does the Use of Visuals Affect Challenging Behaviors
in the Preschool Classroom?

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A Literature Review Presented
in Partial Fulfillment of the Requirements
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Abstract

Children with autism (ASD) are being included increasingly in the general education setting for preschool. This brings with it unique challenges as these children often are significantly discrepant from their peers in their communication abilities, both receptively and expressively. Beyond communication, ASD affects the child's joint attention skills, necessary for observational learning and sharing social experiences, each of which are significant elements in a typical preschool setting. These delays lead the child to frustration, which can be expressed in aggression, disruption, and other challenging behaviors. These behaviors negatively affect the student's ability to participate in preschool activities, make friends, and gain positive relationships with teaching staff. Research exploring the use of different types of visual supports in the preschool classroom shows some change in behavior when children are given access to alternative communication methods including PECS, visual schedules, social scripts, alternative augmented communication devices, and core vocabulary boards.

How Does the Use of Visuals Affect Challenging Behaviors in Children with Autism in the Preschool Classroom?

Preschool, also known as Early Childhood Education (ECE), is a critical time in the educational life of young children. Studies show that participation in quality preschool can directly affect the outcomes of children. A study done by David P. Weikart (1990) of the High/Scope Educational Research Foundation reported that children who received preschool programming in a high quality setting tend to do better in school and go on to report fewer social problems and greater income. Preschool is a unique transition between home (or other childcare) and school. The preschool teacher at times may be like a caregiver to this group of children, and for some this experience is the first outside of their home (Dobbs & Arnold, 2009).

ECE settings are becoming increasingly inclusive environments, combining typically developing children and children with all types of special needs. In 2015, the U.S. Department of Education and the Department of Health and Human Services released a joint statement expressing the position that all children, regardless of their ability or disability, should have access to a high-quality preschool in an inclusive environment. The National Association for the Education of the Young Child (NAEYC) and the Division of Early Childhood (DEC) also released a statement in favor of inclusive educational experiences for young children (NAEYC & DEC, 2009). Inclusion in preschool is happening regularly throughout the United States. Research has shown that inclusion benefits both atypical and typically developing children. Holahan and Costenbader (2000) conducted a study with two groups of children matched in pairs based on factors like age, gender, developmental level, and services. One of the pair was in an inclusive environment and the other in a self-contained setting. The authors found that the children with the higher level of social skills to begin with showed an increase in development of

these skills. The children who were considered lower in social development showed similar performance in both environments (Holahan & Costenbader, 2000).

This push toward inclusion has in turn pushed accessibility considerations to the forefront. Accessibility for preschool students with special needs is uniquely challenging, especially for those children with communication disorders and delays. An inclusive environment has led to great gains in equity for children with special needs. However, many preschool children struggle with their inclusive environment because they are lacking basic communication skills they need to navigate the environment (Hill & Flores, 2014). This is especially true for students with autism and other communication delays. Students with communication deficits are more likely to display difficult behaviors in the classroom (Frea, Arnold, & Vittimberga, 2001). To prevent negative behaviors from occurring, students with communication needs must have access to ways to communicate to others. For example, if a child is intellectually able to answer questions but does not have the expressive language skill to do so, he or she should have access to an alternative. A teacher, aide, or paraprofessional must anticipate the needs of the child and make sure the alternative methods are available. The use of visuals prevents or decreases challenging behaviors because it gives the child a voice, or a means to communicate and express choices. Anxiety is decreased when children feel a sense of control over their situation (Kern et al., 1998). Increasing a child's choice making ability reduced their displays of negative behaviors (Kern et al., 1998). The purpose of this paper is to expand early childhood teachers' understanding of how the use of visual supports can affect challenging behaviors in ECE as it applies to students with autism and other communication delays. Is challenging behavior mitigated using visual supports? Does the use of visual supports affect the frequency of challenging behaviors in the preschool classroom? If so, how can it be implemented

in the preschool classroom to best meet the needs of non-verbal and communication delayed children, including those with ASD?

Literature Review

Communication and Autism

According to data released in April of 2018 by the Center for Disease Control, 1 out of 59 American children has autism (Autism Speaks, 2018). Also known as autism spectrum disorder (ASD), this neurological disorder presents as delays in social-emotional skills, deficits in communication, and the presence of repetitive actions, thoughts, and interest areas (Harrington & Allen, 2014). Children with autism are especially at risk for negative educational outcomes due to their struggle with attention, social interactions, emotional self-regulation, (Bulotsky-Shearer, Dominguez, & Bell, 2012) and communication. Children with ASD show impairments in both receptive and expressive communication. Receptive communication is the comprehension, while expressive communication is the production of speech. Hudry et. al (2010) studied a large group of preschoolers with ASD and found that contrary to what was previously thought, the children's receptive skills were far more impaired than their expressive language skills.

Receptive and expressive communication delays. Even if a child with ASD has the ability to talk, communication is impaired due to processing difficulties and lack of understanding of context and intent (Jordan, 2005). The ability to understand words comes before the ability to say them (Hudry et al., 2010). The understanding of words comes before they can be used (Hudry et Al., 2010). While children with autism show marked discrepancies in both receptive and expressive language development, more attention has been paid to the delay in expressive language (Kurt, 2011). Both delays have effects on the child's education, but the

receptive delay, since it is hidden, can be a significant issue. This poses a particular problem in education settings, specifically preschool, where instruction is often verbal and focused on social interactions. Teachers are counting on the children's ability to understand verbal directions and interpret social cues and non-verbal gestures. Preschoolers entering school for the first time are assumed to possess such skills, as well as understand how to follow directions and participate in basic social situations (Lane, Givner, & Pierson, 2004).

Participation in preschool. Children with ASD and other disorders are increasingly integrated into the typical preschool classroom. A positive outcome of inclusion is that typically developing children in inclusive environments show positive attitudes towards children with disabilities (Odom, 2000) after having participated in the inclusive setting. Studies have not been as definitive as to the benefits of inclusion on the special needs child. Some studies show increased social skills development and some show the same progress as in the more restrictive special education environment (Odom, 2000). The preschool setting is designed to serve the typical student, but is now being asked to serve students with all types of needs. Consider students with complex communication needs and the daily routine of preschool. The typical preschool class routine consists of alternating times of child-led and adult-directed activities. At large group time, there is an expectation for children to sit, pay attention, listen to the teacher, and participate in group activities such as songs, rhymes, and games. During centers, preschoolers choose activities and navigate social situations such as sharing and entering the play of others. Small group time typically requires students to imitate or follow directions to play a game or make a craft. All of these demands are problematic for students who find it difficult to observe, imitate, and communicate. Students with ASD may exhibit behaviors during these times such as screaming, hitting, biting, throwing toys, or other displays of aggression or disruption,

due to frustration and misunderstanding. The behavior of children with autism is easily misunderstood, and as a result mislabeled as intentionally defiant, off-task, and distractible (Hodgdon, 1995). It is obvious that these behaviors cause problems and are not acceptable social behaviors; however, the cause of these behaviors is not what it seems. This misunderstanding happens in part due to the difference in the way children with autism learn versus their non-autistic peers. The autistic child's learning style and the teacher's teaching style do not match. Much of what is taught in preschool is taught through observing or listening, both of which are difficult for a child on the spectrum. Children with autism, like their typically developing counterparts, must understand what the teacher wants them to do in order to participate in the classroom experience. If they do not understand what is expected of them, the potential for challenging behavior is increased, whether out of frustration or lack of participation. The expectations must be communicated in a way that is understandable for the child. For example, if a preschool child without autism is directed to transition from a highly motivating area (building a tall tower at the block center) to a literacy activity (where they are expected to sit), they may react by saying, "I want to build my tower! I am not done!" The teacher would respond, "You can finish your tower after we do our ABC book together." The child understands the verbal communication and knows that he or she will be able to return to the activity. They most likely will go with the teacher to complete the activity. In contrast, a child on the spectrum, who is struggling with receptive communication, may be told by the teacher, "Come with me, we need to look at your ABC book at the table." When the child with ASD protests, whether by grunting, saying "no," or whatever method he or she has at their disposal, this appears to the teacher as non-compliance. In fact, this child is doing the same thing the first child did. They are communicating their desire to continue with the blocks. The communication methods they are

using are interpreted as challenging behaviors. The child needs to understand what they are being asked to do, the steps to complete the task, when they will be done. A teacher may express this information verbally, but if a child has deficits in receptive language, he or she may be confused. The teacher continues to push the child to comply with the task but does not change the method of communication they are using. If the child does not know what is being asked of him or her, it can cause more anxiety in the child, which can elevate the emotions and lead to acting out. Simple miscommunication leads to challenging behaviors. Asking a child to “wait” may be interpreted as “no” causing challenging behaviors for a child with receptive and expressive communication delays. The child is misunderstanding the teacher’s directions and the teachers are misinterpreting the child’s communication attempts as non-compliance. These challenging behaviors stand in the way of a child’s ability to participate, socialize, gain a positive relationship with the teacher, and ultimately, access education.

Social impact. During the preschool day, social interactions are very important. A child who is perceived as “naughty” or “out of control” will not appear to the other children as a suitable playmate. The child with ASD may be avoided or ignored by others in an attempt to steer clear of their behaviors. Seemingly harmless, stereotypical ASD behaviors like flapping, clapping, jumping, examining objects very closely, or a preoccupation with things rather than people, make the child appear unrelatable or different. More serious behaviors such as hitting, biting, eloping, throwing toys, and screaming can alienate the child from their peers. Relationships with peers are extremely important for the development of social skills, such as negotiating and understanding others’ point of view (Volling, Youngblade, & Belsky, 1997). Gestures and body language are important aspects of social communication that are often lacking in children with autism. Stereotypical behaviors such as vocalizations like screaming or

screeching and physical behaviors like flapping hands (Yinging Wert & Neismith, 2003) contribute to the student's difficulty fitting in and making relationships. Lack of relationships affects the social development of children as they age and into adulthood (Volling, Youngblade, & Belsky, 1997).

Challenging Behaviors

For the purposes of this paper, challenging behavior is defined as it is commonly in the ECE classroom as hitting, kicking, eloping, throwing things, and tantrums. These are often seen from children who have communication disorders when a demand is put on them such as performing a task at school. These behaviors are particularly difficult when the student is not able to express why they are behaving that way. A child who uses these challenging behaviors at home or with other caregivers will attempt to use them at school as well. If a behavior has worked in the past and been reinforced, it is more likely to happen again in the future. The negative behavior in itself is a form of communication, is functional, and will remain as long as that behavior is being reinforced (Dunlap & Fox, 2011). The need for immediate action to mitigate these behaviors is obvious; a child cannot be allowed to hit or kick others in the preschool classroom.

Antecedents of behavior. The antecedent of a behavior is what happens directly before the behavior. Challenging behaviors are most often seen when a demand (task) has been asked of the child or a task or activity has been taken away. A typical child might protest this change and negotiate with the adult. Whether or not the child "wins" the negotiations, he had an opportunity to express his feeling about it. The non-verbal child with autism has not been given a method with which to communicate. Unstructured time can be an antecedent for behavior if a child is unsure of what to do or how to participate in an appropriate activity. The uncertainty of the

expectations causes stress and anxiety in a child who has delays in interpreting social cues.

While other students might group together around a table to put a puzzle together, a student with ASD may feel anxious about entering the play of others because they are not equipped with this social knowledge. Too much sensory stimuli in the environment can be an antecedent to challenging behaviors. The preschool classroom is a busy, bustling place with lots of colorful displays, noisy children and toys. For a child with sensory integration problems, a common part of ASD and other developmental delays, the environment in itself might be enough to set off a meltdown. Another example is choice making. Teachers should consider times when students who are non-verbal are not given access to choices or preferences that other children have. This could happen when others can quickly communicate their needs, while the delayed student cannot. For example, students are given a choice (“What color would you like?”), but because a child is non-verbal, his choice is made for him. Choice making gives children a sense of control (Dunlap et al., 1994). When children are given a visual display of options, the child’s preferences are taken into account. There are many situations where verbal children are allowed to make a choice because they chime in and ask for it, while children with verbal and communication delays may be assumed not to have a preference. This perceived disregard for their preference can lead the communication-delayed child to engage in negative behaviors that seem to come out of nowhere. In reality, negative behavior does not come out of nowhere; in fact, it is always preceded by something. This antecedent of behavior can give teachers concerned with behavior important information about why the behavior is occurring.

Consequences and reinforcement. After considering what happened before the behavior occurred, the consequence of the behavior can be examined for more information on why the behavior is occurring. A consequence in behavior theory is not the same as the traditional

definition. It is not the same as punishment. In behavior analysis, consequence means what happens directly after the behavior. Consider this simple example: The preschool teacher releases students to centers time. Three children go to the drama center and it is full according to the posted classroom rules. A child with autism wants to go to the drama center. She screams and cries. The teacher comforts her and tells one of the students to go choose another center so she can play in drama. In this scenario, the antecedent to the behavior is the drama center being full (the child does not get the activity she wants). The behavior is screaming and crying. The consequence is the child gaining access to the drama center. The child's negative behavior is reinforced by the teacher's decision to allow her to play in drama. The screaming and crying will most likely occur again when the child wants to gain access to something. This scenario could be addressed with the use of visuals. The teacher, assuming she could not communicate to the student, allowed her access to the activity after the challenging behavior was displayed. With some basic training in the use of visuals, this situation could look much different. The teacher could use visual representation of how many students are allowed in a center, such as a Velcro picture of each student that is placed in the each center area on a chart. Each area's chart has only enough openings for number children it will hold. When it is full, the children can see there are no more spots. A visual could be used to show the child how much time will need to pass before they are able to play at the drama center. This could be a visual timer or a visual countdown. These methods help to prevent negative behaviors by showing expectations to the children in a visual way. Visuals can be used during challenging behavior as well. A first-then chart is useful. When the child is crying about not getting a turn, the first-then chart shows them "first play at the sensory table, and then play at drama." The child can now understand that they will indeed be able to play where they want to, they just have to wait. While this may not always solve the

problem, it is a better option than reinforcing the screaming and crying behavior. A second example has a social consequence. A child, “D,” is on the autism spectrum. He has verbal communication but it is delayed. He is extremely impulsive. He desires the attention and acknowledgement of the other kids in his preschool class. At recess, D wants to play with other children but does not understand how to wait his turn or how to be safe on the equipment. He runs over other children going up the stairs and does not wait for others on the slide, butting in front of them and at times hurting them by running into them at the end of the slide. The consequence of this behavior is the children are unwilling to play with D. His antics at recess have turned them away from him not just at recess but during other times of the day as well. D’s social interactions become negative as he experiences this avoidance. In this case, visuals can be used to show D how to behave properly on the slide. The routine can be explained visually with pictures or a video model showing him doing it the correct way. Another option would be to give him visual cues while on the playground (a stop sign held up until it is the proper time to go down the slide). These methods are not only keeping the children safe and teaching D the appropriate behaviors, but also preserving the social interactions and relationships among D and his peers.

Just as babies and toddlers use tantrums to communicate when they are frustrated, so do preschoolers with communication delays. Sign language is often taught to babies by parents to increase communication and decrease frustration. Some children with autism use sign language as well. However, there are limits to this method of communication in terms of its generalization in all areas of the communication-delayed child’s life (Schwartz, Garfinkle, & Bauer, 1998). If the person they are communicating with does not understand the signs, the communication breaks down and the frustration would continue. Visual methods are preferred over manual

methods because they translate more easily to people outside of the child's immediate circle (Ganz & Simpson, 2004). Preschoolers with communication delays will try to communicate with others in a way that works. Unable to access typical methods of communication, preschoolers with delays often fall back on what has been successful in the past, such as screaming, hitting, and tantrums, to get what they want or to be understood. In the past, when this has happened in a classroom setting, teachers have used typical behavior modification methods.

Behavior modification methods. Research shows that typical behavior modification methods used in classrooms are not as effective with children with ASD. Common strategies such as verbal reminders, pre-teaching of expectations, and direct instruction of social skills are not feasible for students who lack receptive language skills and the skills to pay attention to what others are doing. Lack of joint attention, a common characteristic of autism (Nader et al., 2008), precludes the ability to listen and follow directions. The Positive Behavior Supports method (PBS) is commonly used in preschools. Tier One includes the methods listed above. Tier Two, for students with more challenging needs, includes visual supports and social stories. Tier Three, the highest level of intervention, includes functional behavior assessments (FBA), behavior intervention plans (BIP), and individual education plans (IEP) (Benedict, Horner, & Squires, 2007). Intervening when behaviors are still in Tier One or Two is optimal. Decreasing challenging behaviors improves the overall learning environment for all children as well as the individual child's ability to learn and develop skills. It has social impacts, too. As previously discussed, children with challenging behavior have social difficulties and do not make friends as easily. Visuals can bridge the gap between these differences. Because the use of visuals is not invasive or restrictive, it can be implemented quickly and easily, and can support the curriculum already being taught in the general education environment.

The gains seen from inclusion in preschool are lost if behavior becomes an obstacle because a child's negative social behaviors can hinder their ability to participate in the general education setting. To be fully included in the general education environment, behavior prevention and intervention methods must be in place (Holahan & Costenbader, 2000). A planned and purposeful classroom structure with carefully designed interventions is necessary for inclusion to work (Holahan & Costenbader, 2000). Negative behaviors can affect more than just the non-verbal or communication delayed child. The other students are denied educational time while the teacher(s) deal with the behaviors. This discussion focuses on visual interventions, however there are other things that can be helpful for students with ASD, such as environmental supports, wait time, giving warning time before changes, and reduction of excess stimuli. These methods should not interfere with the general education classroom routine (Behavioral Disorders, 2011). Visuals and alternative communication are two of such methods.

Visual Supports to Aid Communication

Visuals. There are several forms of alternative communication. "Visuals" or "visual supports" are terms used for the typical picture-based methods. Picture exchange cards (this includes the system known as PECS), core vocabulary boards (CVB), and visual schedules are commonly used. They are easy to use for most educators, and besides PECS, do not require specific training. Visuals can be created using actual photos of the classroom, toys, or activities. They can be created using websites and software specific to this type of work. They can be printed and laminated, then adapted to the student's needs. Electronic devices are available as well, but are more expensive. With these interventions in place, children with communication disorders have an opportunity to communicate. These methods need to be explicitly taught to the student for them to be beneficial. The benefits of using visuals along with typical teaching

methods (such as verbal directions) are increased joint attention, ability to follow directions, and improved receptive language skills (Quill, 1997).

Preis (2006) conducted a study with five participants with autism, using two treatments. Treatment A was asking the student to do something with a visual cue, and Treatment B was asking without the visual cue. The pictures ranged in iconicity from concrete objects such as *ball*, to more abstract ideas such as *go* (Preis, 2006). The researchers sought to show a link between the use of visuals and compliance. The study was done in a speech-pathology department of a university. Though limited by a small sample size, this study showed a positive connection between the students' ability to follow directions and retain those skills when a visual or picture symbol card was used. Frea, Arnold, and Vittinberga (2001) followed a boy who was so aggressive his parents had been told he would not be able to return to his school if behaviors did not improve. Upon implementing visuals in two of his daily activity areas, researchers found the preschooler's aggressive outbursts decreased significantly. After six days of treatment, the challenging behaviors had ceased entirely. The authors admitted that there might be more to it. When using the picture cards, the boy was able to exhibit more control over his situation and that could have played a part in his ability to better control his behavior (Frea et al., 2001).

Implementation. Implementing visuals in the classroom takes planning and time. Careful thought should go into what types of activities a child will be doing, what vocabulary is needed, and what sorts of communication they will be doing. A child's individual preference should be considered (Sigafos, et al., 2009). The staff should also consider what would be most appropriate. If a teacher introduces sensory materials such as water beads, some potential visuals would be: circle, wet, bead, squishy, pour, dump, and roll. A different set of vocabulary is needed for snack time and other times of the day. As for setting up visual schedules, this can be

straight forward if a class is consistent in its schedule. Once set up, the schedule will need changed if any out-of-the-ordinary events occur. Visual schedules can be as simple or complicated as desired. With proper visual supports in place, a child's ability to express himself is increased, and appropriate communication can gradually replace negative behaviors. The use of appropriate communication and decrease of challenging behaviors will allow them the opportunity for social relationships with peers and positive interactions with caregivers. Because preschool is an indicator of later success in education, it is imperative that teachers and paraprofessionals understand how to support the non-verbal child in order to allow him or her to gain skills to communicate with others, express his or her needs, and avoid challenging behaviors.

Types of Visual Supports

Visual schedules. Using visuals serves many purposes for the autism or special education classroom. Ganz et al. (2008) explain that visuals work due to the child's propensity for visual learning over auditory learning (Ganz et al., 2008). People with autism have trouble paying attention and/or a deficit in comprehension of auditory information (Ganz et al., 2008; Preis, 2006). It is typical for teachers to give information verbally about how the day will go, however this does not communicate to a child with receptive difficulties. This is when visuals can come into play. Caregivers and teachers report the use of visual schedules, cues about what is happening next or where they are supposed to go, help children with ASD decrease stress reactions and improve negative displays of behavior and increase on-task behavior and independence (Ganz et al. 2008). Picture schedules or visual schedules are typically made of a strip of paper or cardstock, vertically or horizontally oriented, where the child's schedule is represented in a visual form; small squares sequentially outline the child's day. For example, a

preschooler's visual schedule may have a card depicting a child washing their hands, which indicates that the child should wash their hands upon entering the classroom. The next square represents large group time and depicts a circle of children sitting on a carpet. Following that, a picture of a cracker and a cup symbolizes snack time. Each time these activities are completed, the child takes off or covers the icon and moves to the next one. Visuals have been used in social situations where children lack awareness of others in the form of social scripts (Ganz et al., 2008; Scattone et al., 2002; Mirenda, 2001). Similar to visual schedules, social scripts lay out typical social routines in a pictorial form. Like visual schedules, social scripts help a communication-delayed child understand what they should do (Scattone et al., 2002). The activity is a social routine such as how to enter the play of others. For example, a strip would show Child 1 tapping Child 2's shoulder to gain his attention, Child 1 asking for a turn, and Child 2 handing Child 1 the toy item. Previous research has shown the effectiveness of this method for children with autism. In the four studies that were published in the 1990s, when social scripts were introduced, researchers noted negative behaviors decreased and social skills increased; however, more research should be done to validate these findings (Mirenda, 2001).

Core Vocabulary Board (CVB). Core vocabulary boards give children access to multiple words and are used to expand the functions of language they are using. A core board is a grid, laid out in several different options depending on the scanning ability of the child. In each grid square, there is a picture and word that is considered a "core" vocabulary word. Words such as in, go, want, what, where, when, finished, and more are examples of core words. The use of the core board can take a child's communication ability from single word requests to commenting ("cracker good!" "more water") and asking or answering questions. Fringe, or additional, highly specific vocabulary, can be added for individual use in different settings. A

snack fringe (showing only what is offered as an option during snack time) added to the CVB gives the child access to requesting the snack, asking what is for snack, telling staff that he or she does not want snack or wants more snack. Without these implements, teachers are left guessing what the student wants, causing stress for teacher and student alike. Modeling the use of the core board is imperative in teaching the student how to use it. The staff should point to the items as they are offered. Teacher models should always pair their pointing with a verbal model and allow wait time as children process.

Picture Exchange Communication System (PECS). The PECS system is a multiple phase system in which the child is trained to select icons representing their requests, hand them to a specific communication partner, and be reinforced by gaining access to the thing that was requested. Though other functions of language can be accessed using PECS, it leans heavily to requesting, especially for younger children. For example, at a snack time scenario, the teacher would present the Phase 1 PECS student with visuals representing what is available for snack, such as crackers and water. The student will look at the options, discriminate between the two items, select the one they want and hand it to the communication partner (in this case, the teacher). The teacher will reinforce that request by giving them access within seconds to help them pair that icon with that item they received. The teacher will also use a verbal model, such as saying “cracker” when they hand them the cracker. Thorough research has not been done specifically on Picture Exchange Communication System (PECS) to confirm or refute its benefits to children with ASD (Archibald 2017, Charlop-Christy et al. 2002, Schwartz, Garfinkle, & Bauer, 1998). However, some have reported anecdotally that the use of PECS decreased problems in the classroom and even helped students gain social skills (Charlop-Christy, 2002). A study done by Charlop-Christy, Carpenter and Le (2002) followed three non-

verbal boys diagnosed with autism as they were exposed to PECS. Two out of the three boys displayed challenging behaviors to gain access to something or escape an un-preferred activity before the PECS training. At the conclusion of the study, the researchers reported marked decreases in the challenging behaviors in the two boys who presented with behaviors at the start (Charlop-Christy et al., 2002). Quill and Grant (1996) found an increase in joint attention, receptive language, and a willingness to do a task when four non-verbal children were presented with both an oral direction and a visual support at the same time (Quill & Grant, 1996). A study by Aguis and Vance (2016) expressed that preschool-aged participants who had access to iPads and PECS and were trained to use them to request with an adult communication partner, increased their ability to request for items when motivated by a reinforcing object.

Alternative augmented communication (AAC). AAC comes in a variety of forms and can be used in virtually every area of the classroom. AAC technology encompasses tablet-based solutions and can be customized to the child's abilities and needs. These devices work like a core board for the student, laying out options to choose from, but the device has a voice output function called speech generation, allowing the user to construct sentences and play them for the listener (Xin & Leonard, 2015). Tobii Dynavox is the maker of a tablet specifically used for AAC. TouchChat and Proloquo To Go are applications that can be added to an iPad for use by the student. These options, while helpful, can be cost-prohibitive and require some knowledge of technology for programming and troubleshooting. Students and the teaching team must be trained in their use. A unique benefit of these programs is a teacher or parent can use the device to take an actual photograph of the object or activity, add it to the visual repertoire, and the child immediately has access to it as a visual support. Xin and Leonard (2015) studied the use of AAC on an iPad by three students over six weeks. Two of the students were non-verbal; the other had

some speech but it was not functional. None of the three students used communication in any setting in their school day prior to the implementation of the device, except for repetitive speech at times by one of the subjects. After the devices were implemented and subjects were trained, the researchers saw the students communicating with both teachers and peers at different times of their school day (Xin & Leonard, 2015). The use of communication added many social interactions to the students' school experience (Xin & Leonard, 2015). This study is promising for the use of AAC devices; however, it was limited by its small scale and short span of time.

Video modeling. The lack of ability to watch or observe another person doing an activity makes it very difficult for young children with autism to learn new skills. Visual methods such as video modeling is one method that has been studied. Video modeling is the recording of the child doing the required behavior, such as washing her hands. The video is close cut on the child and the activity and is a short, simple recording. The child is shown the video when the task is being asked of her. If the child is not able to accomplish this task for the purpose of making the video, a peer model can also be used. Because children with autism have more difficulty making eye contact and attending to another person, the video model allows them to observe the skill being modeled without having those joint attention skills needed for observational learning. Yinling Wert and Neismith (2003) studied a small sample of children with autism and their ability to spontaneously request (SR) after watching themselves do it on a video model. The study showed marked increases in SR after video models were implemented and that the skills were generalized to home and school (Yinling Wert & Neismith, 2003).

Types of Communication

Requesting. Communicating a desire for an object, activity or person, known as requesting, is a foundational skill in communication (Ganz & Simpson, 2004). Babies' first

communication is crying when hungry; they desire to eat, so they communicate that need. They are requesting to be fed. When they are fed, their request is fulfilled, reinforcing that attempt at communication, making it more likely to occur in the future. Requesting is a good starting point for implementation of visual supports since it is a very basic communication function. Children with communication difficulties may not reach out to others for their requests because they do not understand communication as the link between them and another person, or the way in which other people can be helpful to meeting our needs. For this reason, the concept of initiation is stressed when using visuals for requesting (Ganz & Simpson, 2004; Schwartz, Garfinkle, & Bauer, 1998).

Other functions. Other functions of communication are important, though not as prevalent as requesting in this age group. Commenting or labeling of items is a skill small children use; they will point to an object or picture and say, “dog.” This helps build vocabulary and encourages the back-and-forth of social communication. Protesting is the ability to express your dislike or disagreement in an appropriate way. This is at times challenging for the communication-delayed child, since many inappropriate methods are reinforced (intentionally or unintentionally) so that they may appear repeatedly. Throwing a non-preferred snack on the floor is not an appropriate protest, though it is a communication. Other functions of language include social greetings, asking questions, and answering questions.

Non-verbal communication. While understanding verbal communication is a challenge, understanding non-verbal communication is also difficult for child with ASD. A hallmark of autism is the lack of “theory of mind,” which allows a person to realize that other people have thoughts and ideas apart from their own (Richman & Bidshahri, 2018). Theory of mind is an important concept for social development as it informs the ability to understand the feelings of

others based on scenario or body language and facial expression (Richman & Bidshahri, 2017). This is necessary for feeling empathy and for navigating social interactions as adults. Another issue is joint attention, or the sharing of an experience and attention toward a subject. This skill is important in communication and is often lacking in children with autism. Much of learning happens from imitation and observational learning, especially in the ECE setting, and joint attention is needed for those to occur. This is important in this discussion because lack of joint attention can often look like challenging behaviors. Children may “ignore” requests, leave the area during instruction, and appear to be “in their own world.” Without joint attention, children are unable to participate in observational learning and imitation (Ganz et al., 2008), and instead may be engaging in what looks like challenging behaviors as they attempt to do their preferred activities instead.

Transitions. Waters, Lerman and Hovanetz’s (2009) conducted research on problem behavior in children with autism occurring during transitions. They set up a study of two boys with challenges, observing the transition times from no activity to a non-preferred activity and then to a preferred activity. At baseline, both boys had challenging behaviors during each transition to a non-preferred activity. As visual schedules were implemented, behavior improved but not significantly. Additionally, extinction and differentiated reinforcement of other behaviors (DRO) were used with the visual schedules. With this combined approach, challenging behaviors during transitions were greatly reduced in the two participants (Water, Lerman, & Hovanetz, 2009). DRO is a method by which the student is reinforced (with candy, sticker, or other preferred item) in certain intervals as they refrain from the challenging behavior identified (Water, Lerman & Hovanetz, 2009). For example, a child is given an M&M’s candy after each specified interval wherein they do not leave their seat. Transitions can be a tricky time for

children struggling with communication, so proper implementation of the schedules and visuals is important. While implementation is simple for the most part, some common errors can prevent visuals from having a significant impact. One such error is offering too many symbols at once, overwhelming the child's scanning ability. Failing to teach what the symbols mean also causes problems in the use of visuals. Some symbols are easily interpreted while other are not, so explicit teaching is necessary. This is typically done by modeling. It is problematic when the teachers are not consistent with the use of the schedule. The schedule should be a regular part of the child's day so that they can count on the predictability and stability of its purpose. Finally, staff should consistently reinforce the students' use of visuals. For requesting, this is simply allowing access to the requested object within seconds.

Analysis

The preschool experience is an important one, and can have lasting impact on the trajectory of an education. Quality preschool for all students is a necessity. This includes students with disabilities such as autism and other severe delays. Students with communication disorders can be challenging in the classroom due to their lack of ability to express themselves. Basic attempts to communicate may be interpreted as challenging behaviors and thus have a negative impact on their social relationships, both with teachers and with other children. These children need a way to access the curriculum in their classroom but also a way to express their needs. They need proper preparation for changes in routine, transitions, and expectations. Verbal directions do not typically work for students with autism and other communication delays due to their lack of receptive language and joint attention. Simply watching what other children do and following along can be nearly impossible for the child with autism.

There are many options for visual supports. Picture exchange methods, including PECS, is a basic method by which students choose and present cards featuring icons on them to their teachers or peers to request or comment. Visual schedules are used to prepare students for transitions and to alert them to changes that are coming up. Core vocabulary boards are used to broaden the students' access to more vocabulary in order to do more labeling and commenting. Social scripts can be used to teach students lacking social awareness how to navigate typical social situations. Each can be helpful in increasing social communication and preventing challenging behaviors in the classroom. Moreover, they can increase a child's ability to participate in activities, thus giving the child more opportunities for high quality learning. Visuals are indeed useful for teachers working with children with autism and other communication delays because they give the student a means to express him or herself before frustration occurs. These visuals are limited by their ability to be set up properly and anticipate the needs of the student. The teacher must prepare the visuals in advance. It is possible that during an interaction the proper word or icon will not be available to the student, thus leaving the possibility of frustration. These visuals are limited by the child's willingness to use them and they must be explicitly taught how to do so. When sudden changes arise, it may be difficult for staff to adjust the visual schedules or scripts to accommodate the student's needs, and the student may revert to challenging behaviors or meltdowns.

In the inclusive preschool classroom, the use of visuals focused attention and improved communication. Joint attention, or the ability to share in an experience with others, is an important skill in the classroom since it is necessary to learn from the methods teachers typically use to teach (such as direct instruction, small group learning, and one-on-one instruction.) Joint attention is the building block to imitation, which is foundational to observational learning

(Cardon & Wilcox, 2011). Visual supports also increase the communication-disordered child's ability to follow directions. When thinking about behavior, it follows that children who are better able to pay attention and follow directions are not as likely to act out in ways that are interpreted by teachers as challenging behaviors. Preschool classrooms can be a challenging environment for a child with autism or other communication disorder. Careful planning and implementation of visual supports such as picture exchange symbols, visual schedules, pictorial scripts, and others can help children have access to communication. More research is needed into these methods and their role in affecting challenging behavior. Though some have reported a decrease, the studies have been limited by an extremely small sample size. A more comprehensive study involving multiple participants in multiple settings should be conducted to find out more.

Application

As a teacher in a modified preschool setting, it is common for me to use visuals with all of my students because they are all non-verbal. In the last several months and especially due to this research, it has become apparent to me that the use of visuals may be even more critical in an inclusive setting. The district I work in has plans to begin moving towards an all-integrated model, even in its preschool, in the very near future. Because of this, classroom teachers, not just special education teachers, will need to know when and how to use visuals in their classrooms. Without this education, teachers may find themselves dealing with many challenging behaviors from children with communication disorders such as ASD.

Further research

While there is anecdotal evidence and some research that visuals improve or prevent challenging behaviors and frustrations, there is not much solid research to back up these claims. In order for a method to be implemented across the field of early childhood education in my

district, it must be researched and evidenced-based. I hope to propose a research project to my program director wherein I study children and visual use in the integrated preschool setting. The participants would preferably be first year IEP students who do not have much experience with visual supports. The students would be given some time to settle into their routines, perhaps a few weeks, before taking a baseline for behavior, to prevent skewing data. Students' behavior naturally improves as routines are learned. Taking baseline data on the students with communication delays would include recording frequency and severity of challenging behavior incidents. From this point, two groups could be formed, one getting Treatment A (exposure to visual supports like picture exchange, first-then charts, visual schedules) and Treatment B (typical methods used in general education classroom, such as verbal reminders, reinforcers). This would occur for a period of six weeks with data being collected weekly by several members of the staff who have been trained in what challenging behavior looks like and how to evaluate its severity. At the end of six weeks, the data would be evaluated to determine if there were any correlations.

This research could influence how the district sets up the general education classrooms, what they spend their money on, how they staff their classrooms, and how they educate their teachers. Special education teachers can work alongside classroom teachers to assist in setting up these visual supports, but general education teachers should also feel equipped to use them on their own at any time, even with non-disabled students. It could be as simple as implementing a visual schedule for the entire class or as specific as having a picture exchange board for one student to help her make choices at centers. Students without communication disorders and challenging behaviors can be easily folded into this method. Even with communication skills, the use of visuals can enhance the communication experience between preschoolers who are at

differing levels of development. Recently during a session of Peer Mediated Intervention (PMI), a general education peer played one-on-one with a non-verbal student in my special education classroom. I witnessed the general education student use the core vocabulary board (specific to play-doh, with words like “roll” “snake” “cut”) to tell her playmate, “I am going to roll it in a ball first,” as she pointed to the picture of rolling it in a ball. This was exceptional to witness, because the peer had not been trained in the CVB method but had witnessed the child with ASD use it and the teacher model it. The typical peer recognized its value as a tool for communication and adopted it as her own. This is exciting because the more the methods are integrated into the typical students’ routines, the less likely they are to single out or alienate the child who has the communication disorder and whose delays necessitate its use. The alternate communication method becomes normalized in the inclusive setting.

Moving forward in my classroom, I will use the research I have done here to influence specific aspects of how I teach. Firstly, I am certain that the students I teach daily must have constant access to appropriate, comprehensive vocabulary to fit in with what is being taught or talked about. In addition, I need to teach explicitly and implement these methods before the problem behaviors occur. As my students develop more social skills, and we implement more peer mediated interventions, I need to anticipate the conversations and vocabulary that could occur and give access to both the typical and disabled child. Before this research, we had been doing the peer-mediated interventions training separately from the visual supports. Now, after reading what I have read, I can see how using visual supports can be a bridge between the child with communication delay and the verbal child. I hope to complete this research and be able to present it to a group of colleagues and fellow teachers at a professional development session or

professional learning community. The findings could be relevant to many teachers, not just preschool or special education teachers.

To set up my classroom with visuals, I would build on what I currently have. Firstly, students with communication delays will have their own personalized visual schedule. For example, a vertical strip of construction paper laminated and fitted with five squares of the “hard side” of hook-and-loop fastener. Picture cards with all the activities and locations of a student’s day are kept in a container and used to set up the personal schedule before the child arrives each day. In my class room, it looks like this: Circle time icon, choice time icon, wash hands icon (for snack), individual work time icon, and bathroom icon. The students are taught the cue “check schedule” or “what’s next” and handed a card with a visual symbol for “checking schedule.” In our case, it is a checkmark. The students take the check card to their schedule and drop it in an envelope or bucket. They find the top picture, which is the next activity. The student removes the picture (attached with Velcro), and travels with it to the next area, where he or she matches it to a corresponding picture. For example, if he is going to wash his hands, there is an exact match of the wash hands symbol at the sink with an open area of “soft side” Velcro, to which he can attach the picture. This is called a “carry and match” schedule and is useful for students in preschool because it encourages students to walk to the area. In addition to the visual schedule, there are visual supports such as *help*, *more*, and *I want* available for students to use to communicate those basic needs during play.

At snack time, each child has a communication board made from a three-ring binder with the front flap cut off to expose the back panel and the rings. In the back panel of the binder, a core vocabulary board is affixed (3x3 matrix with large icons with words such as more, help, finished, good, here). To the rings is attached a specific “fringe” that pertains to that day’s snack.

This fringe can be taken off or altered depending on what is available. For example, one student's fringe has Goldfish crackers, water, raisins, and apple slices. The teacher is a communication partner and the student must use the board and fringe to request the item desired. Depending on their level, the student might just point to the cracker icon to receive a cracker. Others must make a sentence by pointing to "I want" and "cracker." Another important piece to this method is initiation. The student is required to get the attention of the communication partner, or initiate the interaction. This could be by a vocalization, tapping, gesturing, or eye gaze. Crying, screaming, or other challenging behaviors are not reinforced, the item being requested is not given until an acceptable behavior occurs. If challenging behavior does happen, the communication partner can ignore the behavior and wait until the student uses an appropriate method, or can redirect and reteach the appropriate methods. All of these things depend on the development and needs of the specific child. The students in my class are at different levels of how they use the visuals. Some are able to use the supports completely independently, while others are learning how it works and hand-over-hand prompting is common.

The core vocabulary board (CVB) is used in our play areas. Each area of the room where one-on-one learning occurs is outfitted with a CVB along with the toys. Recall that in preschool; most learning happens during natural play experiences, so our one-on-one learning time also occurs in that setting. In these areas, the teacher is leading specially designed instruction in the areas of functional play and imitation. The student is required to use the CVB to request a turn or to ask for the next piece of the puzzle. Different levels of prompting are used until the student is independent in their use of the CVB, the prompts are faded. CVBs can be made specific to each play area as well. As I described earlier, when using play-doh our students have access to a CVB

with words like squish, roll, cut, and descriptions of the supplies they can ask for such as cookie cutters, different colors of play-doh, and utensils.

Another visual support used in my classroom is the visual routine. This is similar to the layout of a visual schedule; however, it depicts a routine. These are very easy to implement. I use them for activities or transitions with several steps. For example, handwashing is a task in which we want each child eventually to be independent. Near the sink, low enough for the children to be able to see it easily, I have posted a strip of icons in this sequence: turn on water, wet hands, get soap, scrub hands, rinse hands, take paper towel, dry hands, throw away towel. Each icon depicts the step in a simple line drawing. While we do not always use every icon all the time, if a student is stuck at a step or skips a step, we can refer to the visual as we remind them verbally. I have used these routines to directly address challenging behaviors. For example, one student was exhibiting challenging behaviors at snack time. He would hit the teacher or throw his food when he was frustrated or disappointed (when he did not get the snack he wanted). With the help of other building staff, we evaluated his behavior. We determined the function of his behavior was attention. I made him a “placemat” with his snack routine on it. At the top, it featured icons such as *sit at table*, *open snack*, *use spoon*, *drink water*, and *throw away trash*. When he began to display behaviors, instead of addressing the attention-seeking behavior, we would point to what step he was on to remind him what he should be doing. It was not paired with a verbal reminder in order to provide the least amount of reinforcement for the behavior (he desired to engage with the teacher when he was upset). After a few sessions of this, the challenging behavior decreased significantly.

To build on what we are currently doing, I would like to add picture exchange books and choice boards to my classroom. A picture exchange book is similar to the PECS book, where

there are different pages of visuals Velcro' d to the page and used by the child to set up a sentence such as "I want red ball." I would like to add this to our repertoire to expand and lengthen requests. Additionally, I would add more pictorial scripts or social skills stories to help students learn what to do in certain social situations. This will apply well to the peer mediated intervention scenarios that are happening in my class. I am prompting rather heavily to teach the student with the communication disorder how to ask the general education student for a turn. I find that the student typically either screams or tantrums when they are asked to relinquish the toy or turns to me to communicate with the other child. I would like to teach the non-verbal student through these pictorial scripts, how to relinquish a toy, wait for a few minutes to allow the child to play with it, then ask for it back without displaying challenging or inappropriate behaviors. With the implementation of these methods, I hope to create an environment where my students can easily access language and communication when and where they need it. My goal is that they would use it to communicate with teachers and students.

The classroom should be set up with as much visual communication as possible. Visual supports should be available for use by students with communication delays and to enhance play opportunities between verbal and non-verbal peers. Visual supports should prevent problem behaviors rather than after the fact. One visual support that is especially useful with autism is the first-then chart. It is simply a card divided into two columns. One column says "first" and the other says, "then." This chart can be used when a child is having difficulty accepting no or delaying gratification. Take for example a child who is supposed to go to circle time but she wants to play play doh. She communicates by handing the adult the PECS that says play doh. However, this is not the time for free choice; she needs to go to circle time with her classmates. Explaining waiting to a child with little receptive language can end up in a power struggle.

Instead, present the first-then chart. Under “first” put the visual for circle time. Under “then” place the visual for play doh. State clearly, “First, circle time. Then play doh,” while pointing to the visuals. This communicates the idea that the child will in fact get what they want, they just have to do the other thing first. Without this tool, the child could become frustrated not understanding why she does not get the toy she desires. She might think the answer is “no” instead of “not now.” The chart can be outfitted with Velcro so that the items are interchangeable and available to set up at a moment’s notice.

Conclusion

While there are many important findings about communication and visuals in the studies mentioned above, additional research is needed to more completely discover the impact that visual implements have on challenging behavior in preschool students with ASD. A broader study is needed to determine if these findings are similar across different ages and levels of communication delay. There is an abundance of research supporting the use of visuals to increase communication. There remains a need for evidence of how those visuals can affect the behavior of the students with communication deficits. Studies need to be done on the ways in which implementation of visual schedules, picture exchange systems, core vocabulary boards, and visual rule reminders are changing the behaviors of the students. Teachers can use this research to inform their teaching practice.

The inclusive preschool classroom with communication-delayed students can be a challenging environment for students and teachers alike. Challenging behaviors arise as a result of the child’s inability to express their needs and wants, and their anxiety surrounding schedule changes and expectations. These behaviors are a result of lack of understanding. Access to visuals as a stand-in for those basic communication skills, can assist communication-delayed

students in requesting their needs, understanding the demands put on them, and anticipating any transitions or expectations. For many children, this information is all that is needed to decrease the frequency of challenging behaviors. When children are acting up less and able to participate in classroom activities more appropriately, they gain better social relationships. Better social relationships lead to a better education, since relationships with teachers and peers can affect how students are able to learn (Gupta, Heninnger, & Vinh, 2014; McDaniel, Bruhn, & Troughton 2017). A quality-learning environment in preschool sets the stage for better outcomes throughout the educational life of the child.

With the current trend of inclusion for children with special needs, it is imperative that the needs of all the students are considered. Each child should have the opportunity to use a voice in whatever form it may be. Visuals give the child the opportunity to express to the teacher and the teacher the opportunity to speak to the child. If child and teacher are unable to communicate, a relationship is unlikely to form. Anxiety builds, as students do not understand what is expected of them. With the purposeful implementation of visual communication systems and training for students and staff, communication among all members of the preschool classroom can be achieved.

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