The volunteers who verbally interacted with the children stayed the same during the study, which cut down on overstimulation and encouraged social interaction.

Teaching Techniques for Children with Autism Spectrum Disorder

By Kim Wendell and Kat Rusnak

Photos courtesy of Dream Catchers at the Cori Sikich Therapeutic Riding Center

whoa

As new estimates from the Centers for Disease Control and Prevention report that about one in 88 children have been identified with an Autism Spectrum Disorder (ASD), PATH Intl. instructors have become increasingly familiar with the rewards and challenges of working with children and adults on the autism spectrum. Until recently, the effects of any form of equine-assisted activities and therapies (EAAT) for people with autism were primarily measured by qualitative observations rather than quantifiable studies. This has restricted potential funding sources and limited the credibility of the achievements.

In October 2010, Dream Catchers at the Cori Sikich Therapeutic Riding Center collaborated with faculty at the College of William & Mary to study the positive impact of therapeutic riding for children with ASD and to quantify the improvements. The findings (see Study Results, page 34) support not only the effectiveness of therapeutic riding for children with ASD but also indicate that the positive impact generalized to behavior in the school classroom and that consistent riding improves the outcome. To date, 35 students have participated in the study that took place at this PATH Intl. Premier Accredited Center near

Williamsburg, VA, over a 30-week period during the 2010-11 school year.

Study Background

Lesson plans for the study were developed after the instructor for the group met the children in their classrooms. Interviewing the teachers and observing the students beforehand provided information for horse selection and identified potential safety concerns. Teachers identified and discussed the students' specific fears and sensory issues, as well as some specific goals. Drawing on knowledge about Dream Catchers' herd, PATH Intl. training and this visit, the instructor paired horses with students. Continuity within the team, including the horse, is usually a goal in therapeutic riding, but changes were made depending on whether a student needed more or less sensory input from the horse's movement.

During every lesson, an intern recorded her observations and information that the instructor dictated to her on a hand-held audio recorder. Sidewalkers were encouraged to provide information at the end of the lesson, including any changes, improvements or problems they observed in the students' behaviors. Each lesson began with a sensory activity on the ground. These included touching different items in a stall, holding a lead rope, placing carrots or apples in feed buckets, painting body parts of the horse or using stall shavings and glue to write the student's name. These horsemanship lessons progressively increased during the sessions and led to the student touching a horse and eventually learning grooming and leading skills.

The following is a sampling of some of the successful techniques and strategies used in the study, which were incorporated, in part, to regulate the sensory thresholds of the children.

Mounting and "Quiet" Riding

After the instructor(s) performed horse/tack safety checks, the students were mounted with specific verbal and physical cues from the instructor. The verbal cues were: "Hands on the pommel, foot in stirrup, 1, 2, 3 up-and-over." If needed, the instructor would physically assist the child in placing his or her hands on the saddle.

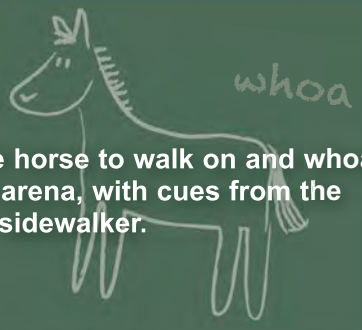
Over time, most students needed less assistance mounting. Decreases in sensory defensiveness were also observed in most students. For example, some students were willing to accept touch by the instructor when mounting, and others reached independently to touch their horses once mounted. One instructor helped the students mount while a second instructor or trained volunteer checked tack and made adjustments. A new mounting order was determined each week based on the previous week's experiences and the behavior of each child when he/she arrived with the group.

During the first 10-15 minutes of riding, the horses moved non-stop without verbal communication from the instructor or sidewalkers. This quiet ride was normally an outside trail ride, but when weather did not cooperate, the indoor arena was used. The outdoor quiet time was preferred because many of the students were more relaxed in this setting. The trail ride provided novel visual stimulation without auditory distraction.

This quiet time appeared to reduce sensory defensiveness and encourage self-regulation by removing distractions and extra sensory input. The teams (horse leaders and sidewalkers) were asked to be silent unless there was a safety issue. According to Temple Grandin, a university professor who has ASD (1992), "People with ASD may be able to avoid complex visual input by averting the eyes or narrowing the focus of visual attention and to actively avoid sources of unpredictable tactile input. Environmental auditory input, however, is more

Students who initially had a great deal of sensory defensiveness and poor eye contact improved their social interaction throughout the six-week study.

Sample Lesson Plan



Objective: Riders will use verbal and/or signing motion to ask the horse to walk on and whoa at each counting station in the arena and at each letter around the arena, with cues from the instructor and assistance as needed from the designated "verbal" sidewalker.

Educational Goals: Motor planning, sequencing and counting

Arena Set-up: Place ground poles in each corner to make an "inside arena" and an outside path for riding at the walk. Space four barrels in the shape of a square with a large numbered sign leaning or resting on the barrel. Each barrel should have an empty cowboy hat and a basket on top filled with different items to be counted: plastic horses, curry combs, plastic horseshoes and laminated paper cowboy hats. (Look for cowboy-themed borders at a school supply store, cut out the different items and laminate them so they can be used in many different lessons.)

Lesson: After students have mounted, have them ride for first 10-15 minutes without distraction. Review the skills from the previous week and practice "walk on" and "whoa" cues with the entire group as the horses walk around the arena. Then divide the students into two groups. The first group will walk on the outside of the ground poles, stopping at each dressage letter to practice cues for "whoa" and "walk on." The second group will walk to each barrel one at a time, count out the designated number of items from the basket and drop them into the cowboy hat. After each student has been to each barrel, have the groups switch. Then ask the entire group to walk around the arena as the horses increase and then decrease speed at the walk.

For a cool-down, have students listen for a verbal cue from the instructor of a specific number between one and 10, and when they hear that number, give the cue for their horse to "whoa." Dismount and have each student say "thank-you" and "goodbye" to their horses and volunteers with the designated volunteer walking with the student to meet the teachers.

difficult to escape. They may therefore be left with the somewhat dysfunctional alternatives of being overwhelmed by complex auditory input or blocking it all out." She vividly explains how difficult it is to regulate sound: "My hearing is like an open microphone that picks up everything. I have two choices: turn the mike on and get deluged by sound, or shut it off."[2]

Each week, it became increasingly evident that this time of riding without instructions, communication or directed activities improved the students' focus and relaxation during the instruction part of the lesson, which took place in the arena after the quiet riding time.

Riding Skills Instruction

After the initial quiet riding time, the instructor requested that only a designated member of each team speak with the child to reinforce instruction and minimize the input from too many people. The volunteers who verbally interacted with the children stayed the same during the study. The following were some of the techniques and teaching practices that helped students better handle sensory input:

• Specific, consistent and repetitive prompts/cues were used: For example "1, 2, 3 walk on" was the verbal cue used every time we wanted the child to prompt his/her horse to walk.

• Sufficient processing time was given for each command, recognizing that even if there was no eye contact the student might still respond.

• Responses from students were both verbal and non-verbal for walk on and whoa. The American Sign Language signs for "walk on" and "whoa" were used during the lesson. The consistency of these cues engaged the auditory, visual and kinesthetic learners while modeling non-verbal communication for non-verbal riders.

• Visual cues were established in the arena set-up. For example, laminated signs were used for activities, which included positional words (up, over, in and under) and shapes (star, square and circle).

• Fences, barrels and cones were

used to define space and to form clear boundaries.

Another important aspect of the study involved providing opportunities for social interaction for students and helping them increase eye contact by:

• Calling each student's name several times during the lesson when praising or as a prompt.

• Designating a specific cone or barrel in the arena where each student would stop the horse with a verbal or signed "whoa" and then asking the student to wave to a teacher or to give a high-five to a sidewalker.

• Pairing each student with another student during an activity.

• Using large group games like "red light/green light" or "Simon Says" to encourage safe competition.

•Encouraging students to thank their horses and volunteer team after dismounting.

The lessons included short bursts of sensory stimulation. Some ways to incorporate this into lessons are to:

• Vary the amount/type of sensory information in the riding environment. This helps focus the student and will keep the attention of a sensory-seeking rider or challenge the tolerance of a sensory-avoiding rider.

• Ask horse leaders to follow prompts from the instructor to increase and decrease the speed of the horse at a walk during the lesson.

• Have each horse trot (or for the Tennessee Walking Horses, flat walk) early in the lesson rather than at the end.

• Include activities that encourage holding, touching or tossing items, such as bean bags, to encourage students to use their tactile senses.

Grooming and Leading Horses

Due to cognitive differences between the two groups, the more advanced group was introduced to grooming and leading after six weeks of lessons while the other group started between eight and 10 weeks. Many students were hesitant to touch the horse even after having ridden for several weeks. Some students were hesitant to enter the stall, so grooming stations with portable fencing were set up.

Each grooming lesson was simple and consistent with students using a brush and counting out strokes. During this activity, volunteers were encouraged to count aloud with the student to encourage bonding and trust. Students also learned to hold the lead rope and walk their horse out to the arena with the help of a sidewalker and a horse leader.

Although the techniques used in the lessons have not been independently examined to determine their effectiveness, collectively they produced statistically significant positive results prompting additional research. The children in this study showed statistically significant improvement on the GARS-2, an autism and social interaction rating scale, and on the social interaction subscale, both in lessons and in the classroom. The children demonstrated fewer symptoms, calmer behavior, improved relationships with others and greater engagement in learning.

The study also found that the symptoms were reduced only with continued therapeutic riding. After a planned six-week break from the riding lessons, the degree of autism symptoms returned to pre-riding levels. However, once lessons resumed the children's symptoms rapidly improved and they quickly regained those benefits.

"There is a significant decrease in autism symptoms, especially with regard to social interaction, which manifests in the child's classroom behavior," said Dr. Sandra Ward, the study researcher. "The findings of this study show evidence of therapeutic riding's effectiveness as a form of social therapy as well." For more information on the study, go to http://dreamcatcherswilliamsburg.org/index.php/research.

Before the lesson, an outdoor quiet ride helped students relax by removing distractions and providing novel visual stimulation without auditory distraction.

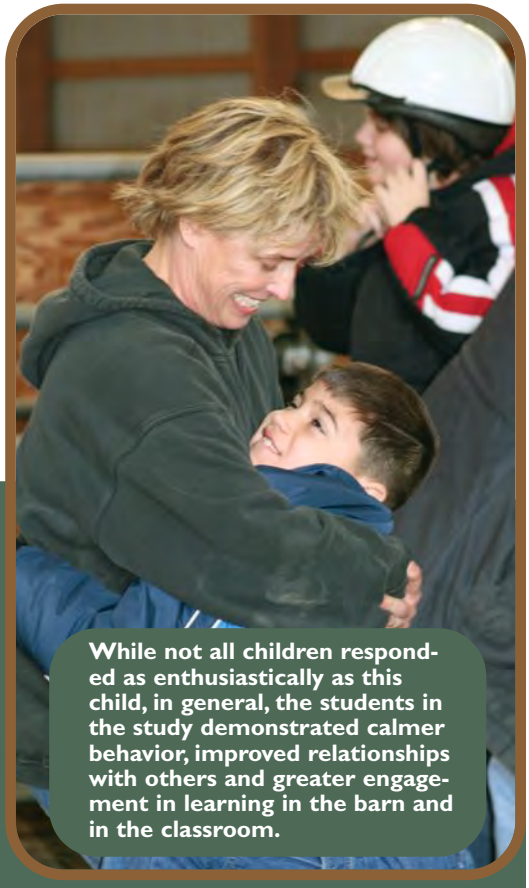
References

1. Centers for Disease Control and Prevention (www.cdc.gov/search.do?query textautism&action)

2. Ashburner, J.; Ziviani, J.; Rodger, S. *American Journal of Occupational Therapy (AJOT),* "Sensory processing and classroom emotional, behavioral and educational outcomes in children with autism spectrum disorder." Sept. 1, 2008.

Kim Wendell is a PATH Intl. Certified Registered Instructor at Dream Catchers at the Cori Sikich Therapeutic Riding Center and was the primary instructor for this research study. She can be reached at kswendell@aol.com. Kat Rusnak is a master's degree student at Boston University in occupational therapy and the center's former research coordinator. She can be reached at katrina.rusnak@gmail.com.

The study was conducted by Sandra Ward, PhD, and Kelly Whalon, PhD, with The College of William & Mary School of Education; Kim Wendell, BS; Kat Rusnak, BS, and Nancy Paschall, BS, executive director of the center. Wade Johnson, MD, provided guidance on the study.



While not all children responded as enthusiastically as this child, in general, the students in the study demonstrated calmer behavior, improved relationships with others and greater engagement in learning in the barn and in the classroom.

Study Results

By Dr. Sandra Ward

Students from ASD classrooms in two local elementary schools were bused to the barn once a week during the school day for four to eight weeks with four to nine students per lesson. The groups rode for three sessions of three different lengths from the fall 2010 to the summer 2011 with a six-week break in between.

The study used the Gilliam Autism Rating Scale (2nd Edition) and the Sensory Profile School Companion. Questionnaires provided examples of specific observable behaviors and allowed teachers to rate the frequency that they observed each child exhibiting the various behaviors in the classroom.

The data showed significant improvements in the autism index and social interaction subscale of the GARS-2 as well as in the registration, sensitivity, and several school factor subscales of the SPSC. The GARS-2 data pointed to a general reduction of overall autistic characteristics and behaviors, particularly in the area of social interaction. The SPSC data suggested that the participants became more attuned to their surroundings and more actively engaged in the classroom environment.

Because the study design included breaks between sessions, the data suggested that these improvements could be seen at the end of the six-week and eight-week sessions. Over the two breaks, these improvements declined back to the initial levels observed at the beginning of the study, and the four-week riding session did not show any improvement. From these results, the researchers interpreted that (1) therapeutic riding can lead to observable positive benefits in settings other than during the actual lesson, and (2) consistent participation in lessons is necessary for these benefits to be maintained. While therapeutic riding instructors are not licensed counselors or therapists, nonetheless students with ASD appeared to improve socially as a result of the lessons.

walk on