Using an AB design with generalization, this study sought to determine the effectiveness of presenting videotaped emotions and Social Stories™ to teach a 9-year-old child with Asperger syndrome to recognize and understand emotions in himself and to generalize them to other situations in his home. Data collected in the child’s home showed an improvement between baseline and intervention in the child’s ability to recognize emotions and understand their occurrence.

When Hans Asperger, an Austrian psychiatrist, described the characteristics of his young male clients, he highlighted social and emotional problems that impeded their interactions with others, average to above-average intelligence, and a high level of original thought patterns (Frith, 1991). Wing (1981) interpreted Asperger’s observation about this unique pattern of thoughts by stressing that what makes it so special is the starting point of their narrow but logical thoughts. Persons with autism tend to focus on details that may not be perceived by others, and it is from those details that they develop their narrow but logical thinking. Hans Asperger further noted that although myriad functional areas were affected (e.g., academics, sensory), in most cases, the children’s social and emotional problems were so profound that they overshadowed other challenges.

Within the area of emotional impairment, children and youth with Asperger syndrome (AS) experience deficits in recognizing, understanding, and using facial expressions (Downs & Smith, 2004; Gross, 2004; Hill, Berthoz, & Frith, 2004; Shalom et al., 2006; Wang, Dapretto, Hariri, Sigman, & Bookheimer, 2004). Thus, most seldom display facial expressions or respond to and recognize emotions, a skill that is demonstrated in neurotypical peers during the first 2 years of life (Bretherton & Beeghly, 1982; Dawson, Webb, Carver, Panagiotides, & McPartland, 2004; Izard, 1971). Since facial expressions play an integral role in communication, and in particular for communicating feeling states (Kasari & Sigman, 1996), a disruption in the emotional signaling system can cause social interactions to deteriorate. For example, an adolescent with AS could not understand why his classmate called him “crazy” because he laughed when his sister had a serious car accident.

The social impairment in AS manifests itself in (a) the inability to understand and use nonverbal behaviors to regulate social interactions and communication and (b) a lack of social or emotional reciprocity despite a common desire to have friends. Social interactions, when they do occur, are often eccentric and one-sided rather than the social or emotional indifference seen in classic autism (American Psychiatric Association, 2000; Klin, Volkmar, & Sparrow, 2000; Ozonoff, Dawson, & McPartland, 2002). For example, a young man with AS may not be aware that his salutation when his aunt asks, “How are you?” should not be the same as when a supermarket cashier asks, “How are you?”

Despite the widespread acknowledgment that individuals with AS have challenges in understanding facial expressions and that this impairment can have debilitating effects, little research has been conducted on the effectiveness of specific interventions used to address these issues. To date, research in this area has primarily focused on individuals with autism, with most studies examining emotional recognition through labeling of facial expressions from formatted photographs (e.g., Ashwin, Wheelwright, & Baron-Cohen, 2005, 2006; Begeer, Rieffe, Tervogt, & Stockmann, 2006; Castelli, 2005; Dawson et al., 2004; Shalom et al., 2006; Wang et al., 2004; García-Villamisar & Polaino-Lorente, 1998, 1999, 2000). Other intervention approaches have used language to identify causes for emotional deficits through written stories, audiotaped lists of words and stories (Castelli, 2005; Rieffe, Tervogt, & Stockman, 2000), or motion via videotaped facial expressions to determine whether persons with autism comprehend emotions when presented in static or dynamic format (Gepner, Deru-
elle, & Grynfell, 2001). Yet other studies have measured emotional expressions using mixed techniques, such as interviews and self-reports, social-oriented cards with pictures, and problem solving (Downs & Smith, 2004; Hill et al., 2004; Shalom et al., 2006). And some have used videotaped emotions combined with pictures (Gepner, De Gelder, & Schonen, 1996) and videotaped actors to teach recognition of facial expressions (Bell, & Kirby, 2002; Loveland et al., 1997). Finally, multimedia interventions (Bishop, 2003; Golan & Baron-Cohen, 2006; Moore, Cheng, McGrath, & Powell, 2005), as well as social and cognitive training, have also been used to train persons with autism and AS in appropriate interactions and recognition of emotions in social situations (Baumer, 2002; Gevers, Clifford, Mager, & Boer, 2006).

The purpose of this study was to expand the scope of research on emotional recognition by providing direct instruction via video modeling and Social Stories™ (Gray, 1994). Video modeling used the self-as-a-model strategy (Hagiwara & Myles, 1999; Sherer et al., 2001) to compensate for the difficulty children and youth with AS experience with generalization (Klin & Volkmar, 2003). Social Stories were introduced to provide static visual stimuli, which have been determined to be a strength for individuals with AS (Barry, & Burlow, 2004; Bledsoe, Myles, & Simpson, 2003; Burke, Kuhn, & Peterson, 2004; Crozier, & Tican, 2005; Delano, & Snell, 2006; Toplis, & Hadwin, 2006).

**Method**

**Participant and Setting**

The participant, Alan, was a boy who was 9 years 8 months of age and had a full-scale IQ in the superior range (Wechsler, 1991). He was diagnosed with AS by a licensed psychiatrist using criteria from the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 1994). Alan was enrolled in a fourth-grade public school general education classroom and received assistance from four paraprofessionals during various times and activities. The paraprofessionals alternated among activities, and at no time was Alan supported by more than one adult.

The study took place in Alan’s home in a midwestern, middle-class community. Alan lived with his parents. His father was a university professor; his mother did not work outside the home.

**Targeted Behavior**

At the time of the study, Alan was experiencing difficulty in controlling his anxiety, frustration, and anger. Specifically, a functional behavior assessment revealed that he had difficulty identifying, talking about, and managing these emotions. School personnel reported that his behavior was calm at school. Alan would not reveal his feelings to others or seek adult assistance when he felt anxious, frustrated, or angry, even though he often complained at home of being bullied at school and not having friends. When he arrived home, however, his behavior often escalated to tantrums. To address these issues, the behaviors targeted for this study included recognition of emotions and identification of appropriate actions associated with each emotion.

**Materials**

Materials used in the study consisted of a video camera, videotapes, a digital camera, Social Stories, and laminated pictures of various reinforcers identified through a reinforcer survey. The video camera was used to tape Alan in situations that elicited different emotions so he could view his behaviors. (A list of the videotaped segments is provided in Table 1.) The digital camera was used to take pictures of Alan that later were used for the Social Stories intervention. Following guidelines described by Gray and Garand (1993) and Gray (1994), Social Stories were written about five different emotions: happiness, anger, anxiety, calmness, and frustration (see the appendix). Laminated pictures of reinforcers included visual representations of the various fast-food places at which Alan liked to eat (e.g., McDonald’s, KFC, Baskin Robbins) as well as edible reinforcers (e.g., cookies, ice pops).

**Measurement**

Throughout the study, the principal investigator and Alan’s father employed an event-recording system. A multicolumn data-collection form was used for data collection. The first column was for recording an emotional situation portrayed in the videotaped segment. The second, third, and fourth columns contained the following questions: “How did you feel?” “Why did you feel like this?” and “What should you do in that situation?” respectively.

**Procedure**

The principal investigator videotaped some of Alan’s daily home routines that appeared to elicit tantrums, as well as situations that would elicit opposite emotions (e.g., calmness, happiness). For example, Alan was videotaped making his bed, an activity that he generally found stressful. He was also videotaped playing with his Pokémon cards, which he reported made him feel happy. A set of 10 videotaped segments of opposite emotions was divided into two sets of 5. In those 5 segments, 3 contained the emotion related to the Social Story that was read before the tape was viewed, and 2 were distracters.

**Baseline.** During baseline, Alan was shown two videotaped segments of various situations in his home. One illustrated Alan expressing a positive emotion; the other showed him expressing a negative emotion. Alan was asked to respond
to three preselected questions for each videotaped scenario; “How are you feeling?” “Why did you feel like this?” and “What you should do next time?”

**Intervention.** During the intervention phase, which also took place in Alan’s home, two Social Stories were introduced to Alan each session, both containing photographs introducing and explaining the emotions with which he was struggling. The two opposing emotions were also explained. Alan’s physical expression as seen in the videotapes was discussed, and strategies that would help him cope with these emotions were explored.

First, the principal investigator and Alan read the Social Stories related to the videotaped segments to be shown during a given session. They then viewed the videotaped segments of the emotions. (A break of 10 to 20 minutes was provided during the intervention session.) Finally, the questions about the videotaped segments (“How are you feeling?” “Why did you feel like this?” and “What you should do next time?”) were presented. In the case of happiness, the last question was omitted, and for the calm emotion, the final question was replaced with “What helps you to be calm and relax, or what you can do better when you are calm?”

Two types of reinforcers were introduced: (a) food or a short game that Alan could enjoy after viewing the videotaped segments and during the break; and (b) community-based reinforcers, such as going to McDonald’s, that could be earned after viewing the second set of videotapes.
**Generalization.** Following the intervention, a generalization component was introduced by the principal investigator and implemented by Alan’s parents. First, Alan’s mother and father were to review a Social Story with Alan over a 4-day period. Alan could choose which one he wanted to read. After the 4-day period, his parents were to read the Social Story whenever they saw Alan in any of the emotional states that had been addressed during the study and ask him what he should do when he felt that emotion. They were encouraged to assist Alan in following the solutions that he proposed in his Social Story during the intervention phase. For example, if Alan were able to recognize that he was mad, his parents would encourage him to follow what he had said in his Social Story would help him to calm down, sitting in his blue chair or squeezing his squeeze ball. During this phase, a reinforcer system was also implemented, consisting of points that Alan could earn every time he provided an answer. The points were exchanged for activities after each lesson.

**Results**

Figures 1 and 2 present the results of the study. As illustrated, during baseline, from Session 1 to Session 10, Alan correctly applied an emotional label to a videotaped segment with a mean accuracy of 55%. For the explanation of the emotion seen in the videotaped segment, why he felt that way, and the action response (i.e., what he should do next time), he answered with a mean accuracy of 10%.

During the intervention phase (Sessions 11–20) when Alan was (a) introduced to the Social Stories that explained the emotions and (b) provided a rationale for the emotion and action response, behavior changes were seen. For example, Alan’s accuracy in labeling emotions rose to 95%, and his accuracy in explaining emotions and determining action responses increased to 100%. In Sessions 21 to 27, the generalization phase, Alan’s mean accuracy in identifying alternatives to an inappropriate behavior was maintained at 100%. In this stage, Alan’s father, upon observation of an emotion that might lead to a tantrum, would select the appropriate Social Story, read it to Alan, and provide him with three alternate behaviors that he could engage in rather than having a tantrum.

**Discussion**

This study sought to determine the effectiveness of using videotaped segments of emotions and Social Stories to teach a child with AS to recognize and understand emotions in themselves and generalize them to different situations. In terms of length, data were collected for 27 sessions. An intervention across additional days would have permitted the introduction of a maintenance phase. However, the student’s availability and school commitments did not allow for a longer study phase.

**Conclusion**

Overall, using videotaped segments of emotions and Social Stories to explain those emotions was effective in teaching a child with AS to recognize and understand emotions in himself and to generalize them to other situations. During the intervention phase, Alan responded consistently to the stimuli provided. Following the 11th session, he achieved 100% accuracy in recognizing emotions. However, during the 18th session, he answered only 50% of the questions correctly. The videotaped segment for that session was confusing to Alan since the action shown could elicit more than one emotion. The segment showed Alan cleaning up his closet. He started out appropriately but then began to throw his clothes into the
closet. When asked to identify the emotion and how he felt, he ran away from the principal investigator and screamed that he was getting frustrated because he did not know what he felt. A 5-minute break was provided and an extra reinforcer was introduced since he expressed openly what he was feeling. This episode gave the investigator an immediate opportunity to show Alan that it was important to say how he felt so that he could obtain assistance in understanding emotions and therefore handle them more effectively.

Few interventions have been developed to help people with autism spectrum disorders understand emotions and act on them. To date none has paired videotaped segments as a principal source of imaging with Social Stories as a source of understanding what those images mean and how to deal with them. It is generally believed that children with AS, similarly to children with autism, learn best when information is presented to them visually. Hence the choice of materials used in this study. Social Stories are static visual stimuli that describe a social situation and provide direction. Videotaped segments are also visually based, albeit more transiently than Social Stories. Videotaped segments have an advantage over static stimuli by enabling children to see themselves engaging in behaviors in context, including observing the environment, antecedents, and consequences. Finally, videotapes are beneficial because they can provide repeated exposure to a situation. That is, by rewinding a tape, the student can view him- or herself again. The strategy is simple to use and has the potential for use for by parents in home settings and teachers in school. In addition, it allows the student to respond appropriately to situations where emotions are involved.

Although this study was implemented with one student over a limited period of time, the findings suggest that the intervention deserves further investigation. Specifically, future research is needed to validate its effectiveness with persons with AS who are at different ages and developmental stages and in different environments.

ABOUT THE AUTHOR

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REFERENCES


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**APPENDIX**

**Social Stories**

**When I Am Calm**

*<Picture of Alan in his favorite chair reading a book>*

Feeling calm is an important feeling.
Feeling calm can help me to do things better.
Feeling calm allows me to think better what I want to do.
Feeling calm helps me to think how I am going to do things.
When I am calm, often things seem much easier. I will try to be calm before I start things that are hard.

When I am calm, often I am able to listen and understand things and persons better.
Feeling calm can help me to succeed.
If I need to stay calm, Mom and Dad can help me.
If I need to stay calm at school, my teacher may help me learn ways to stay comfortable.
Feeling frustration is OK!!!!

*(continues on page 106)*
When I Am Feeling Happy!!!

When I play with my red automatic car.

when I play with my red automatic car.

When I feel happy, normally I have a smile on my face, so when
I smile people know that I am happy.

It feels good inside of me; I am calm and relaxed.
And I feel that I can talk to Mom and Dad; explain them things
without yelling or moving all around.
I will try to do things that are hard when I feel happy, because
I feel that I can succeed, and if they are too hard
I can always ask for help. That is OK!
It feels good when I am happy!

When I Am Mad

Then I will try to listen to every word that they say. I will try
to understand and respect what they say.
If I am still a little bit upset after I have listened to them, I
will go to my blue chair or to my room. I can sit in my
chair or in my room, take a deep breath, and calm
down. I can squeeze my squeeze ball. I can hug my fa-
vorite teddy bear

and remind myself that they love me and they want the best
for me!!
Most of us get to do some of the things we want to do. No
one gets to do all of the things we want to do.