

# Using Aided Modeling to Improve Social Interaction in an Adult with Autism Spectrum Disorder: A Pilot Study

Laura Richardson, M.A., Doctoral Candidate, The Pennsylvania State University

Kathryn D.R. Drager, Ph.D., Associate Professor, The Pennsylvania State University

## Background

Autism Spectrum Disorder (ASD) is a lifelong disorder characterized by communication and social impairments. Between one third and one half of individuals with ASD never acquire speech that is functional to meet their daily needs (National Research Council, 2001). A segment of this population may remain "beginning communicators" into adulthood. Romski and colleagues (Romski et al., 2002) described beginning communicators as individuals learning language with fewer than 50 words or symbols in their vocabulary, in typical language development, a 50-word vocabulary is significant in that it marks a period of language development during which vocabulary growth occurs quickly and begins to combine words. Also at this time, the domains in which communicative development is emphasized shift from pragmatic and semantic growth to grammatical skill development (Romski, Sevcik, Hyatt, & Cheslock, 2002). Adults with ASD may be particularly vulnerable in the area of developing communication for social closeness. Light, Parsons, and Drager (2002) summarized criteria for social closeness interactions for beginning communicators, including: (a) being chronologically age appropriate, (b) occurring within the natural environment, and (c) involving only the beginning communicator and a partner with who he/she desires a social relationship. Age-appropriate activities targeting social closeness that may be appropriate for adult beginning communicators included high-five routines, dancing, engaging in interactions involving photo albums, and looking at magazines together (Light et al., 2002). There is a growing body of research suggesting that aided modeling procedures may be effective for teaching individuals to use AAC. These interventions may be appropriate for adult beginning communicators because modeling offers cognitive supports and occur within the natural environment. Aided modeling procedures involve the use of both AAC and natural speech by the facilitator to provide a model of what type of output is expected of the AAC user. These interventions may also aid in comprehension, as the user is getting two types of input: auditory (by hearing spoken words) and visual (by seeing the use of their AAC device). In addition to modeling language, seeing a partner navigate an AAC system provides a learning experience to become familiar with how to navigate the system. Aided modeling interventions share three characteristics: (a) they take place in natural contexts, (b) they augment spoken input received by the user, and (c) they utilize modeling as a tool for expanding vocabulary (Drager, 2009).

## Purpose

Given the need for social closeness across the lifespan, the importance of social interaction skills to outcomes for adults with ASD, as well as best practice requirements emphasizing the need to focus on the core impairments of the disability, research is needed to address social closeness routines for adults with ASD who are beginning communicators. The purpose of this pilot study was to investigate the effects of using aided modeling procedures with a speech-generating device on the frequency of intentional communicative acts during social closeness routines with an adult beginning communicator with ASD. Each intentional communicative act was also coded to determine the range of communication modes and the range of pragmatic functions expressed.

## Method

**Design**  
The current study employed a single-subject AB design. It served as a pilot for a larger, ongoing study that employs a multiple baseline across participants design.

**Participant**  
The pilot study included one participant, an 18-year-old male with ASD. The participant was seen in his group home. Staff at the participant's group home reported that he had previously received a PECS book and met with a representative for a company that manufactures AAC devices, but no additional contact occurred. The participant communicated primarily through idiosyncratic gestures, vocalizations, and facial expressions. It was reported that he inconsistently used signs.

**Materials**  
Intervention used the Apple iPad2 with the application SceneSpeak. SceneSpeak allowed visual scene displays to be programmed into books to allow for continuous routines. All materials were programmed into the iPad to reduce joint attention demands on the learner (Light et al., 2002). A video camera was used for ease of data collection.

**Procedures**  
The participant's interests and motivating activities were determined through a combination of indirect measures and engagement-based procedures. A preference hierarchy was derived and used to guide intervention activities. Five baseline and five intervention sessions were conducted. Each session lasted 20-minutes. During baseline conditions, the iPad was present, but no instruction or modeling was provided. The participant's communication was observed and videotaped in his group home. When the researcher presented the iPad, she asked "What would you like to talk about?" During intervention, the use of aided modeling procedures was introduced. The researcher modeled the use of the iPad while simultaneously using natural speech to provide verbal models of the referent. An age-appropriate social closeness routine was used; telling knock-knock jokes. Knock-knock jokes included characters or pictures from preferred television shows as well as music and sounds including holiday and animal noises. Magazine pictures from Sports Illustrated were also programmed into the program; however, the participant did not select those pages as something he wanted to talk about. A least-to-most hierarchy was used to support the participant's use of the SGD. The primary dependent variable was the frequency of intentional communicative acts (ICAs). Intentional communication acts (ICAs) are behaviors that are both (a) directed at a communication partner, and (b) convey an identifiable message. ICAs were then coded for modes, concepts, and pragmatic functions (adapted from Wetherby, Cain, Yonckas, & Walker, 1988). Pragmatic functions were divided into three categories: behavioral regulation, social interaction, and joint attention. Behavioral regulation includes acts intended to protest, request an action, and/or request an object. Social interaction includes acts intended to provide acknowledgement, calling, greeting, requesting attention, requesting permission, and/or initiate or maintain a social routine. Joint attention includes acts intended to request clarification, comment, and/or request information. Following intervention, staff from the participant's group home completed a social validity questionnaire about their perceptions of the appropriateness of the intervention goals, procedures, personnel, and outcomes.

**Data Analysis**  
Results were graphed and analyzed using visual inspection and percentage of nonoverlapping data. Interobserver agreement was calculated. IOA was 100% of a point-by-point basis, yielding a Cohen's kappa of 1.0.

## Results

Results reflect data collected on three dependent measures: the frequency of ICAs, modes of communication, and pragmatic functions expressed. The frequency of ICAs during each session is depicted in Figure 1. The participant did not demonstrate any intentional communication in baseline. During intervention, Caleb demonstrated 7 to 18 ICAs per 20-minute session.

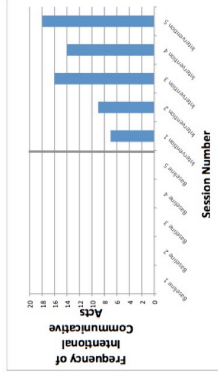


Figure 1. Frequency of intentional communicative acts during 20-minute baseline and intervention sessions.

The modes of communication expressed are shown in Figure 2. The participant did not use any gestures/signs, speech/vocalizations, or activate the SGD during baseline. During intervention, the participant used between one and two gestures/signs, one vocalization, and activated the SGD between 5 and 17 times per session.

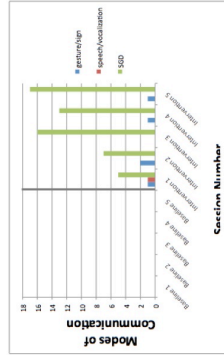


Figure 2. Modes of communication used by Caleb during 20-minute baseline and intervention sessions.

The pragmatic functions expressed by the participant are shown in Figure 3. Caleb demonstrated intentional communication primarily for social interaction during intervention.

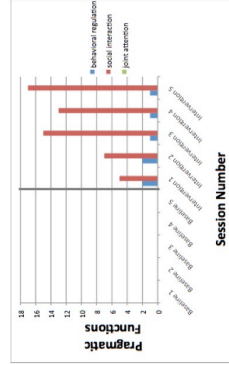


Figure 3. Pragmatic functions by Caleb during 20-minute baseline and intervention sessions.

## Conclusion

This study investigated the use of aided AAC modeling with an adult with ASD who possessed very limited functional communication skills. When provided with models of using the SGD and access to the SGD, the participant increased his rate of intentional communication, modes of communication used, and range of pragmatic functions expressed. The results of this pilot study are encouraging; however, without replication of effects between or across participants, this study has limited generalizability at this time. Based on the pilot study's social validity results and best practices for beginning communicators, the intervention was modified for the ongoing study. With remaining participants, primary caregivers were trained in utilizing aided modeling procedures. Future research should address a variety of activities, and focused on a range of pragmatic functions.

## References

Drager, K.D.R. (2009). Aided modeling interventions for children with autism spectrum disorders who require AAC. *Perspectives on Augmentative and Alternative Communication*, 18(4), 114-120.

Light, J. (1988). Interaction involving individuals using augmentative and alternative communication systems: State of the art and future directions. *AAC: Augmentative and Alternative Communication*, 4(2), 66-82. doi:10.1080/07434618812331274657

Light, J. (1997). "Communication is the essence of human life": Reflections on communicative competence. *AAC: Augmentative and Alternative Communication*, 13(2), 61-70. doi: 10.1080/07434619712331277848

Light, J., Parsons, A., & Drager, K. (2002). "There's more to life than cookies": Developing interactions for social closeness with beginning communicators who require augmentative and alternative communication. In J. Reichle, D. Beukelman, & J. Light (Eds.), *Exemplary practices for beginning communicators: Implications for AAC* (pp.187-218). Baltimore, MD: Paul H. Brookes.

Romski, M.A., Sevcik, R.A., Hyatt, A.M., & Cheslock, M. (2002). A continuum of language intervention strategies for beginning communicators. In J. Reichle, D. Beukelman, & J. Light. (Eds), *Exemplary practices for beginning communicators: Implications for AAC* (pp. 1-23). Baltimore, MD: Paul H. Brookes.

## Acknowledgements

Funding is being provided for this study by the Organization for Autism Research.

