

## **The Development of a Simplified Manual Sign Communication System for Special Populations**

John Bonvillian<sup>1</sup>, Tracy Dooley<sup>2</sup>, Heather Emmons<sup>2</sup>,  
Allison Jack<sup>1</sup>, Nicole Kissane<sup>3</sup> and Filip Loncke<sup>1</sup>  
University Virginia<sup>1</sup>; Formerly University of Virginia<sup>2</sup>; University of Florida<sup>3</sup>

### **Abstract:**

Over the past decade, we have developed a simplified manual sign communication system. We did this because signs from genuine sign languages often proved difficult for persons with disabilities to learn and form accurately. In selecting signs for our system, we primarily chose signs with readily transparent meanings. We also modified signs so that they typically consisted of only a single movement and basic handshapes. These modifications were based on findings from several investigations of sign acquisition and production. We then tested the signs for accuracy of recall and formation in undergraduate students. The completed system consists of 1000 signs.

### **Purpose**

To describe the development and testing of a new simplified manual sign communication system, and introduce it to the AAC community as an option for use with multiple diverse populations, especially children with developmental disorders and adults with aphasia.

### **Introduction**

Teachers, therapists, and families working with children with communication difficulties often turn to sign language as an alternative or augmentative system. Often, however, children experiencing the most serious language impairments—children with autism spectrum disorders, Down syndrome, or cerebral palsy, for example—also demonstrate cognitive and motor impairments that make learning signs from existing sign languages a difficult task. The initial focus of the Simplified Sign System project was to create a highly iconic, motorically simple sign vocabulary that would meet many of the

communication needs of these children. We hoped also that the system would prove beneficial to many aphasic individuals who had experienced serious losses in their spoken language abilities.

As development of the system progressed, our focus expanded. We received requests for new signs from a variety of individuals having difficulty communicating effectively through speech: older persons experiencing hearing loss, international travelers, and healthcare professionals attempting to provide emergency services to non-English-speaking immigrants and refugees. The breadth of interest in a simplified manual communication system convinced us that we had tapped an area both of great need and great possibility.

## Methods

### *Selection and creation of signs.*

Our two primary criteria in selecting and creating signs for our sign system were 1) iconicity and 2) motoric simplicity. As previous work had demonstrated that children with autism or intellectual disabilities more rapidly learned signs that clearly resembled their referents—that is, highly iconic signs (Konstantareas, Oxman, & Webster, 1978), our first step was to identify signs in pre-existing systems whose meanings were readily transparent. In existing sign languages, the incidence of these highly iconic signs is relatively low; however, by surveying dictionaries from over 41 different sign languages, we were able to identify over 1000 signs of high iconicity. When we were unable to find readily transparent, pre-existing signs for concepts of likely importance to users of our system, we generated new signs, based on the principles of iconicity and motoric simplicity.

Our creation of these new signs, as well as our modification of signs from existing languages, was guided by findings from three studies of sign learning. In one study, low-functioning students with autistic disorder were videotaped while they signed with their teachers (Seal & Bonvillian, 1997). In the second study, the American Sign Language (ASL) learning children of deaf parents were followed longitudinally (Siedlecki & Bonvillian, 1993). In the third study, undergraduate students unfamiliar with a sign language were videotaped as they tried to recall lists of signs (Wright, Bonvillian, & Schulman, in press). From these studies, we learned which aspects (sign handshapes,

locations, and movements) of sign production were more difficult for children and adults to form and to remember. All signs created or modified for inclusion in the Simplified Sign System consisted primarily of handshapes, locations, and movements whose simplicity had been empirically validated.

#### *Validation of sign simplicity.*

Our next step in the development of the system was to test undergraduate students' ability to remember and to form potential Simplified Signs through a cued-recall memory task. In most instances, each participant was presented six lists of 20 signs together with their spoken English translations. One experimenter demonstrated the signs on a list while simultaneously uttering their English translations. This experimenter then cued each participant for sign recall by saying the English translations again. A second experimenter scored whether each participant recalled a sign and its formational accuracy. Only those potential signs that were recalled perfectly by 70% or more of the participants were included in the Simplified Signs lexicon. Approximately 1500 potential signs were tested to achieve our final 1000 sign lexicon.

We also wished to determine whether our Simplified Signs were easier to remember and produce than signs from an existing sign language. To do this, we tested undergraduate students' ability to recall lists of ASL and Simplified Signs under immediate- and delayed-recall conditions. The students recalled many more Simplified Signs than ASL signs and formed the Simplified Signs more accurately in both recall conditions.

### **Conclusions**

After nearly a decade of work, a dictionary of our Simplified Sign System is currently in press. We hope that this system will be of assistance to many teachers, therapists, and caregivers who are interacting with persons with spoken language difficulties. Informal reports that we have received from teachers and therapists working with nonspeaking persons have indicated that Simplified Signs are a real advance in comparison with signs from existing systems. In the future, we hope to run controlled trials to provide empirical support for its efficacy as an AAC system for a variety of populations.

## References

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## Contact

John Bonvillian  
Associate Professor  
Dept. of Psychology  
University of Virginia  
102 Gilmer Hall  
PO Box 400400  
Charlottesville, VA 22904-4400  
Tel: (434)924-0646 or (434)924-0651  
Fax: (434) 982-4766  
E-mail: jdb5b@virginia.edu