

**Critical Review: The effect of sign language on spe**



sign to spontaneous speech. Further, it was found the participants primarily produced words she had seen the children sign, with only a few of her produced words not initially signed by the children. The author concluded that there was a contingent relationship suggested between the participants signed and oral expression, and that the signing facilitated rather than inhibited her oral expression. As with these studies, the systematic breakdown of experimental conditions, however the duration of the study allowed for a better picture of the long-term effects of signing on speech than some of the more controlled experimental designs.

DiCristo, Stricklin, & Benjee examined the effect of manual signing on the communication of other delayed and non-toddlers in a preschool setting. Nine children with disabilities were included in the study which employed a unique design: cross two groups. The study examined the children in four activities, one which was controlled throughout, and three where the teacher began to use total communication in her interactions with the children. The communications of the children were recorded and descriptive statistics of the groups who were provided. Analysis revealed that there was an initial increase in the children's signing and their verbalizations. The children with disabilities were assured something verbalizations that seemed and that intervention, while there was no change seen in verbalizations during the control activity. A major contribution of this study is the fact that the results are provided for the group rather than examining the behaviour of the individual participants. It is not possible to determine whether or not the increase in verbalizations was evident across the children or if some children showed decrease in verbalizations while others showed a greater increase, resulting in the overall increase. A positive aspect of this study is the fact that it examined performance in a more natural environment than the other studies, which took place in private therapy sessions.

Four of the studies used a ternary design to compare two intervention approaches within a single subject. The first of these, by Sisson & Brett (1984), compared the use of total communication speech and sign to speech alone in training sentences to children, ages 4, with developmental disabilities.

Following separate testing, training took place twice daily, once using each experimental condition. In other experimental conditions children were taught equivalent sentences through the use of changing the second word to criterion and then adding a second word. In the total communication condition, children received signed and spoken prompts and were able to respond with speech and/or sign, while in the oral condition they received only spoken prompts and required spoken responses. The results showed that total communication facilitated learning for two of the three children while oral training yielded only savings. The remaining child, who was the youngest, showed no savings in either condition but less differentiated effects. The researchers suggested that the age of the child may have had an effect on his performance. No tests of statistical significance were performed on the data, but rather provided in graphs, which makes it difficult to determine the significance of the difference seen between the two conditions.

The remaining three ternary treatment designs were by one group of researchers and used a similar design for each study, while examining different questions. In Croke, Reington, & Light (1984), the acquisition of signs that were and were not in the receptive vocabulary of the children were compared. Three children, ages 4, with developmental disabilities participated. In Croke, Reington, & Light (1984), the acquisition of signs using total communication and sign alone training were compared. Four children, ages 4, with developmental disabilities participated. Finally, in Reington & Croke (1984), they compared the acquisition of signs using Different Sign Training and Extensive Sign Training. This study involved five children between the ages of 4 and 5. A three studies followed a ternary treatment design, in which the children, following separate testing, participated in two daily sessions, one for each experimental design. The participants were taught single words from picture referents using behaviour reinforcement and the participant experimental condition until the children demonstrated acquisition of the word. After the treatment period, post-treatment testing was completed to assess the participants' acquisition of the signs. A three studies also included assessment of speech production, and so can be examined for the effects of sign on speech production.







**Table 1** Studies involving sign intervention with documented speech production outcomes in children with developmental disabilities

Reference	Design	Goal of Study	Participants	Intervention	Reported Effects on Speech
Craker, Reington, & Light	A ternary treatment comparison of known vs unknown words	Teaching words	children with MR, 4 years old	DIY training sessions using Tot communication sign speech with picture referents	Increase in children's unknown
Craker, Reington, & Light	A ternary treatment comparison of tot communication vs sign one	Teaching words	4 children with MR, 4 years old	DIY training sessions using Tot communication or sign one with picture referents	Increase in children
DiCristo, Strickland, & Benjee	Multiplesine teacher directed tot communication intervention across classroom activities	Teaching words	children with various diagnoses, 4 years old	Teacher modeling of Tot communication in structured didactic classroom activities	Increase reported in group
oury	Treatment withdrawal	Teaching words	children with various diagnoses, 4 years old	Twice weekly treatment of child oriented modeling of tot communication	Increase in children, decrease in children
oury	Longitudinal case study	Teaching words	child with Down syndrome, 4 years old	Twice weekly treatment of child oriented modeling of tot communication	Increase
Reington & Craker	A ternary treatment comparison of Differentiated Sign Training vs Expressive Sign Training	Teaching words	4 children with MR, 4 years old	DIY training sessions using tot communication differentiated expressive conditions using picture referents	Increase in children, no change in children
Sisson & Brett 4	A ternary treatment comparison of or vs tot communication	Teaching word combinations	children with MR, 4 years old	DIY training sessions of sentences using chaining with or or tot communication using picture referents	Increase in children