

The Acquisition of Manual Signs

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Abstract

A systematic review of the literature on the acquisition of manual sign was conducted to summarize empirical evidence published between 1960 and 2006. The review identified a total of 25 studies in which 9 were conducted with typically developing participants, and 16 with participants with developmental disabilities. Research evidence suggests that teaching manual signs to children (both typically developing and children with disabilities) can play a significant role in the communicative, language and vocabulary development.

Research Description

Manual signs and gestures have been an important part of augmentative and alternative communication (AAC) for over four decades (Fristoe & Lloyd, 1978, 1979a, 1979b, 1980; Goodman, Wilson, & Bornstein, 1978; Lloyd, 1976; Schiefelbush & Lloyd, 1974; Zangari, Lloyd, & Vicker, 1994). More recently “Baby Signs” have been used with typically developing children to enhance their speech and language development (Acredolo & Goodwyn, 1985, 1988, 2002; Goodwyn & Acredolo, 1993, 1998; Goodwyn, Acredolo, & Brown, 2000). Researchers reported both gestures and manual signs have cultural constraints in their use, but the distinction is that manual signs also have linguistic constraints in their formation, while gestures have no such linguistic constraints (Fristoe & Lloyd, 1979a; Hoemann, 1975; Lloyd & Karlan, 1984).

A systematic literature review was conducted to summarize research on the acquisition of manual signs. For the purpose of this study, the term *manual signs* refers to the visual representation used in sign languages such as American Sign Language (ASL) and sign systems such as Signed English and Baby Signs. Studies focusing on “natural gestures” (e.g., giving, pointing, showing) or “deictic gestures” were excluded since they are not considered language-based and may vary across individuals. Deictic gestures are “gestures that refer to an object or event by directly touching or indicating the referent” (Iverson, Capirci, & Caselli, 1994, p. 24); Researchers also indicated representational gestures are used frequently and in a communicative manner by infants and toddlers who are not systematically exposed to a gestural linguistic input such as sign language (Acredolo & Goodwyn, 1985; Iverson, et al.; McNeil, 1993). However,

this study only focused on those investigations that suggested linguistic-based manual signs (e.g., ASL, Baby Signs).

The following selection/search criteria were used: (a) studies published in peer-reviewed journals between 1960 and 2006 - this was based on the fact that research supporting ASL as a language emerged in the 1950's and 1960's (see Stokoe, 1960; Stokoe, Casterline, & Croneberg, 1965); (b) studies involving typically developing children between the ages of zero to four; (c) studies involving children with developmental disabilities (e.g., autism, Down syndrome) between the ages of zero to twelve - studies of children with acquired disabilities (i.e., traumatic brain injury) were excluded from this review due to previous language experiences; (d) studies with hearing caregivers - studies with participants or caregivers with hearing impairment or deafness were excluded due to environmental and experience differences which may have influenced the results; and (e) studies focusing on acquisition or development of manual signs. Studies that did not meet all the criteria were excluded from this review.

Manual signs were defined as “a general term that may refer to a natural sign language or to the use of manual signs as a code for a spoken language” (Blischak, Lloyd, & Fuller, 1997, p. 41). ASL was defined as a “visual/gestural language, distinct from English and other spoken language, from sign languages used in other countries, and from English-based sign systems used in the United States (such as manually coded English systems)” (Wilcox & Kreeft-Peyton, 1999, p.159). Baby Signs were referred to as signs based on ASL, but may have been altered by the infant or parent to meet the infant's motor development needs (Acredolo & Goodwyn, 2002). Other important definitions in this review were, (a) typically developing children who were defined as children who seem to be reaching developmental milestones at the appropriate developmental age and (b) children with developmental disabilities who were defined as children who presented some type of developmental delays (i.e., cognitive, language, motor). In most cases, these were children diagnosed as having autism, cerebral palsy, Down syndrome, or unspecified mental retardation.

The search process had three phases¹. First, four electronic databases were searched. Second, two specialized databases were searched (i.e., DARE and Cochrane). Finally, ancestral searches were conducted of references obtained that met the selection criteria.

Results of the searches of the 6 databases provided a total of 1356 references. References repeated across databases were automatically eliminated leaving a total of 722 references. Only those references from peer-reviewed journals were kept, automatically excluding books, thesis, and non-peer-reviewed journals, which resulted in a total of 99 references. These 99 references revealed a total of 7 literature reviews, which were kept for ancestral searches. A total of 21 references were obtained through the ancestral search process. After the detailed coding process, a total of 25 studies met the set criteria, in which 9 studies focused on typically developing children and 16 studies focused on children with developmental disabilities.

Studies meeting the selection criteria were reviewed and coded. Coding categories were chosen to limit the studies to only those relevant to the selection criteria. Each study in this case was coded with respect to: (a) goal of the study (i.e., acquisition, onset, development), (b)

¹ Full names of the databases and the keywords will be supplied in the presentation handout.

participants (i.e., typically developing children, children with developmental disabilities), (c) age (i.e., typically developing children: zero to four; children with developmental disabilities: zero to twelve), and (d) diagnosis (i.e., autism, cerebral palsy, Down syndrome, unspecified mental retardation).

For reliability of coding, 20% of the studies were reviewed and coded by a second trained coder. This was done to determine consistency in which two observers agreed on the coding procedures (Kennedy, 2005). Inter-rater agreement was calculated using a point-by-point method in which the number of agreements was divided by the number of agreements plus disagreements and multiplied by 100. The mean percentage of agreement was 95%.

The results of the 25 studies suggest manual signs demonstrated considerable benefits for both typically developing children and children with disabilities². Results proposed that the use of manual signs enhanced and promoted important communicative skills (i.e., comprehension, vocabulary, language) in children. As stated by Salvin, Routh, Foster, and Lovejoy (1977) “if the goal is spontaneous communication sign language can be a means to this goal” (p. 371). One important aspect to consider when teaching children manual signs is one should immediately acknowledge and reinforce the child’s communicative intent. As Skinner’s (1953) learning theory suggests, if a response is followed by a reinforcer during several trials, the frequency of that response increases. When using manual signs one should consider intervention strategies designed to reinforce and teach communicative skills as well as, increase the child’s successful communicative opportunities.

Several contributions arose from this investigation. The first contribution summarized the empirical evidence on the acquisition of manual signs in typically developing children and children with developmental disabilities. Second, summarized the advantages and disadvantages in the use of manual signs during early ages, specifically how manual signs may affect speech acquisition. Lastly, provided parents, teachers, and clinicians with a summary of empirical evidence on whether manual signs can be used with infants during early stages and how the child’s development may be affected when manual signs are used. Other contributions and practical implications will be discussed along with limitations and future research needs.

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² Mayor aspects of the 25 studies will be provided in the presentation handout.

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