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## The Role of Symbolic Gestures in Early Language Development

The role that symbolic gestures may play in early language development is an intriguing question because of its implications for the nature of human symbolic capacity. Examining how children understand and use gestures provides insight into their ability to adopt symbolic units for the purpose of communication. Evidence of the emergence of symbolic gesture in deaf children and the natural acquisition of American Sign Language (ASL) by deaf children are testaments to the power of gesture in fulfilling the language function. Gesture combinations created by deaf children have been found to have elements of thematic roles and syntactic structure (Goldin-Meadow, 2003). Hearing blind children have also been found to use gesture to communicate about objects that are proximate to them (Iverson, Tencer, Lany & Goldin-Meadow, 2000). These findings speak to the robust nature of gesture in communication.

However, gestures may play a different role in the world of hearing children. Gestures may do more than supplement the acquisition of spoken language; they may also represent a step toward symbolic understanding and ultimately provide an advantage in verbal language development. These links between gesture and words allow one to examine how young children come to understand the nature of symbols and how this understanding may ultimately underlie all language and communication systems.

#### An open symbolic capacity

DeLoache (2004) outlines the importance of the development of symbols and understanding symbolic function, both phylogenetically and ontogenetically. She argues that children must learn the notion of representation and how one thing (gesture, word, etc.) can represent another in order to participate in symbol-steeped human culture and society. Gesture can come in many forms, including those that are symbolic. Deictic

gestures, such as pointing, do not carry an inherent meaning and are context-dependent; however, iconic gestures capture some aspect of their intended referents, such as flapping one's arms to represent a bird, and are therefore less context-dependent and more symbolic (Goldin-Meadow, 1998). Several important issues must be addressed in order to determine what kind of role symbolic gestures play in verbal language development, including children's openness to different symbolic forms. The use of symbolic gestures by very young children has been examined by Acredolo and Goodwyn (1988) who looked at normal, rather than deaf, infants. The authors found that normal hearing infants who are 16-18 months old produce gestures at the same time as they produce words, and that children tended to have either a gesture or a word for a particular referent and not both. The presence of both symbolic forms implies that children are willing to use either; interestingly, they prefer not to duplicate their symbolic forms, indicating that they have some, mostly likely implicit, understanding of the nature of symbols.

In later work, Goodwyn and Acredolo (1993) examined whether 11-month-old children had a modality preference, gesture or word, for the onset of symbol use. Previous research suggested that children develop symbolic gestures earlier, however this study examined the modality within its subjects by providing hearing infants an opportunity to learn symbolic gestures as well as spoken language. The authors used the same criteria to grant "symbolic status" to both words and gestures. The words and gestures were considered symbolic if they were used "to refer to multiple exemplars (e.g., various dogs, various noses)"; "in the absence of the referent as well as in its presence"; and "in response to a picture as well as a real exemplar" (p. 695). A strong modality preference was not found, suggesting that children are indeed open to both forms.

### Gesture vs. Word

While young children may be open to either symbolic form early on, ultimately, verbal language is the predominant system for a hearing community. This canalization of communication modality provides insight into the developmental trajectory of children's symbolic abilities and openness. Namy and Waxman (1998) examined this phenomenon using a word-learning paradigm with 18 and 26-month-old children. The children were presented with either a novel word or a novel gesture to represent an object category. While both groups readily assigned a novel word to name a category, only the 18-month-olds interpreted the novel gesture as the category name. This result suggests that the interpretation of different symbols as names moves from being a general ability which includes gestures and words to one that privileges words. The authors suggest that as children become more familiar with the spoken modality of communication, they become more conservative in their assignment of names to categories.

Using Werker's (1989) models of the impact of experience on learning, this result provides evidence for a "maintenance/loss" trajectory of the development of symbolic naming. While children initially allow both gesture and word as their symbolic form for language, increased experience in the spoken modality strengthens their preference for words. Interestingly, Namy and Waxman (1998) conducted a follow-up experiment and found that 26-month-olds would adopt a novel gesture if they were asked to practice producing it in addition to interpreting it. This result also lends evidence to an experience-based "maintenance/loss" model since the practice experience renewed the ability. Therefore, in the task of word learning, there is a shift toward the primary modality of the environment.

### Gesture facilitating word learning

While words ultimately “win out” for hearing children, symbolic gesture can still play a strong role in their language development by simply aiding the understanding of the symbolic function. See Box 1 for a comparison of different perspectives on the emergence of the symbolic function. Goodwyn, Acredolo, and Brown (2000) examined the effects of early training in symbolic gestures on later language development. The longitudinal study began at 11-months-old and looked at three groups of children: a Sign Training group who were trained by their parents in regular use of various symbolic gestures, a Verbal Training group who received increased verbal input such as object labeling, and a control group who received no intervention. The results showed a significant difference in verbal language ability (at 19 and 24 months) between the Sign Training group and the two control groups which were not different from each other. See Box 2 for their research methodology.

Goodwyn et al. (2000) discuss their results in terms of a social-interactionist perspective and Vygotsky’s idea of scaffolding in language development. Scaffolding refers to guidance provided by adults or peers that narrows the gap between a child’s stage of ability and the demands of a particular task. Goodwyn et al. argue that scaffolding “enables children to gather information about the symbolic function in general and about the specific objects, events and conditions that make up their world” (p. 100). Thus, children are in each interaction, verbal and nonverbal, drawing the idea that one entity may stand for another entity for the purposes of communication. Because children are gleaning information about different concepts and learning to apply and generalize a symbolic gesture correctly, they can easily replace the gesture with a word

when the time comes, for example, when the child's articulatory ability for a particular word is in place. This notion of the symbolic gesture as a placeholder is also important in the context of continuity and whether spoken language suddenly emerges in children or if there is an intermediate step in understanding and using symbols (Acredolo and Goodwyn, 1988).

Another advantage of providing symbolic gestures is for children to understand the decontextualized nature of symbols. This understanding, the "notion that the development of representational ability requires children to tolerate greater and greater 'distancing' of the symbol from the referent" is that of dual representation (Goodwyn et al., p. 82). Dual representation requires one to perceive the physical symbol (e.g., gesture) and to represent the concrete object that it stands for (DeLoache, 2004). Goodwyn et al. (2000) explain this connection in terms of symbolic gestures demanding greater cognitive ability on the part of the child because the relationship between symbol and referent must be maintained mentally without support from the environment.

Thus, the results found by Goodwyn et al. (2000) suggest that increased experience in using symbolic gestures facilitates early language development by effecting early gains in receptive and expressive language abilities. The key element here is that the effects of the Sign Training were more significant early on in the longitudinal study and by 36 months, the difference between the Sign Training group and the control group was no longer significant. The training in the use of symbolic gestures had, in effect, provided a "jump start" to verbal language development (Goodwyn, et al., p. 102). Because symbolic gestures are communicative and also carry some meaning in their

form, unlike deictic gestures such as pointing, they may be a stepping stone to understanding symbolic function, which is necessary for successful word learning.

#### The nature of the input

The use of symbolic gestures seem to provide some advantage unto itself; however, their use is inseparable from the communicative context where the child encounters them. This context provides many lessons of its own regarding the nature and use of symbolic forms; parents as communicative partners do shape the language comprehension and development process. Goodwyn et al. (2000) state that “children are learning both ‘form’ and ‘function’ from the communicative partners including the fact that the form of the gesture must remain constant for communication to be successful” (p. 84). This crucial idea about how symbols work and why they are used is provided in the regular communicative contexts of children with their parents.

Namy, Acredolo, and Goodwyn (2000) look at this question of environmental input in their discussion of gestural routines in parental communication with young children. Namy et al. examined the frequency of gesture use and how children’s gesture production varies in relation to their input. The study measured parents’ verbal and gestural labeling during joint-attention tasks such as picture book reading and free play with different objects. The authors suggest that the association between gestural labels and verbal labels may impact lexical development and how these associations are made. They observed that:

parents tended to supply verbal and gestural information about the same objects and within the same joint-attention episodes, enabling the infants to associate the two symbolic forms with each other as well as with their referents. (p. 77)

Thus, this study introduces the social context of the communication interaction in that most associations are made through repeated or routine actions and use of verbal and nonverbal symbols.

Further data from Namy et al. (2000) show that the frequency of gestural labels in interaction does not differ significantly from the frequency of verbal labels, suggesting that these joint-attention episodes provide a substantial amount of symbolic input for the infant. Namy et al. stress the bi-directional nature of the development of language skill: “as infants become more proficient language users, parents may decrease their use of gestural labels, with verbal labels eventually supplanting gestural labels in parental input as the infant’s verbal comprehension increases” (p. 76). This observation provides a larger perspective of the process which is occurring in the earlier described “maintenance/loss” paradigm in which 26-month-old children are less likely to use a novel gesture to name a category. Parents also change the amount of gestural labeling that they model as children become more capable with language. It is also not surprising, with respect to these results, that children are initially open to accepting gestures and words for language. Since parents initially use both types of symbolic form, children may be keeping their language options open.

#### Gesture’s continuing impact

If children are indeed aided in verbal language ability by learning to use basic symbolic gestures, an interesting question arises of what the effects of a complete gestural system might be. Daniels (1994) examined the effects of teaching ASL to pre-kindergarten children who were at risk for language delays. The author’s previous research had found that language outcomes for hearing children of deaf parents who were



learning both ASL and English were higher than average, suggesting that introducing multi-modal exposure to language can have a positive effect. Children were exposed to ASL and English concurrently half of the time and English and ASL each one-quarter of the class time (p. 295). Daniels found that children in the class exposed to ASL scored significantly higher on vocabulary measures than those in the non-ASL classrooms. Daniels attributed the results to the multi-modal symbolic input that the children were receiving and the richer language base that they had access to, which may enhance metalinguistic awareness. The results provide an interesting contrast to Goodwyn et al. (2000) where young children also showed language gains after being exposed to isolated symbolic gestures, but these gains tapered by 36 months. Daniels' school-aged subjects, however, benefited from the rich input of a complete gestural system, which may have ultimately been far more salient as a communicative language.

Finally, as gestures move from a complementary role to a supplementary role in communication between hearing people, it may be questioned what meaning they continue to hold. In an effort to determine the role of gesture in children's comprehension of language, McNeil, Alibali, and Evans (2000) conducted a study looking at the presence and absence of symbolic gesturing in a communication attempt, while recording the response or success of message reception. While they spoke a command, the experimenter would use a reinforcing gesture, no gesture, or a conflicting gesture. Preschool children made choices consistent with speech more often when the speaker used reinforcing gesture than when no gesture accompanied the instructions. Thus, as they had hypothesized, reinforcing gestures facilitated speech comprehension. However, they also found that conflicting gestures hindered speech comprehension which

may be because they direct comprehension away from the meaning of the spoken message and toward other meanings. The fact that conflicting gestures can lead to misinterpretation of simple messages, shows that gesture holds a greater power than to simply augment comprehension.

McNeil, et al. (2000) provide several reasons for the effectiveness of gestures as scaffolds when they accompany speech as they did in their study and in Daniels (1994). Reinforcing gestures “provide redundancy across channels” and “represent meaning indexically or iconically” ( McNeil, p. 144). Thus, with the aim of supporting verbal messages, providing an alternate route with reinforcing gestures not only repeats the message, but also allows for message reception to be successful if either means is interpreted properly.

Because gestures aid in the movement toward language, intervention plans may focus on reiterating the links between gesture and language which may have been lacking for impaired children. Further understanding of the language process can potentially be used in the remediation of language, especially because gestures provide an alternate route toward the same semantic meaning. The idea that gestures do not simply help immediate message reception, but that they aid in the transition to language and the acquisition of the cognitive ability to understand language supports the benefits of gestures in language development. Further, one of the reasons that Goodwyn et al. (2000) give for the success of the Sign Training group in their study is that because these children have more successful communication interactions with their parents because they use gestures; this cycles into eliciting more interaction with parents which gives more experience in gestures, words, and communication overall. It is easy to see how

gestures would provide these high quality interactions; however, it is not necessarily the case that gestures are required for language development. The Goodwyn et al. data also show that the differences between their Sign Training and control groups did not last through the preschool years. Further, blind children whose gestures are limited compared to those of hearing children do not suffer language delays, suggesting that gesture use is a handy strategy for hearing sighted children, but is not necessary for verbal language development (Iverson, et al., 2000).

### Conclusion

Gestures clearly do play a role in the acquisition of language and understanding the symbolic function. Children come equipped with the ability to interpret gestures symbolically and this ability can be exploited in the case of hearing children to enhance their ability to manipulate the symbolic world of language. While gestures do not provide the sole route to this understanding, they are an alternate modality of communication which provide immediate visual, sensorimotor feedback. Gestures scaffold learning in many ways including by providing parents with a means to understand their preverbal or just-verbal children and by providing children with an intermediary symbol that is not quite as arbitrary as words can be. Gestures may play a continuing role in development, either through intervention to enhance metalinguistic understanding in older children or as meaningful supplements to language through adulthood. Infants' natural tendency to gesture sets the stage for an intriguing line of research looking at what our natural symbolic capabilities are. Future research may provide insight into how accessible this symbolic form is throughout development. See Box 3 for suggestions for future research directions.

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