MORPHOSYNTAX: EVIDENCE-BASED AVT
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The auditory-verbal approach, one of several effective communication options available to children with hearing loss, is based on certain principles that guide the existence of Auditory Verbal International. One of these principles clearly states that developmental patterns of listening, language, speech, and cognition are used to stimulate natural conversation (AVI, 1991). Therefore, it behooves every parent and clinician implementing this approach to understand the current literature on how children typically develop spoken communication skills.

A Birthright to Language
The literature clearly shows that the development of language, a gift of evolution, is a creative process for which we human beings seem to be innately wired. All children, then, have a biological birthright to a complex linguistic system that is a vast rule-governed entity. Moreover, researchers have clearly indicated that normally hearing children learn the basis of their mother tongue by four years of age, thereby entitling these children to be called “linguistic geniuses.” In effect, then, four-year-old children appear to have ‘cracked the code’ which enables them to verbally interact rather easily with adults (e.g., Pinker, 1994).

Given this information, it is imperative that we understand, as best as we are able, the elements inherent in the language learning process. The purpose of this paper is to selectively present some key research findings that enable us to enhance our auditory-verbal practices. In particular, two communicative subsystems will be highlighted here – those of morphology and syntax, often collectively referred to as morphosyntax and often thought of as the sine qua non of language (Hirsh-Patek & Golinkoff, 1996).

The Morphological Component
Morphology encompasses the word formation patterns of language and this includes inflection, derivation, and composition, all representing the ‘perceptual glue’ of our grammar. Such morphological elements as prefixes and suffixes attached to word roots modify the meanings of our words; they tend to be unstressed and more difficult to hear. Morphological markers include plurals, possessives, and past tenses – all of which tend to be concentrated at the high frequency end of our hearing spectrum. Most of these markers are naturally produced by normally hearing children between two and three years of age.

Historically and, unfortunately, quite typically, the language of children with significant hearing loss was found to be severely delayed, in large part due to the lack of morphological markers in either their spoken or written language. Given what we know about the frequency spectrum and the ‘speech banana’ (Ling, 1976), the morphological aspects of our spoken language are often uttered at 30-35 dB HL levels. These sounds can be difficult for the child with a hearing loss to hear, especially if the child’s hearing aids or cochlear implants are not optimally fitted or programmed. For this reason alone, effective sensory aids are absolutely essential for children with hearing loss. With our current technology in cochlear implants and programmable hearing aids, children with profound hearing loss can now access the morphological markers of language.

Some researchers have noted that mastery of the /s/ and related /z/ phonemes, both in hearing and in production, cause a rapid unlocking of many semantic and morpho-syntactical forms (e.g., Nelson & Camarata, 1996). Likewise, some auditory-verbal therapists (Rhoades & McCaffrey, 2002) have repeatedly observed such phenomena. Thus, when children are unable to perceive these two phonemes, referrals are typically made for cochlear implantation.

Even with effective hearing prostheses, our world is a noisy place and acoustic information for our children is often compromised. It therefore becomes important that we ‘acoustically highlight’ those morphological markers during auditory-verbal therapy. Therapy sessions are conducive for permitting our children to listen in relatively quiet environment that, in turn, optimize their ability to hear and understand morphological markers.

The Syntactical Component
On the other hand, syntax defines the rules for the formation of grammatical sentences; it represents the word order of our language. Infants and toddlers who are not yet speaking already know many of our syntactical
rules. Even when using telegraphic speech, toddlers rarely scramble word order. And when young normally hearing children do make grammatical errors, they are not random nonsense; their spoken linguistic errors follow the logic of grammar. Typical three-year-old children respect language universals and are masters of most spoken grammatical constructions. This is not to argue that average preschoolers communicate as well as adults; rather, it is understood that some grammatical structures such as compound and subordinate clauses within complex sentences still need to be understood. Yet preschoolers are widely recognized as being syntactically competent. In summary, research findings clearly indicate that four-year-old children with normal hearing have essentially acquired adult grammar, less the compound or complex sentences that are typically learned by seven years of age.

When children with hearing loss learn to listen well with their respective hearing prostheses, they are exposed to the syntax of our language. Because they repeatedly hear parents and therapists use well-constructed phrases and targeted words within grammatically appropriate sentences, children receiving auditory-verbal therapy come to internalize the rules of language, as do normally hearing children. When children come to understand and produce the morphosyntax of their respective linguistic community, they typically can be professionally released from AVT.

**Semantics and Morphosyntax**

Current developmental language research finds a high correlation between the development of semantics (word meanings) and the morpho-syntactical development of language. It is interesting that vocabulary acceleration coincides with the onset of combinatorial or telegraphic speech, i.e., combining words in the second year of life. Although the nature of this corresponding relationship remains unclear, there is no question that vocabulary development and morpho-syntactical production are closely related in time.

**Morpho-syntactical Research and AVT**

While the recent explosion of research findings on morpho-syntactical growth in young children is enlightening, it should be used to facilitate intervention strategies for children with hearing loss. In fact, recent studies demonstrate that evidence-based auditory-verbal intervention does enable children with profound deafness to close the historically notorious language gap (e.g., Rhoades & Chisolm, 2001). Of necessity then, auditory-verbal therapists must consciously target word meaning as well as word order and morphological markers when planning for each therapy session.

**Function Words**

The literature on language development has clearly taught us that function words are much more critical for young children to learn than are content words (e.g., Segalowitz & Lane, 2000). Function words are a closed set of defined words that include pronouns, articles, conjunctions, quantifiers, and prepositions. The addition of new words to this group is unusual, slow, and open to controversy. These are the connecting words of language. Function words have a primarily grammatical role and occur with high frequency in our language. Typically, these are the connecting albeit unstressed words, and are uttered more quickly than content words as they involve a more automatized process. This enables our language to be fluent and systematically structured. In contrast, content words are an open set of changing words that include nouns, verbs, adjectives and adverbs that, in turn, tend to provide meaning to what we say. While our knowledge of content words keeps expanding as we mature into adulthood, we cannot converse fluidly or clearly unless we effectively use function words.

This certainly affects how auditory-verbal therapists enable children to master the language (see Figure 1). Therapy must be more than just learning the names of objects. Knowing “up” and “down” is far more important than “shoe” and “ball.” As a result, auditory-verbal therapists have a marked tendency to target such action-oriented words during the first level of therapy.

**Recasts**

Another example of evidenced-based auditory-verbal intervention can be seen in the therapist’s use of “recasting” as a strategy that promotes rapid morpho-syntactical growth. Recasting occurs when the therapist or parent repeats some of the child’s words and corrects or otherwise modifies the morphologic or syntactic forms of the child’s sentence while maintaining the central meaning of the child’s production. Sentence recasts facilitate grammatical development by creating a favorable environment for the child to compare their existing grammar with the adult standard. The child’s attention is focused on the modified grammatical information in the adult recast. This is a non-intrusive conversational intervention used during typical adult-child interactions (e.g., Strapp & Federico, 2000). For example, a child might say, “I winned!” and the parent would respond by recasting what the
child said, as in “Yes, you won!” Interestingly, the most common reply of normally hearing children to an adult recast is not to verbally reply at all. This lends credence to auditory-verbal therapists who caution parents about the overuse of hand cues or prompted imitations.

**Morphological Markers**

Still another example of how empirical evidence impacts on high-quality auditory-verbal intervention is when therapists target their inputting of verbs in the present progressive tense, i.e., the action of doing something that is in the here and now (see Figure 1). During the first level of auditory-verbal therapy, the child is learning stereotypic verb phrases and expressions that eventually transition to the use of present progressive verbs in what is typically the second year of language learning (e.g., Naigles & Hoff-Ginsberg, 1998). Just as it’s important that children learn the meaning of many different verbs, so it is important they understand and ‘know’ this morphological rule at this level of language learning. Therefore, in light of research findings, parents and auditory-verbal therapists would do well to acoustically highlight this morphological marker at appropriate times during therapy sessions.

**Becoming a Grammatical Genius**

When we adhere to an empirically based type of intervention, we maintain the highest level of expectations for our children. Indeed, we now know that children with profound deafness who benefit from AVT can become ‘grammatical geniuses.’ These children can attain normal rates of language growth. They can take what is rightfully theirs: the birthright of hearing and speaking their mother tongue.

Ellen A. Rhoades currently provides A-V training workshops and mentoring for professionals seeking to become auditory-verbal therapists, and she consults with families who do not have access to local Certified AVTs. Her website is [www.AuditoryVerbalTraining.com](http://www.AuditoryVerbalTraining.com).

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**References**


CRACKING THE CODE TO BECOME A GRAMMATICAL GENIUS

Morphological Markers → → → → Function Words “the connectors” → → → → Morphosyntax "the sine qua non of language"

We are programmed to learn the few simple rules of language. Morphology is a creative aspect of grammar and provides structure for our words. When children crack the morpho-syntactical code, they can utter an infinite number of sentences.

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