Continued Language Development into Adulthood

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Most people with Down syndrome experience some degree of communication impairment, although the extent can vary dramatically across individuals. Areas of communication that can cause difficulty include articulation (resulting in various degrees of intelligibility), fluency, and language. Interestingly, the functional and social uses of language appear to be a relative strength for people with Down syndrome, although some may experience difficulties arising from speech or language impairments. The focus of this article is the profile of language ability in people with Down syndrome, and recent evidence for continued learning into adulthood.

Language Profiles

During the 1970s and 1980s, there was much research effort into identifying language patterns of children with Down syndrome. There was also some debate about whether their language could be described as delayed (that is, the same as in normal development, but behind) or different (that is, they were doing something different to that seen in normal development. Jon Miller has summarised much of this early work. He noted that, at least in terms of language production, when compared to children of similar IQ levels or stages of language development, children with Down syndrome do not do anything different. Hence, in terms of the order in which language structures developed, and the relationship between the number of words combined and grammatical endings used, there was no distinct Down syndrome pattern. This finding seemed to support the notion that language development in Down syndrome is delayed, but not different to that seen in children without developmental disability.

Some of these early studies have indicated, however, that there does seem to be something different about language development in children with Down syndrome in terms of two patterns. The first pattern is a mismatch between aspects of language development. In particular, children with Down syndrome have been shown to have comprehension skills that are more advanced than their production skills. This mismatch appears to persist from early childhood through to adulthood. Within comprehension, a further developmental mismatch has been found with understanding of vocabulary appearing to be an area of strength, while understanding sentence and grammatical structures falls behind. An important implication of this pattern is that in order to obtain an accurate profile of the comprehension skills of children and adults with Down syndrome, testing must include comprehension of vocabulary, grammar and sentences, rather than only one of these.

An important implication of this study was that testing comprehension of individuals with Down syndrome must extend beyond simple tests of vocabulary to include grammar and syntax to ensure that comprehension skills are not overestimated.

The second distinct pattern found in children with Down syndrome is the occurrence of plateaus in language growth: that is, where development seems to slow right down and even come to a stand still for an extended period of time. The first plateau occurs in developing single words. Preschool children with Down syndrome appear to experience some difficulty with the emergence of spoken words. The teaching of signs has been found to assist with the transition to a sizeable spoken vocabulary, with the use of signs often dropped as spoken word production takes over. A second plateau can appear in moving from single to 2-word combinations. In children without disability, once their spoken vocabulary reaches about 50 words, they start using 2-word combinations (e.g., “more apple,” “go shop,” “big dog”). Children with Down syndrome, on the other hand, often don’t start combining words till their vocabulary reaches around 200 words. The

use of signs or aided augmentative and alternative communication systems (e.g., picture boards or electronic devices with pictures) have been found to assist children in overcoming this apparent hurdle from single words to word combinations.

A developmental plateau that has caused particular concern over the potential for continued language growth was documented by Anne Fowler and colleagues. Longitudinal studies, whereby language development is followed over a period of time, provide a means of identifying patterns of language development. These researchers conducted such studies, beginning with Rebecca, who was assessed monthly from the age of 51 to 89 months (approx. 4-7 years) and then every 6 months up until 108 months (9 years). Rebecca was tested as having an IQ of 57. She showed relatively rapid language development up until the point at which she was combining words, and also using some word endings (e.g., the "s" at the end of a word to mark plurality – cups). This stage of language development marks the beginning of the use of more complex sentences, such as through elaborating various parts of the sentence, using more sophisticated word endings and developing the verb system (e.g., "I run," "he runs," "she is going").

Fowler and her colleagues found that Rebecca's progress slowed right down just prior to developing these more complex language forms. These and other researchers have found a similar pattern in other children with Down syndrome. The concern with what appears to be arrested development at the point of more complex grammar and sentences has been that even if growth continues, it appears to be at a slow pace. The danger is that the child will fail to catch up sufficiently to allow the development of fully mature, or correct and complete sentence production. Hence, it may be that these children and adolescents miss a critical period. An unfortunate result of Fowler's work has been the interpretation that language development ceases in late childhood or adolescence in people with Down syndrome.

Factors Contributing to Language Difficulties

A number of factors have been explored as potentially contributing to the language delays experienced by individuals with Down syndrome. In addition to the presence of intellectual disability, these include the frequent occurrence of hearing impairment, slow brain growth, articulation difficulties, and environmental factors. None of these factors (other than intellectual disability) appear to account fully for the particular difficulties that people with Down syndrome have with language development, particularly with grammar and syntax comprehension and production.

What could be influencing language development are problems with remembering and processing speech. Speech is perceived auditorily (through the sense of hearing), and occurs as a sequence of sound units. There is a great deal of research evidence that processing such auditory and sequential information is particularly difficult for people with Down syndrome and results in them having difficulty remembering sequences of spoken information – referred to as auditory short term memory. This ability is often tested by having the person repeat increasingly long series of digits. Most people with Down syndrome are unable to remember more than 3 units, compared to the average of 7 for people without disability. Research has shown that assessment tasks that over-tax an individual's short-term memory may fail to show a true picture of the person's language skills. Also, a recent study by Robin Chapman and her colleagues showed that adults and adolescents with Down syndrome tended to use more complex grammar and syntax in shorter utterances than in longer ones. This result suggested a potential trade-off between complexity and length caused by reduced auditory short-term memory. Therefore, the earlier studies may not have provided a true indication of language skills in children with Down syndrome.

Evidence of Continued Language Development into Adulthood

Recently, a number of studies of adults into their early 20s have provided evidence that language development does not stop in adolescence or earlier, as was once suggested. In fact, these studies have shown that 24

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A factor that does seem to be a potential significant contributor is problems with remembering and processing verbal information presented auditorily and sequentially, as is the case with speech.

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year-olds are able to use much longer and more complex sentences than was shown for Rebecca by Ann Fowler and her colleagues. One reason for the differences found across studies may be in the tasks used to obtain language samples, which are then analysed for the complexity of the language used. It seems that trying to engage a child or adult in a conversation will result in shorter and less complex sentences than occurs when they are asked to tell a story. A way of eliciting stories in research has been showing the person a wordless picture book and asking him/her to tell the story.

They found that skills became more advanced with age, a result that argued against a ceiling in language development, or a slowing of development.

Further research by Robin Chapman and her colleagues has also shown continued language growth from 8 years through to 20 years. These studies provide evidence to argue against a ceiling effect in language development. More research with older adults with Down syndrome is needed to provide greater understanding of their continued language learning.

Conclusion

Research has demonstrated that individuals with Down syndrome do show differences in their language profiles in comparison to typical language development. These differences include mismatches in areas of development and periods of slowed growth. For a while, there was a belief that language growth ceased in late childhood or adolescence. Recent research, although to-date addressing only early adulthood, has provided evidence of continued language development. In fact, Ann Fowler, whose work has often been cited as evidence for a ceiling in language development, argued that in 1995 researchers were only just beginning to develop an understanding of the learning potential of people with Down syndrome. She also predicted the potential for young adults with Down syndrome to exceed prior expectations as they are given greater educational and other opportunities, and research methods improve. Such continued development requires documentation through research that takes account of the potential for characteristics, such as problems with auditory short term memory, to confuse results from language testing, and also includes true measures of underlying skills.

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