

# Pragmatic development

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I review research on the pragmatic, or social, aspects of language development in children, adolescents, and young adults with Down syndrome. Virtually all facets of pragmatic development have been found to be delayed in Down syndrome, but some facets are especially delayed relative to cognitive development. Areas of strength in pragmatics (e.g., narration), however, have also been identified. Strengths and weaknesses in pragmatics relative to other conditions associated with intellectual disabilities (e.g., fragile X syndrome) have been found as well. Next steps for research are briefly outlined.

## Pragmatics: A definition and a brief model of development

Pragmatics can be defined as the intentional use of language to interact with other people<sup>[1]</sup>. Although this definition emphasises language, the use of language for social ends involves much more, including the coordination of linguistic information with gestures, facial expression, eye gaze, and body posture; the use of information from the physical, social, and affective context of the talk to decide what to say, how to say it, and what another person's words mean; and the integration of the current talk with relevant information from past encounters with the other participants or from previous events and entities referred to in the current talk<sup>[2]</sup>. Moreover, typical children engage in considerable intentional communication prior to language, relying on nonverbal behaviour and situational support<sup>[3]</sup>. Consequently, becoming pragmatically competent requires skills and knowledge beyond those entailed in the acquisition of the linguistic system, including memory skills, deep and well-organised knowledge about the social and physical worlds and about the communicative process itself, the ability to flexibly integrate multiple sources of information from different modalities, and the ability to plan and recognise goal-directed sequences of actions<sup>[2]</sup>.

In light of the multiple domains of knowledge and skill that underlie pragmatics, it is not surprising that Down syndrome, which is associated with disruptions in the development of skills in

multiple behavioural domains, should also be associated with pragmatic problems<sup>[4]</sup>. Nevertheless, the profile of pragmatic development in Down syndrome is characterised by areas of relative strength and weakness and changes with age, reflecting both the changes in the domains of competence supporting pragmatic behaviour and the dynamic nature of the societal demands for communication on the individual<sup>[5]</sup>. In this section, we summarise the state of our knowledge concerning the pragmatic profile of individuals with Down syndrome from the prelinguistic period into adulthood, pointing out connections with other dimensions of the syndrome's behavioural phenotype where possible. We also point out areas in which the empirical base is inadequate.

## Pragmatic development in the prelinguistic period

Typically developing children begin to communicate intentionally at around the age of 9 months, some 2 to 3 months in advance of using their first words<sup>[3]</sup>. In particular, typical toddlers use various combinations of eye gaze, gesture, and nonlinguistic vocalisation to express intentions to other people<sup>[6]</sup>. To make a request for an object, for example, the child might point to the object and then look anxiously back and forth from object to adult while vocalising in a "pleading" tone. Children with Down syndrome are delayed in the onset of such intentional communication<sup>[5]</sup>. Thus, they make fewer requests, particularly instrumental requests, which are designed to regulate another's behaviour, than do developmental level-matched typically develop-

ing peers<sup>[7-10]</sup> or even cognitively matched individuals with intellectual disabilities of other aetiologies<sup>[11]</sup>. Although less delayed than in requesting, children with Down syndrome are also delayed relative to developmental level-matched typical children in the frequency and maturity of form of their comments (i.e., attempts to direct a partner's attention to something interesting in the environment<sup>[12,13]</sup>).

In order to engage in intentional acts of communication, such as requesting and commenting, a number of interrelated prerequisite achievements and behaviours must be in place, each of which poses its own set of challenges for children with Down syndrome. For example, the child must be able to engage in joint attention, which entails the coordination of one's attention with that of a partner, as when a child tries to direct an adult's gaze to an object of interest or when the child looks toward an object to which the adult is already attending<sup>[14]</sup>. Infants with Down syndrome are delayed relative to age, although not developmental level, expectations in mastering the various components of joint attention<sup>[10,15,16]</sup>.

Intentional communication also requires the ability to use a variety of gestures, including pointing. Although delayed relative to their typical age peers, gesture use appears to be an area of relative strength of children with Down syndrome<sup>[5]</sup>. In fact, research has shown that children with Down syndrome use gestures more often, and have a larger repertoire of different gestures, than do their developmental level-matched typical peers<sup>[17]</sup>. It may be that difficulty acquiring spoken language fuels an increased reliance on,

and enhanced development, of gestures.

Cognitive achievements are also necessary for progress in the domain of prelinguistic intentional communication. The acquisition of concepts about objects and about the causal connections between actions and outcomes have been found to be related to progress in commenting and requesting for children with intellectual disabilities, including those with Down syndrome<sup>[8,12,13,18]</sup>, as well as for typically developing children<sup>[6]</sup>.

Whatever their source, the delays in prelinguistic intentional communication displayed by children with Down syndrome may play a causal role in their subsequent delays in linguistic communication. In particular, longitudinal studies have demonstrated that higher rates of nonverbal commenting and of nonverbal requesting are associated with better outcomes among children with Down syndrome<sup>[9,19]</sup>.

## Pragmatic development in the linguistic period

As discussed in the previous section, there is evidence of pragmatic problems for children with Down syndrome during the prelinguistic period. These problems continue in the linguistic period, although some facets of pragmatics are more challenging for individuals with Down syndrome than are other facets.

It has been found that children with Down syndrome express the same intentions through language, and at the same relative rates, as do younger, typically developing children at similar developmental levels, at least when interacting with parents or other competent adults<sup>[20,21]</sup>. The most common intention expressed by preschoolers with Down syndrome, is “answering” (e.g., answering a yes-no question), which reflects their passivity in conversation with adults. These results suggest that once they begin speaking, children with Down syndrome view language as a vehicle for expressing the same types of social intentions as do typically developing children at similar developmental levels.

Although individuals with Down syndrome may have a reasonable understanding of how language can be used in social interaction, they display areas of substantial pragmatic weakness, particularly as they grow older and face contexts

in which information must be conveyed about increasingly abstract or absent entities and events. In a study of non-face-to-face talk, Abbeduto and his colleagues found that adolescents and young adults with Down syndrome were more likely than nonverbal mental age-matched typically developing children to extend the same description to two or more intended referents, rendering the description uninformative from the listener’s perspective<sup>[22]</sup>. The adolescents and young adults with Down syndrome were also less likely than their typically developing matches to include “scaffolding” in their descriptions (e.g., “it looks kind of like a ...”) to assist the listener. It is important to note that although performance in the non-face-to-face task was correlated with a measure of expressive language ability (i.e., vocabulary and syntax), the pragmatic difficulties of the speakers with Down syndrome also reflected their limited understanding of basic principles of informational adequacy in linguistic interaction.

Although there are areas of pragmatics in which individuals with Down syndrome have especially serious impairments, there are other areas in which they display strength compared to individuals with other neurodevelopmental disorders. As a group, children with Down syndrome, for example, seldom engage in verbal perseveration (e.g., an unusual number of utterances on the same topic) or produce off-topic or tangential language compared to developmental level-matched children with fragile X syndrome<sup>[23-26]</sup>. Moreover, individuals with Down syndrome seldom use stereotyped language or begin conversations inappropriately compared to individuals with Williams syndrome<sup>[27]</sup>.

## Narrative discourse

Narrative, or story-telling, is a particularly important type of linguistic interaction, with rules and organisational principles different from those of everyday conversation. Mastery of the narrative form is predictive of subsequent success in school and helps to organise and facilitate the acquisition of knowledge of the social world<sup>[28]</sup>. At the same time, however, narrative can require more sophisticated language use, especially syntax, than does much of every day conversation<sup>[29]</sup>.

Individuals with Down syndrome appear to recognise and express the important

elements of a story despite their limited lexical and syntactic skills<sup>[30,31]</sup>. They do so, however, by expressing that content in a larger number of simpler syntactic forms than do their typically developing peers<sup>[32]</sup>. In fact, the syntactic limitations of individuals with Down syndrome are even more apparent in narrative tasks than in conversation<sup>[33]</sup>. Thus, these findings suggest that individuals with Down syndrome are able to compensate somewhat for their expressive syntax problems to convey narrative content. And finally, Chapman and colleagues have demonstrated that the narrative skills of individuals with Down syndrome can be increased, at least as regards narrative content, by focused questioning and visually supported practice<sup>[31,32,33]</sup>.

## Next steps in research on pragmatic development in Down syndrome

Although work on pragmatic development in individuals with Down syndrome began in earnest in the mid 1970s, many questions remain. First, we know little about the ways in which the profile of pragmatic strengths and weaknesses is shaped by other aspects of the Down syndrome behavioural phenotype. It is likely that the speech and language impairments limit the ‘tools’ available for communication and lead to the adoption of atypical strategies for communication. It is also likely that pragmatic impairments negatively affect subsequent linguistic achievements. How these bidirectional processes unfold is largely unknown. Second, there is considerable evidence that individuals with Down syndrome elicit unique types of social and affective responses from other people; however, it is not clear how these shape pragmatic development. Third, we still know very little about how the profile of pragmatic development in Down syndrome differs from that of many other neurodevelopmental disorders. Finally, there have been surprisingly few attempts to treat the pragmatic problems of individuals with Down syndrome, especially through interventions tailored specifically for that population. Recent prelinguistic interventions<sup>[19,34]</sup>, however, are promising.

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