Current Research in Pragmatic Language Use Among Deaf and Hard of Hearing Children

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abstract

In this article, we provide a narrative review of research literature on the development of pragmatic skills and the social uses of language in children and adolescents, with a focus on those who are deaf and hard of hearing (DHH). In the review, we consider how pragmatic skills may develop over time for DHH children and adolescents depending on age, language context, amplification devices, and languages and communication modalities. The implications of these findings for enhancing intervention programs for DHH children and adolescents and for considering ideal contexts for optimizing the pragmatic development of DHH children are considered.

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Many deaf and hard of hearing (DHH)* children and adolescents are at risk for limited access to language during the early years of life because of restricted auditory access to spoken language and a lack of signed language models. Language deprivation has significant consequences for children's and adolescents' cognitive, academic, and socio-emotional well-being.[1] Although formal language skills, such as vocabulary and syntax, are important, perhaps the most critical linguistic competence is the ability to use language as a means of connecting and engaging with others, known as pragmatics. Pragmatic rules are socially constructed, culturally- and context-dependent norms for using language to engage with others.[2] Pragmatics play a central role in an individual's ability to take part in all social settings, including home, preschool, and school, as well as the larger community, and involves skills that guide our choice of language forms, topics, and functions. In working to understand the challenges faced by DHH children in communicating with others, it is important for pediatricians and other health care providers to attend to children's ability to use language meaningfully for engaging in social relationships, beyond their ability to produce words and sentences. Difficulties in pragmatic use of language will impact the child's ability to participate in many community and social activities, form friendships, and find meaningful work. It is critical for pediatric health care providers to be sensitive to these less obvious communication skills when interacting with DHH children and adolescents in their care and to support the development of these pragmatic skills to enable full participation of DHH children and adolescents within communities.

Evaluating pragmatic skills, that is, whether a child communicates in socially expected ways, is fundamentally normative. What might be a completely socially accepted behavior to one culture may be unacceptable to another, and judgments about acceptability are necessarily informed by one's personal, social, and cultural experience. For example, in some cultures, children are expected to look directly at adults who speak to them; in others, direct gaze to adults is considered disrespectful. Differences like this can and do cause misunderstanding and negative attribution, as when a child from a culture with the latter rule looks at the floor when scolded by a teacher who then demands angrily, "Look at me when I'm talking to you!" This variation makes measuring pragmatic skills challenging and difficult to examine in a neutral or unbiased way.

Nevertheless, it is important to know whether educational and medical systems are leaving DHH children without access to communicative norms of the community in which they function and thus at an disadvantage in social communication. Recent advances across much of the developed world, including universal newborn hearing screening, gains in early intervention techniques in both signed and spoken language, and innovations in hearing technology, have improved all aspects of language, including pragmatics in DHH children.[3] Despite these improvements, with the exception of DHH children learning a sign language from fluent signing deaf parents,[4,5] we have been unable to entirely prevent many DHH children and adolescents from experiencing lingering language delays,[6,7] particularly in the area of pragmatics, as the following review reveals.

In this narrative review, we describe a body of literature spanning 25 years that reveals that DHH children's pragmatic use of language is often different from that of hearing children. These differences may reflect incomplete language acquisition and be cause for concern. In some cases, however, differences between DHH and hearing children may reflect variation in culturally specific pragmatic norms in hearing and Deaf communities. In these cases, differences may sometimes reflect potential strengths, that is, DHH children may make strategic use of pragmatic language as a way of adapting to a world that does not function with DHH people in mind.

The child language research community has long accepted that the relationship between language and social interaction is dynamic and reciprocal; that it depends, in the early years, on support from more competent communication partners; and that the inherently social function of language is a powerful driver of acquisition.[8,9] Pragmatic skills develop, along with other aspects of language, throughout childhood.[10–12] There are wide individual differences both within each developmental level and across age cohorts of children and adolescents. In this article, we provide a narrative review of what has been learned about the acquisition of pragmatic skills in DHH children and adolescents at 3 developmental levels: preschool (birth to 5 years of age), primary school (6–12 years of age), and adolescence (13–18 years of age). We begin each section with a general sketch of pragmatic language development in children with typical hearing in the relevant age group (sketches that draw heavily on exhaustive reviews by Owens,[11] Paul et al,[12] and Gleason and Ratner[13]), and then we review the literature specific to DHH children. Our review is inclusive of DHH children and adolescents who use signed and/or

* The rationale for using identity-first language ("DHH children" rather than "children who are DHH") is that this is the terminology that is widely used in Deaf culture. We use DHH because many of the studies include children with a range of hearing levels.

spoken languages and who may or may not use hearing aids or cochlear implants (CIs). The purposes of the review are (1) to provide pediatricians and other health professionals with insight into the ways access to language can shape pragmatic use in their DHH patients and (2) to aid in understanding the impact these challenges can have on the interactions of DHH children and adolescents. We provide a review of a relatively sparse literature base published mostly in communication, education, and language journals, with the aim of highlighting the need for a multidisciplinary approach that includes medical professionals to support the development of pragmatic skills in DHH children and adolescents. Key words were used to identify the relevant articles. These key words were focused on 4 broad themes: (1) age groups of participants (preschool-age, school-age, and adolescence), (2) mode of communication (sign or oral or spoken language), (3) pragmatics (including the terms social communication, metapragmatics, turn-taking, and contingency), and (4) deaf (including DHH and severity of hearing loss [profound, severe, or mild]). The earliest article identified by using these key words was published in 1977. All articles that were relevant to these themes from 1977 to 2020 were included in the analysis of the body of literature.

PRESCHOOL-AGE (0–5 YEARS)

In the first year of life, infants begin making vocalizations, pointing, making eye contact, and smiling.[11,13] They also take turns, request objects (such as toys), and play communicative games. At ~12 months of age, children start using words. They gradually begin to make requests, to show and name objects and activities, and to invite others into social interactions, such as playing peek-a-boo. As their vocabulary and utterance length increase, they answer routine questions ("Where is mommy?"), ask for new information ("What's that?"), and keep a conversation going by taking a turn, even if only by producing an imitation of what the adult just said. Between 2 and 5 years, as children move to communicating with fully formed sentences, they increase their ability to elaborate and maintain a topic for more than one or two turns; provide new information that the listener does not already know; ask a wider range of questions; talk about people, things, and activities further from the immediate context (decontextualized language); and become more skilled in repairing conversational breakdowns.

During the toddler stage, between 18 and 36 months, DHH children learn many pragmatic skills. These skills are most often studied in the context of interaction with adults. DHH children display the same motivation to communicate as hearing children do, initiating and responding to adults at the same rate as their hearing peers.

Many preschool-aged DHH children who use hearing aids[14–16] or CIs[17,18] have delayed pragmatic skills, compared with their hearing peers.[19] DHH toddlers in programs that focus primarily on spoken language exhibit delayed patterns of communication while interacting with their mothers.[20] Parental ratings of hearing and DHH toddlers' (12–36 months) conversational skills revealed that DHH children with CIs averaged >2 SDs below ratings for hearing children and fewer than one-third of the DHH children in the sample fell within the normal range.[21] On average, DHH children maintain topics for fewer conversational turns, repair conversational breakdowns less often, and make fewer requests than hearing children.[14,22] A recent Italian study found that DHH toddlers who were implanted between 8 and 12 months developed age-appropriate levels of responsiveness and assertiveness (answering and asking questions) with communicative partners but that children who were implanted after 15 months of age were delayed in both overall language and in these social-communicative abilities.[23]

Several research studies have found better pragmatic outcomes among preschool-aged DHH children who use sign languages.[24,25] Mothers and DHH children who used both a signed and a spoken language showed more cooperation and positive affect than pairs who only used spoken language.[24] An Italian study of 2- to 4- and 4- to 7-year-old DHH children who used the sign language of Italy, Lingua dei Segni Italiana, found that pragmatic development (as measured by comprehension of literal language, irony, and deceit) was comparable to pragmatic development in their hearing peers.[26] The design of this study, which asked children to interpret pragmatic phenomena, eliminated the potentially confounding variable of the communication partner. Children with early exposure to a sign language also wait for eye contact from a communication partner before starting to communicate[25] and thus seem to be aware of the need to establish a connection with their listener. In addition, these early-exposed signing children are as successful at initiating interactions as adults (approximately two-thirds of their attempts to initiate an interaction with a peer are successful).[25] This success rate is much higher than that for spoken language interactions, in which hearing, nonsigning children ignore DHH children's attempts to initiate a conversation >80% of the time.[27] Deaf children with early exposure to a sign language are also adept at managing visual attention by the age of 2 years, which enables them to successfully engage in joint attention,

a behavior that is critical for language learning.[28]

PRIMARY OR ELEMENTARY SCHOOL–AGE (6–12 YEARS)

During the elementary school years, children increase the sophistication of their uses of language through their continued engagement with a wide range of peers and adults. They become able to give hints ("Those cookies smell good!" implies that they would like a cookie), to use varying degrees of politeness as situations require ("Please give me one"; "Would you mind if I had one?" etc), and to talk differently to different people, depending on their social status and rights within a situation ("Could I please borrow your pencil?" to someone who owns one versus "I need the pencil now" to someone who borrowed one). During this time, children develop the ability to say more about a topic, maintaining the topic over a longer span of turns. They become more sophisticated at using language to persuade others, going from simply pleading ("Please, please, can we get a dog?") to arguments that take the listener's point of view into account ("A dog could guard our house and keep strangers away!"). Primary school–aged children also learn how to gauge what a listener needs and wants to know so that they give the appropriate amount of information when interacting with their conversational partners. As children develop, they begin to use a range of discourse genres, including not only conversation but also exposition and narrative. Expository discourse, the ability to provide extended explanations of processes or ideas, is difficult for all children and continues to develop throughout adolescence.[29,30] Success with the narrative genre is highly related to reading ability and success in school[12,31] and may strengthen the link between informal language styles used in conversation and the styles used in academic and written communication.[32]

There is wider variation in the pragmatic skills of primary school–aged DHH children, compared with hearing children.[14,30–33] This variation may result from the range of access to language for DHH children (eg, imperfect and delayed access to spoken language, lack of sign language role models). Skills also vary by conversational contexts and conversational partners (eg, parent, teacher, clinician, familiar peer) and the genre elicited in the interactions. On average, there are significant differences in pragmatic abilities in school-aged DHH children when compared with their hearing, age-matched peers.[14,33,34]

A study[35] with DHH primary school–aged children using spoken language in interactions with hearing peers found that DHH primary school–aged children were active communicators and showed a range of age-appropriate pragmatic skills, including taking turns, requesting for clarification, providing relevant responses to conversational bids, initiating topics, and asking and answering questions. Some differences were also noted in the DHH conversational partners[35]: DHH children asked more questions and said more than their hearing peers, thereby displaying more unbalanced turn-taking between conversation partners than pairs of hearing children talking about similar topics. These investigators also observed that pairs of DHH and hearing children were less likely to share and extend topics by adding new information and more likely to have conversations dominated by sequences of questions that received minimal answers, followed by long pauses, than pairs of hearing children. Difficulties in repairing conversational breakdowns were also reported.[35] Other research reveals, similarly, that pragmatic abilities in DHH children are robust but may still differ from those of hearing children, especially with respect to skills involved in conversational interactions between DHH and hearing children of similar ages.[33,34] In conversational pairs of hearing and DHH children who primarily used spoken language, DHH children were less likely to look at their conversation partners, took longer turns, and provided little verbal or nonverbal feedback to their hearing partners.[34] In addition, this group of DHH children did not respond to some nonverbal cues from their partners, such as cues indicating whether the partner was interested in the topic of discussion (eg, the hearing peer looked away frequently). In studies investigating the strategies DHH children use to repair conversations during interactions with adults, researchers report similar findings.[17,36] Together this work suggests that when using spoken language, DHH children may use different conversational strategies than their hearing peers, perhaps in an attempt to manage the conversation. Directing conversations in this way bypasses potential misunderstandings and thus may be a positive strategy on the part of the DHH communicator. At the same time, it may also be interpreted by hearing peers as being "pushy."

Conversations between DHH and hearing children also seem to differ from conversations between hearing-hearing pairs in expository language use, as indicated by a study in which pairs of children were asked to teach their partners how to play a new game.[37] All pairs were able to convey the rules and purpose of the game and navigate clarifications; however, the DHH children were less likely to seek clarification than the hearing children. Furthermore, DHH children used referents differently from the hearing children; they were more likely to use an incorrect or generic word, omit referents completely, or use unspecified pronouns when

telling their peers how to play the game. However, DHH children were also more likely to support their description of the rules with visual demonstrations, which their partners found useful. Although DHH children can use effective alternate strategies for communication (in this case, visual gestures), they tend to have difficulty using language to teach and learn new things when interacting with hearing peers.

Research with school-aged DHH children who use both a signed and a spoken language offers a different perspective on pragmatic skill development. These children use a variety of repair strategies in communication, changing communication modality or linguistic form when asked for clarifications by a bilingual interviewer.[38] These findings suggest that DHH children who use signed and spoken languages are able to use those languages strategically as they navigate conversational breakdowns.

ADOLESCENCE

Pragmatic skills develop dramatically during adolescence. Adolescents acquire a wide range of new pragmatic skills, such as using humor and sarcasm in increasingly nuanced ways.[12] Perhaps the most salient change in adolescents' pragmatic language, however, is the fact that conversation itself becomes the major medium of social interaction. Conversation represents a new aspect of the adolescent's relation to the social world, in which friendship is negotiated primarily through conversation and young people share intimacies and experiences for the sake of communication alone.[39] Pragmatics and social skills become more entwined during the adolescent years, when the influence of parents declines and conversations with peers become more important.[29]

As DHH children move to adolescence, conversations in spoken language with their hearing peers continue to be frustrated.[39–41] During adolescence, DHH teenagers, especially those who use spoken language, experience stress in social situations, and consequently, higher levels of stress are associated with lower pragmatic skills and increased withdrawal.[42] DHH adolescents also use unique strategies for requesting clarification during referential communication tasks with peers,[39,40] which may relate to their access to language used in conversations. Dyads of DHH children who use only spoken language make more frequent requests for clarification and use repetitions and confirmatory responses more often than hearing or signing DHH dyads. DHH teenagers with CIs are also likely to make more frequent requests for clarification than their hearing, age-matched peers, preferring specific requests for clarification that receive only yes or no answers.[39] These findings suggest that deaf adolescents may regularly miss auditory information and request clarification as an adaptive communication strategy.[40] Signing dyads often respond to requests for clarification by repeating the utterance exactly and sometimes do not respond to requests for clarification at all. This strategy may grow out of the unique contexts of miscommunication in sign language (eg, miscommunication because a communication partner who was not looking at the signer requires only an exact repetition of the utterance, not a more specific rephrasing).[40]

A small number of studies have investigated pragmatic skills of DHH adolescents when conversing with more or less familiar peers and adults. The findings of these studies[33,43,44] suggest that although conversations between DHH adolescents and peers or adults are marked by unrepaired misunderstandings, communication appears more effective when interacting with someone familiar (eg, a parent or friend). This hypothesis is supported by Ibertsson et al,[39] who found that pairs of hearing and deaf teenagers with CIs engaged in productive conversations when they knew one another well, suggesting that joint communication skills in mixed DHH-hearing pairs can be developed over time. The fact that hearing children are often ineffective communicative partners for DHH children even when using spoken language is noteworthy because families often pursue spoken language interventions rather than sign language interventions for their DHH children to broaden the child's prospective social circles.

Recent research suggests that pragmatic skills in DHH teenagers develop with age because DHH adolescents show greater frequency, variety, and complexity of strategies for maintaining conversations than younger DHH children.[21] These findings fit within a pattern of growth in broader pragmatic skills, such as turn-taking and conversational balance, in DHH adolescents compared with younger children.[15,31] However, these improvements are not universal, and differences between DHH and hearing adolescents persist.

Communication is inherently bidirectional. DHH adolescents who regularly communicate with hearing people often report a feeling of frustration resulting from their hearing partner's not being skilled in communicating with DHH people. DHH adolescents who use spoken languages have described higher levels of anger and frustration related to communicating with their parents, teachers, and classmates.[42] These communication partners may be unaware of how to communicate effectively with DHH adolescents. More than 80% of deaf adults who have hearing parents report being left out of conversations with their

hearing family members most of the time.[43]

LIMITATIONS OF CURRENT RESEARCH

Many aspects of pragmatic development, particularly the dynamic, complex skills required to navigate adult life, are understudied in this population. Little is known about DHH children's command of academically important discourse genres, such as narrative, expository, and persuasion; their flexible use of language for a range of social situations; and their tailoring of language content on the basis of understanding listener needs. Although we know that DHH children are often delayed on tests of perspective-taking (termed "theory of mind"), more work is needed to understand how theory of mind and pragmatic language use (which relies heavily on understanding another person's expectations) are related.[44,45]

In addition, much of the current research on pragmatic development for DHH children and adolescents is focused on microlevel conversational turn-taking and structured skills required for referential communication tasks. Language use in real life is much more dynamic and complex, especially as DHH adolescents become adults and navigate increasingly multilayered and complicated social situations. Complex pragmatic skills are useful to participate in postsecondary education, advance in the workplace, and engage in relationships as an adult. Further research is needed to specifically investigate how these more intricate skills develop in DHH adolescents and adults as well as to investigate the impact the skills have on their lives beyond school. Such research can guide educational and medical professionals to better support DHH children. DHH individuals, their families, and advocates, including pediatric health care professionals, will also need to continue to advocate for support for the development of these communication skills as DHH youth navigate social systems that are largely designed by and for hearing people.

KEY POINTS

Several points emerge from this narrative review. The first, and most comprehensive point, is clear: DHH children often have restricted access to language that affects how they use language to interact with others in social situations. This is true even among children who use modern assistive-hearing devices and have had extensive interventions. Delays are evident at the time language emerges and persist throughout childhood and into adolescence, suggesting that further support is needed beyond the early childhood language development window that is typically emphasized. It appears that the strategies currently used with DHH children to support language development are not sufficient to fully meet these children's pragmatic language needs. This argues for both more research on optimal conditions for social language development for DHH children and more education of communication partners about effective conversational strategies for integrating DHH children into social interactions.

Second, as Westby[46] has argued, children can have pragmatic language delays that are undetected by standard language assessments. As we argued above, pragmatic assessment is challenging both because of wide cultural differences in pragmatic conventions and because of a lack of valid assessments of dynamic conversation in any cultural community. This is a critical issue for the field because having age-appropriate language skills on standard assessments is of little use if a child struggles to use those skills to engage with the world in meaningful ways. Pediatric health care providers who are attuned to the presence of pragmatic language vulnerabilities in DHH children are better positioned to advocate for thorough assessment not only of formal language skills but also of the ability to use language in complex social interactions, even if assessed only informally. Such assessment information can pave the way toward enhanced services and supports for DHH children in the area of communicative skills.

Third, we reiterate the dynamic and reciprocal nature of language and social development. What appear as deficiencies in pragmatic language development in DHH adolescents may, in fact, derive from differences in the contexts in which they navigate. The language used by hearing people is not always fully accessible to DHH children, even when children use hearing aids or CIs. They may have limited opportunities to interact with DHH peers of similar ages and are often in situations with few fluent sign language models. Without complete access to language, developing communication and strengthening the capacity to use language in social contexts is a significant challenge. This review also suggests that DHH children and adolescents may demonstrate stronger pragmatic skills when engaging in conversations with familiar people, whether parents or close friends.[30,47] This effect may stem, in part, from a common failure of hearing peers to respond optimally to DHH children (eg, ignoring their attempts to initiate conversations). Assessing pragmatic skills in DHH children and adolescents necessitates an understanding that people adjust their conversational practices on the basis of their conversational partners, the goals of that conversation, and how much of the conversation is accessible. Findings that DHH children who use spoken language often request clarifications, dominate

conversations, use repetitions, and prefer clarifications that are yes or no answers[33,34,39,40] may be evidence of strategies designed to manage conversation and to minimize breakdowns that arise when auditory information is not fully accessible. As such, having knowledge of the barriers faced by DHH children will be critical for health care professionals and others who can advocate for continued services and supports for this population. Training peers with strategies for interacting with children who have autism and developmental disabilities has long been known[48,49] to be an effective method for increasing integration and social opportunities. The same strategies could be applied in multiple contexts with DHH children. Future work on language development in DHH children and adolescents should be focused not only on fixing pragmatic and other linguistic skills but also on ameliorating conditions that prevent DHH children from receiving the linguistic input all children and adolescents need to thrive.

Fourth, much of the research on pragmatic development in DHH children and adolescents is framed in comparison to hearing norms and assessed in conversations with hearing people. Deaf culture and shared experience play a role in shaping communication norms and strategies for members of this community, as they do for any community, and measuring DHH children against hearing norms is often not appropriate. Behaviors that may be interpreted as evidence of deficits in one community may be adaptive in another. For example, responding to a request for clarification with an exact repetition of the utterance has been interpreted in the literature as ignoring the request for specific information. But the response may indeed be appropriate if the reason for the miscommunication stems from an initial lack of eye contact, in which case clarification of only one specific piece of the information would not be appropriate. Moreover, there is little research from the perspectives of DHH individuals, even in researchers who focus on DHH children. Interviews with DHH children, adolescents, and adults can inform the field about the nature of conversational challenges and breakdowns that are experienced every day by DHH people. Apparent deficits in DHH children's pragmatic language use may be partly attributed to a lack of communicative flexibility or competence with pragmatic adjustments that would be helpful by their hearing communication partners. A "difference" rather than "disorder" orientation could thus deepen this literature.

Research suggests that access to fluently signed language may offer DHH children, including those who also use spoken language, an advantage in conversational interaction and can potentially strengthen pragmatic development.[18,38] The strengths of signing DHH children illustrated in this review appear at odds with claims that sign language may harm deaf children (recently argued by Geers et al[50]). The interpretation of results by Geers et al[50] are highly disputed and are not universally seen as providing compelling evidence that sign language is harmful to DHH children.[51] The benefits of sign languages, particularly as a harm-reduction approach that minimizes the very real risk of failing to gain mastery of language, whether spoken or signed, have been argued by numerous scholars.[51–56] This article adds to this conversation by asking readers to consider the social uses of language as valuable measures of language proficiency, not only microlevel language skills that are measured through standardized assessments or in highly structured environments. An understanding of language in social contexts as a way to communicate and connect with others necessitates a broader perspective of what communicative strategies work well for DHH children and adolescents, which, in turn, suggests that sign languages may be beneficial. Understanding the ways in which signing determines culturally specific pragmatic rules and can support language development will undoubtedly provide deeper understanding of the ways in which all DHH children might attain the same advantages.

CONCLUSIONS

Understanding the pragmatic language development of DHH children and adolescents requires an understanding of the contexts in which they navigate. Language is inherently interactive. We align our views with other researchers in the field who understand that "deafness may be a risk indicator, but is not of itself a risk mechanism."[57] DHH children and adolescents can develop robust pragmatic language skills when optimal conditions for language development are met. Understanding the barriers to full communicative competence that DHH children face will pave the way for the development of supports to reduce these obstacles and create optimal conditions for language development.

For pediatricians and pediatric health care providers, advocacy aimed at improved outcomes for DHH children should focus on 2 major points:

1. It is understood that even if DHH children score within the normal range on standard language measures, their linguistic interactions with hearing peers and adults may still be frustrated. Specific evidence-based assessment identified in this review (eg, Toe et al[58]) for DHH children that is aimed at quantifying pragmatic language use may be helpful.

2. It is critical to connect DHH children and adolescents to the accessible linguistic input they need to thrive. This includes making families, teachers, peers, and health care professionals aware of strategies to create optimal conditions (both in terms of fluent signed input and support for spoken conversation with peers trained in strategies for responding to and including DHH children) to enable them to participate more fully in social interactive communication.

ABBREVIATIONS

CI: cochlear implant
DHH: deaf and hard of hearing

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