Pragmatics in Deaf and Hard of Hearing Children: An Introduction

Amy Szarkowski, PhD,[a,b,c] Dianne Toe, PhD[d]

The purpose of this supplement is to highlight the importance of attending to the development of pragmatic skills in children who are deaf and hard of hearing (DHH) for health care professionals, allied health professionals, and researchers. Through increased awareness of the need to identify congenital hearing loss as early as possible, the medical field has been instrumental in fostering substantial improvements in the early detection of hearing loss and widespread implementation of early intervention to support children who have been identified with hearing loss.[1,2] Benefitting from this earlier diagnosis, many DHH children are showing improved language abilities, relative to previous generations of young DHH children.[3,4] Yet pragmatic abilities remain an area of concern for many DHH children.[5,6] We believe that attending to the pragmatic development needs of DHH children is the "next frontier" in improving the quality and type of care needed to optimize development for DHH children.

THE IMPORTANCE OF PRAGMATICS FOR DHH CHILDREN AND RELEVANCE TO MEDICAL PROFESSIONALS

Pragmatic skills, including the ability to use language in social contexts and in relationship with others as well as to understand shared meaning,[7,8] are critical for development, learning, and well-being.[9] Although pragmatics is often considered a "part of language,"[10] DHH children have been shown to have delays in pragmatic skills even in the absence of overall language challenges.[4] Whether because pragmatics is more complex to assess than vocabulary or syntax[11] or because there is a general lack of awareness of the many ways that pragmatics can impact the development of DHH children,[6] pragmatic skills are an aspect of development that is often overlooked, in terms of both assessment and intervention. As demonstrated through works included in this supplement, the social use of language is associated with early attachment, cognitive abilities, social-emotional learning, executive functioning, and educational outcomes. Given the enormous impact that poor pragmatics can have on children's development, attention to this topic is warranted.

Medical care providers are optimally positioned to attend to pragmatic development among DHH children. It is through medical professionals that children and families are often granted access to allied health professionals and to relevant services.[12–15] This is particularly the case in the US context but also prevails in other developed countries such as the United Kingdom,[16] Canada,[17] and Australia.[18] Referrals from qualified medical

[a]*Children's Center for Communication/Beverly School for the Deaf, Beverly, Massachusetts;* [b]*Division of Developmental Medicine, Boston Children's Hospital, Boston, Massachusetts;* [c]*Department of Psychiatry, Harvard Medical School, Boston, Massachusetts; and* [d]*School of Education, Faculty of Arts and Education, Deakin University, Geelong, Victoria, Australia*

Drs Szarkowski and Toe contributed to the conceptualization, writing, and editing of the manuscript; and both authors agree they have reviewed the manuscript, approved the final manuscript as submitted, and agree to be responsible for its contents.

DOI: https://doi.org/10.1542/peds.2020-0242B

Accepted for publication Aug 31, 2020

Address correspondence to Amy Szarkowski, PhD, The Children's Center for Communication, Beverly School for the Deaf, 6 Echo Ave, Beverly, MA 01915. E-mail: amyszarkowski@cccbsd.org

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

FINANCIAL DISCLOSURE: The authors have indicated they have no financial relationships relevant to this article to disclose.

FUNDING: No external funding.

POTENTIAL CONFLICT OF INTEREST: The authors have indicated they have no potential conflicts of interest to disclose.

professionals can mean the difference between a DHH child receiving speech-language therapy, for example, or being unable to access such services; in either direction, this has the potential to have a significant impact on the communication abilities of DHH children,[19,20] as well as other developmental outcomes, including cognition, social-emotional development, and educational attainment.[21]

Caregivers often look to medical professionals to monitor their child's development and help inform decisions[22,23] to better comprehend how a physical difference or a disability may impact a child's life, as well as try to understand what is possible for their own child.[24] The expectations for the development of children, particularly those who have a disability, are often informed by the expectations set by physicians and medical teams.[25] When medical professionals track the pragmatic skills of DHH children, it can increase attention to this important area of development for caregivers as well. There is a need to assess, monitor, and intervene to promote pragmatics in DHH children, as well as to help ensure that the services and supports necessary to optimize this development are put in place.

TERMINOLOGY USE THROUGHOUT THIS SUPPLEMENT

Pragmatics

Put simply, pragmatics is synonymous with social communication. It captures all elements of the way humans harness their resources to interact with other people. It is a vast discipline, the subject of several substantial handbooks,[26,27] and is informed by divergent fields of study. In this supplement, we focus on the development of pragmatic skills in DHH children, that is, the ways that children learn to understand expectations in social situations, deploy language to engage in social interaction, and learn to consider the perspectives of their conversational partners.[28] To be effective, pragmatic skills involve the coordination of a wide range of cognitive, linguistic, and social skills, all of which are likely to be significantly impacted by a child's social and emotional life experiences. This supplement includes a range of empirical, review, and perspective articles, each exploring a key aspect of pragmatic development in DHH children and providing new insights into differences, strengths, and potential areas of vulnerability in the development of pragmatics for this population.

Deaf and Hard of Hearing (DHH)

There are differences in the terminology used to refer to DHH children, both within the United States and globally. For some time, there has been a focus on using "person-first language"[29,30] in the disability community, which would suggest that we say "children who are deaf or hard of hearing"; indeed, in some places, this remains the norm. Elsewhere, "disability-first language" is more common and preferred.[31] Some members of the deaf community have indicated a desire to be referred to as deaf individuals.[32] In some locations, including parts of Europe, the term "deaf" is standardly employed when referring to individuals with any level of hearing loss; that is, deaf or hard of hearing are grouped collectively under this single term. For this supplement, we will use the term "deaf and hard of hearing" ("DHH") as a means of capturing all children who have an identified audiologic hearing loss of any degree. This is intended to be inclusive of the heterogenous individuals who comprise the DHH group, including individuals who have a unilateral or bilateral hearing loss; those who use signed, spoken, and/or written language; and those who use hearing-assistive technologies, (such as hearing aids or cochlear implants) as well as those who do not.

Medical Care Providers, Allied Health Professionals, and Researchers

A variety of professionals frequently help to support DHH children and their families. We conceptualize medical care providers to be those in the fields of medicine and nursing who play an instrumental role in managing the health and physical care needs of children and who monitor and track children's overall development. Pediatricians, family practice physicians, otolaryngologists, nurse practitioners, and nurses are among the medical care providers who are mostly likely to be involved in supporting children who are DHH. Allied health professionals are those who specialize in health or related services, including therapeutic and support services, and who comprise up to 60% of the health care workforce in the United States.[33] Audiologists, speech-language pathologists, psychologists, social workers and/or mental health clinicians, and health educators, as well as child life specialists and early interventionists who work with DHH children, are among the allied health and related professionals who will benefit most from this supplement. Recommendations offered throughout this volume are targeted toward medical care providers and/or allied health professionals. Additionally, researchers from a variety of disciplines examine the experiences and outcomes of DHH children and their families. We wish to extend an invitation to these researchers to explore and contribute to the increased understanding of pragmatics in DHH children, as well.

POSITIONING OF RESEARCH INVOLVING CHILDREN WHO ARE DHH: IMPORTANT CONSIDERATIONS

Although not intended to be a comprehensive treatise on these issues, a brief description of some of

the factors that make research involving DHH children unique relative to researching other populations of children is offered below for readers who are not specialists in working with children who are DHH.

DHH Pediatric Population

DHH children are heterogenous; they present with a wide range of audiological hearing levels, various etiologies of hearing loss, differences in preferred modes of communication (eg, sign language, spoken language, or some combination), and variability in their access to, use of, and benefit from hearing-assistive technologies (eg, hearing aids, cochlear implants).[34] More than 90% of DHH children are born to hearing families, the majority of whom have never had any contact with deaf adults who use sign language.[35–37] Although considered to be a low-incidence disability, congenital hearing loss is among the most common chronic conditions in childhood.[38] Considering the totality of this population, medical care providers and many allied health professionals are likely to encounter children who are DHH in their practice during their careers.

Deaf Culture and Language

From a traditional medical perspective, the condition of being deaf suggests that something requires a "cure" or "fix" so that deaf people can function more effectively in a world of hearing and speaking. In this model, cochlear implants, hearing aids, and spoken language intervention are a central focus for the treatment of deafness.[39] Alternatively, a sociocultural model supports a view of being deaf as a difference, in which deaf people are a cultural and linguistic minority rather individuals who have a disability. From a deaf cultural perspective, there are significant gains that individuals who are deaf may experience, such as the beauty of conveying ideas through signed language and belonging to a tight-knit social group.[40] Research involving DHH children can be influenced by the perspectives of the researchers on the experience of being deaf. In this supplement, we do not posit that DHH children naturally possess "deficits" in pragmatics but rather recognize that pragmatics is an area of vulnerability for many DHH children. Collectively, the contributors seek to understand how environmental, relational, familial, social, and linguistic inputs and/or interventions may help to ameliorate this discrepancy in skills.

Sample Sizes in Research With DHH Children

Large-scale studies with children who are DHH can be difficult to achieve, especially in countries with active research communities but smaller populations such as Australia, Canada, and the United Kingdom. Finding large numbers of deaf children to participate in research projects is a substantial challenge. Consequently, many studies that are reported in high-quality peer reviewed journals are based on what may appear to be relatively small numbers of participants but are in fact a representative sample of DHH children for the data collection location.

WORKSHOP ON PRAGMATICS

This supplement is an outcome of a 2-day Accelerator Workshop on Pragmatic Language Skills in Deaf Children, sponsored by the Radcliffe Institute for Advanced Study at Harvard University. Held in October 2018, this workshop was convened by A.S. and D.T., who were awarded funding for the workshop.

The Accelerator Workshop brought together 20 scholars from 7 countries including experts in clinical work, professional practice, and research. Participants included individuals who are DHH, those who are grown children of DHH adults (commonly referred to as "CODAs"), and those who have typical hearing. The inclusion of DHH scholars and scholars including grown children of DHH adults was a priority for the workshop; however, DHH scholars are underrepresented in this field of research and despite many invitations, it proved difficult to achieve the representation we desired.

Participants joined from diverse fields such as psychology, education, child development, research methods, literacy, and epidemiology. Although most participants' work focuses specifically on children who are DHH, professionals with limited expertise with DHH children were intentionally included as well; these scholars are highly esteemed in their own academic fields such as pragmatics, speech-language pathology, and social science research. Their inclusion helped to ensure that the workshop topics were further grounded in and informed by the latest research and practice related to pragmatics.

Through the course of the workshop, participants were divided into 3 "thinking teams" charged with tackling different aspects of pragmatics. The ideas for each of these 3 articles were discussed at the workshop and informed by the collective discussions that included all the participants. Thus, all workshop attendees are named in the Acknowledgments section of these articles. Three of the articles included in this supplement are a direct outcome of this group work, described below as the "anchor articles" for the supplement.

SUPPLEMENT ON PRAGMATICS IN DHH CHILDREN

This supplement comprises 12 articles, including the 3 articles conceptualized during the workshop. To address the wide variety of topics relevant to the topic of pragmatics in

DHH children, additional articles were solicited from high-profile scholars publishing in this area. Taken together, we believe that the 12 articles capture the current understanding of pragmatics with this population and provide both new insights and substantial guidance for health care professionals, allied health professionals, and researchers who work with DHH children.

The collection of articles in this supplement have been arranged to build a compelling picture of the delays in pragmatic skill development in DHH children and to identify the challenges experienced by them and their families. The first article in the supplement is an anchor article developed in one of the Radcliffe workshop groups: "Current Research in Pragmatic Language Use Among Deaf and Hard of Hearing Children" (Paul et al[41]). In this article, the authors provide a detailed review of >20 years of research in this field and establish the areas of challenge and strength for DHH children. They also provide readers with some insights into the unique ways that being DHH intersects with pragmatic development, reinforcing the positive benefits of a sociocultural perspective of deafness. The next article, by Mood et al,[42] is focused on the early years of a DHH child's development, exploring the ways that pragmatic development interacts with the development of significant cognitive, affective, and psychological factors and making a clear case for how pragmatic skills are much more than language. This is followed by a study of 5 types of infant communication known to positively predict later language development in DHH infants; in this article, Kelly et al[43] provide further insight into the early development of pragmatic skills in this population. This article focuses further attention on the critical role of interaction with caregivers on the development of pragmatic skills. Yoshinaga-Itano, a notable scholar in this field, led the next article (Yoshinaga-Itano et al[44]), which provides empirical data that will assist in answering the question about why pragmatic skills are delayed for many DHH children, illuminating the importance of early conversations between parents and their DHH children for later pragmatic development. Goldin-Meadow[45] then describes gesture and pragmatics and their links to early cognitive development.

By its very nature, the dynamics of social communication make the design of an assessment tool challenging; the field has struggled to develop a gold standard for assessment of pragmatics skills. In the second anchor article from the Radcliffe workshop led by D.T., "The Assessment of Pragmatic Skills in Young Deaf and Hard of Hearing Children," Toe et al[46] propose a protocol for the assessment of pragmatic skills in young DHH children. Next, Paatsch and Toe[47] highlight the critical nature of pragmatic skills for the classroom and school learning, alerting readers to the fact that school entails frequent and demanding social interactions that can challenge DHH children. This is followed by an article by Zaidman-Zait and Most[48] in which they explore the relationship between pragmatic skills and peer relationships for DHH adolescents, identifying the way that delayed pragmatic skills can impact social and emotional development in later years. In their article, Young et al[49] examine the lived experience of pragmatics and provide a voice for DHH adults and parents of DHH children to share their own experiences of navigating the pragmatic world. The final article, "Pragmatics Development in Deaf and Hard of Hearing Children: A Call to Action," is the third anchor article generated by the Radcliffe workshop. Szarkowski et al[50] highlight many of the key elements of the supplement collection and call medical practitioners, allied health workers, and researchers to action to ensure that pragmatic skills will no longer be the missing link[6] in the development of DHH children and young people.

ACKNOWLEDGMENTS

We acknowledge the generous funding and support of the Radcliffe Institute for Advanced Study at Harvard University for the Accelerator Workshop that took place in October 2018. It generated a significant amount of work that underpins the articles in this supplement. The invited attendees contributed their deep understanding of deaf-related topics and pragmatic development and generously shared their expertise. The workshop participants are as follows: Amy Szarkowski, Dianne Toe, Alys Young, Danielle Matthews, Michele Eisan-Smith, Marie Coppola, Louise Paatsch, Deborah Mood, Susan Goldin-Meadow, Elizabeth Walker, Jennie Pyers, Rhea Paul, Stacey Tucci, Carrie Lou Garberoglio, Carol Connor, Amy Lederberg, Naomi Caselli, Connie Mayer, Tova Most, and Jareen Meinzen-Derr.

ABBREVIATION

DHH: deaf and hard of hearing

REFERENCES

1. Watkin P, Baldwin M. The longitudinal follow up of a universal neonatal hearing screen: the implications for confirming deafness in childhood. *Int J Audiol.* 2012;51(7):519–528
2. Papacharalampous GX, Nikolopoulos TP, Davilis DI, Xenellis IE, Korres SG. Universal newborn hearing screening, a revolutionary diagnosis of deafness: real benefits and limitations. *Eur Arch Otorhinolaryngol.* 2011;268(10): 1399–1406
3. Pimperton H, Kennedy CR. The impact of early identification of permanent childhood hearing impairment on speech and language outcomes. *Arch Dis Child.* 2012;97(7):648–653

4. Yoshinaga-Itano C. Early intervention after universal neonatal hearing screening: impact on outcomes. *Ment Retard Dev Disabil Res Rev*. 2003;9(4):252–266

5. Toe D, Beattie R, Barr M. The development of pragmatic skills in children who are severely and profoundly deaf. *Deafness Educ Int*. 2007;9(2):101–117

6. Goberis D, Beams D, Dalpes M, Abrisch A, Baca R, Yoshinaga-Itano C. The missing link in language development of deaf and hard of hearing children: pragmatic language development. *Semin Speech Lang*. 2012;33(4):297–309

7. Matthews D, ed. *Pragmatic Development in First Language Acquisition*. Amsterdam, Netherlands: John Benjamins Publishing Co; 2014

8. Clark EV. Pragmatics in acquisition. *J Child Lang*. 2014;41(suppl 1):105–116

9. Matthews D, Biney H, Abbot-Smith K. Individual differences in children's pragmatic ability: a review of associations with formal language, social cognition, and executive functions. *Lang Learn Dev*. 2018;14(3):186–223

10. Leech GN. *Principles of Pragmatics*. New York, NY: Routledge; 2016

11. Paul R, Norbury CF. *Language Disorders From Infancy Through Adolescence*. St Louis, MO: Elsevier Health Sciences; 2012

12. Greenfield G, Foley K, Majeed A. Rethinking primary care's gatekeeper role. *BMJ*. 2016;354:i4803

13. Gerada C. From patient advocate to gatekeeper: understanding the effects of the NHS reforms. *Br J Gen Pract*. 2011;61(592):655–656

14. Kilbride MK, Joffe S. The new age of patient autonomy: implications for the patient-physician relationship. *JAMA*. 2018;320(19):1973–1974

15. Carlsen B, Nyborg K. *IZA DP No. 10735: Healer or Gatekeeper? Physicians' Role Conflict When Symptoms Are Non-Verifiable*. Bonn, Germany: Institute of Labor Economics; 2017

16. Bion J, Evans T. The influence of health care reform on intensive care: a UK perspective. *Am J Respir Crit Care Med*. 2011;184(10):1093–1094

17. Brown C. Recognition of family physicians as experts rather than gatekeepers requires "cultural shift". *CMAJ*. 2018;190(17):E550–E551

18. Nydam K. Gatekeeper, shopkeeper, scientist, coach? *Aust Fam Physician*. 2012;41(7):457

19. Boss EF, Niparko JK, Gaskin DJ, Levinson KL. Socioeconomic disparities for hearing-impaired children in the United States. *Laryngoscope*. 2011;121(4):860–866

20. Nikolopoulos TP, Vlastarakos PV. Treating options for deaf children. *Early Hum Dev*. 2010;86(11):669–674

21. Meinzen-Derr J, Wiley S, Grether S, et al. Functional communication of children who are deaf or hard-of-hearing. *J Dev Behav Pediatr*. 2014;35(3):197–206

22. Lipstein EA, Brinkman WB, Britto MT. What is known about parents' treatment decisions? A narrative review of pediatric decision making. *Med Decis Making*. 2012;32(2):246–258

23. Adams RC, Levy SE; Council on Children with Disabilities. Shared decision-making and children with disabilities: pathways to consensus. *Pediatrics*. 2017;139(6):e20170956

24. Aarthun A, Akerjordet K. Parent participation in decision-making in health-care services for children: an integrative review. *J Nurs Manag*. 2014;22(2):177–191

25. Lown BA, Clark WD, Hanson JL. Mutual influence in shared decision making: a collaborative study of patients and physicians. *Health Expect*. 2009;12(2):160–174

26. Huang Y, ed. *The Oxford Handbook of Pragmatics*. Oxford, England: Oxford University Press; 2017

27. Allan K, Jaszczolt KM, eds. *The Cambridge Handbook of Pragmatics*. Cambridge, England: Cambridge University Press; 2012

28. Stephens G, Matthews D. The Communicative Infant from 0–18 Months: The Social-Cognitive Foundations of Pragmatic Development. In: Matthews D, ed. *Pragmatic Development in First Language Acquisition*. Amsterdam, Netherlands: John Benjamins Publishing Co; 2014:13–36

29. Dunn DS, Andrews EE. Person-first and identity-first language: developing psychologists' cultural competence using disability language. *Am Psychol*. 2015;70(3):255–264

30. Blaska J. The Power of Language: Speak and Write Using "person First.". In: Naegler M, ed. *Perspective on Disabilities*. Palo Alto, CA: Health Markets Research; 1993:25–32

31. Collier R. Person-first language: noble intent but to what effect? *CMAJ*. 2012;184(18):1977–1978

32. Leigh I. *A Lens on Deaf Identities*. New York, NY: Oxford University Press; 2009

33. Association of Schools Advancing Health Professions. What is allied health? Available at: www.asahp.org/what-is/

34. Szarkowski A. Deaf and Hard of Hearing. In: Budd M, Hough S, Wegener S, Stiers W, eds. *Practical Psychology in Medical Rehabilitation*. Berlin, Germany: Springer; 2017:147–154

35. Centers for Disease Control and Prevention (CDC). Identifying infants with hearing loss - United States, 1999-2007. *MMWR Morb Mortal Wkly Rep*. 2010;59(8):220–223

36. Vohr B. Overview: infants and children with hearing loss-part I. *Ment Retard Dev Disabil Res Rev*. 2003;9(2):62–64

37. Mitchell RE, Karchmer MA. Chasing the mythical ten percent: parental hearing status of deaf and hard of hearing students in the United States. *Sign Lang Stud*. 2004;4(2):138–163

38. Korver AM, Smith RJ, Van Camp G, et al. Congenital hearing loss. *Nat Rev Dis Primers*. 2017;3(3):16094

39. Leigh I, Andrews JF, Harris RL. *Deaf Culture: Exploring Deaf Communities in the United States*. San Diego, CA: Plural Publishing, Inc; 2018

40. Holcomb TK. *Introduction to American Deaf Culture*. New York, NY: Oxford University Press; 2013

41. Paul R, Paatsch L, Caselli N, et al. Current research in pragmatic language use among deaf and hard of hearing children. *Pediatrics*. 2020;146(suppl 3):e20200242C

42. Mood D, Szarkowski A, Brice PJ, Wiley S. Relational factors in pragmatic skill development: deaf and hard of hearing

infants and toddlers. *Pediatrics*. 2020; 146(suppl 3):e20200242D

43. Kelly C, Morgan G, Bannard C, Matthews D. Early pragmatics in deaf and hard of hearing infants. *Pediatrics*. 2020; 146(suppl 3):e20200242E
44. Yoshinaga-Itano C, Sedey AL, Mason CA, Wiggin M, Chung W. Early intervention, parent talk, and pragmatic language in children with hearing loss. *Pediatrics*. 2020;146(suppl 3):e20200242F
45. Goldin-Meadow S. Using gesture to identify and address early concerns about language and pragmatics. *Pediatrics*. 2020;146(suppl 3): e20200242G
46. Toe D, Mood D, Most T, Walker E, Tucci S. The assessment of pragmatic skills in young deaf and hard of hearing children. *Pediatrics*. 2020;146(suppl 3): e20200242H
47. Paatsch L, Toe D. The impact of pragmatic delays for deaf and hard of hearing students in mainstream classrooms. *Pediatrics*. 2020;146(suppl 3):e20200242I
48. Zaidman-Zait A, Most T. Pragmatics and peer relationships among deaf, hard of hearing, and hearing adolescents. *Pediatrics*. 2020;146(suppl 3): e20200242J
49. Young A, Szarkowski A, Ferguson-Coleman E, et al. The lived experience and legacy of pragmatics for deaf and hard of hearing children. *Pediatrics*. 2020;146(suppl 3):e20200242K
50. Szarkowski A, Young D, Matthews D, Meinzen-Derr J. Pragmatics development in deaf and hard of hearing children: a call to action. *Pediatrics*. 2020;146(suppl 3): e20200242L

Pragmatics in Deaf and Hard of Hearing Children: An Introduction

Amy Szarkowski and Dianne Toe

Pediatrics 2020;146;S231
DOI: 10.1542/peds.2020-0242B

Pragmatics in Deaf and Hard of Hearing Children: An Introduction

Amy Szarkowski and Dianne Toe

Pediatrics 2020;146;S231
DOI: 10.1542/peds.2020-0242B