



This is a repository copy of *Pragmatics development in deaf and hard of hearing children: a call to action*.

White Rose Research Online URL for this paper:
<http://eprints.whiterose.ac.uk/168347/>

Version: Published Version

Article:

Szarkowski, A., Young, A., Matthews, D. orcid.org/0000-0003-3562-9549 et al. (1 more author) (2020) Pragmatics development in deaf and hard of hearing children: a call to action. *Pediatrics*, 146 (Supplement 3). S310-S315. ISSN 0031-4005

<https://doi.org/10.1542/peds.2020-02421>

Reuse

This article is distributed under the terms of the Creative Commons Attribution (CC BY) licence. This licence allows you to distribute, remix, tweak, and build upon the work, even commercially, as long as you credit the authors for the original work. More information and the full terms of the licence here:
<https://creativecommons.org/licenses/>

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.



eprints@whiterose.ac.uk
<https://eprints.whiterose.ac.uk/>

Pragmatics Development in Deaf and Hard of Hearing Children: A Call to Action

Amy Szarkowski, PhD,^{a,b,c} Alys Young, PhD,^{d,e} Danielle Matthews, PhD,^f Jareen Meinzen-Derr, PhD^{g,h}

abstract

Although major strides have been made in supporting the linguistic development of deaf and hard of hearing (DHH) children, a high risk of pragmatic delay persists and often goes unrecognized. Pragmatic development (the growing sensitivity to one's communication partner when producing and comprehending language in context) is fundamental to children's social-cognitive development and to their well-being. We review the reasons why DHH children are vulnerable to pragmatic developmental challenges and the potential to create positive change. In this call to action, we then urge (1) medical providers to recognize the need to monitor for risk of pragmatic difficulty and to refer for timely intervention (beginning in infancy), (2) allied health professionals involved in supporting DHH children to incorporate development of pragmatic abilities into their work and to foster awareness among caregivers, and (3) the research community to deepen our understanding of pragmatics in DHH children with investigations that include pragmatics and with longitudinal studies that chart the paths to positive outcomes while respecting the diversity of this population. By working together, there is substantial potential to make rapid progress in lifting developmental outcomes for DHH children.

^aChildren's Center for Communication/Beverly School for the Deaf, Beverly, Massachusetts; ^bDivision of Developmental Medicine, Boston Children's Hospital, Boston, Massachusetts; ^cDepartment of Psychiatry, Harvard Medical School, Boston, Massachusetts; ^dSocial Research with Deaf People, School of Health Sciences, University of Manchester, Manchester, United Kingdom; ^eCentre for Deaf Studies, University of the Witwatersrand, Johannesburg, South Africa; ^fDepartment of Psychology, University of Sheffield, Sheffield, United Kingdom; ^gDivision of Biostatistics and Epidemiology, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio; and ^hDepartment of Pediatrics, College of Medicine, University of Cincinnati, Cincinnati, Ohio

Dr Szarkowski coconceptualized the manuscript, cowrote the initial draft of the manuscript, contributed to subsequent drafts, managed the edits, reviewed the literature, provided conceptual and content expertise, and critically reviewed and revised the manuscript; Prof Young coconceptualized the manuscript, cowrote the initial draft of the manuscript, contributed to subsequent drafts, reviewed the literature, provided conceptual and content expertise, and critically reviewed and revised the manuscript; Drs Matthews and Meinzen-Derr contributed to the conceptualization, wrote portions of the manuscript, reviewed the literature, provided conceptual and content expertise, and critically reviewed and revised the manuscript; and all authors approved the final manuscript as submitted.

DOI: <https://doi.org/10.1542/peds.2020-0242L>

Accepted for publication Aug 31, 2020

Address correspondence to Amy Szarkowski, PhD, 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).

Copyright © 2020 by the American Academy of Pediatrics

This article is licensed under the Creative Commons Attribution 4.0 International License (CC-BY 4.0). The named authors alone are responsible for the views expressed in this publication.

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

FUNDING: Danielle Matthews was supported by British Academy grant MD\170025.

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

Deaf and hard of hearing (DHH) children are a highly diverse population whose language development, whether in spoken or signed language(s), poses complex challenges for practitioners and families alike. There have been great strides in hearing technologies, the formal recognition of the status of signed languages as legitimate,¹ and improvements across the globe in early identification of and intervention to support hearing loss.²⁻⁵ Collectively, these have contributed to language development trajectories and mono-, bi-, and multilingual language development unsurpassed in previous eras.⁶⁻⁹

For most children, language acquisition occurs organically; it is taken for granted that a child with typical hearing will acquire the language(s) in their developmental environment. Yet, for DHH children, there is a high risk of delays in language acquisition and development that, if not addressed, can result in a range of undesirable developmental consequences. Both early language acquisition and continued higher level language development often require direct instruction and nurturance in DHH children.¹⁰

For language to develop optimally, children need to learn not only linguistic forms (such as words or signs, grammatical structures, and prosodic features) but also how to deploy these linguistic resources to support effective social interaction. This is the domain of pragmatics.¹¹ There is a strong association between pragmatic abilities and formal language. Indeed, many have argued that early pragmatic milestones, such as the ability to enter into joint attention and to use social vocalizations and gestures in infancy, are critical precursors of formal language.^{12,13} As children develop, pragmatic skills (including responding contingently to conversational turns, choosing

felicitous expressions in context, drawing inferences about the meaning of communication partners' comments¹⁴) become vital to maintaining relationships with others.

Delays and deficits in pragmatic abilities in children are present in clinical populations and are known to impact well-being.^{15,16} For example, in individuals diagnosed with autism spectrum disorder or social (pragmatic) communication disorder (formerly referred to as pragmatic language impairment), persistent pragmatic deficits are included as diagnostic criteria.¹⁷ Additionally, these pragmatic deficits are associated with difficulties with forming relationships,¹⁸ challenges with obtaining and maintaining employment,¹⁹ and problems across behavioral, social, and emotional areas. These populations are therefore largely recognized as requiring targeted interventions in pragmatics. Similar focused attention promoting pragmatic intervention for DHH children has yet to be established, despite ample evidence of risk for pragmatics delays and deficits in this population.

Even in the absence of a formal diagnosis, deficits in pragmatics can nonetheless have potentially lifelong consequences contributing to poor well-being²⁰ and barriers among DHH children in achieving their potential as they transition to adulthood.^{21,22} Delays in pragmatic skills are common among DHH children.²³⁻²⁵ Reduced pragmatic abilities adversely impact effective communication and interaction, social and familial relations,^{26,27} and the ability to navigate contexts and environments successfully to achieve one's goals.²⁸ Yet, when recognized early, and when appropriate interventions and support are provided, reduced pragmatic abilities can be impacted positively, optimizing outcomes for DHH children.²⁹ We urge the prioritization of pragmatics in DHH

children for a wide range of professionals, alongside families, by issuing this call to action.

PRAGMATIC CHALLENGES FOR DHH CHILDREN

Pragmatic delays are common among DHH children. From infancy through to adulthood, differences in developmental trajectories or delays have been observed in a range of skills, including maintaining joint attention, turn taking, topic maintenance and responding contingently to a partner during conversation, asking questions, repairing misunderstanding, and understanding jokes, deception, and sarcasm.^{21,30-34}

WHY ARE DHH CHILDREN VULNERABLE TO PRAGMATIC DEVELOPMENTAL CHALLENGES?

Conditions required for the development of good pragmatic abilities can be compromised in DHH children for 5 principal reasons.

Reduced Formal Language

To be confident in making inferences about what someone meant by what they said, children need a secure understanding of how words and structures are used to convey meaning. For example, to understand "Mom is bringing the groceries in from the car. She doesn't want the ice cream to melt," one needs to infer that "she" refers to the mother, that the ice cream was part of the shopping, and so on. To construct this cognitive model, an important prerequisite is rapidly recognizing the words and grammar being used to activate relevant semantic representations. Reduced certainty on this front slows down processing and makes drawing inferences harder. Pragmatic development, therefore, tracks formal language development but is not guaranteed by it; additional skills are required. Even if a score on a standard pragmatic assessment

does not indicate a threshold for concern, DHH children may still display significant delays that impact social abilities greatly.^{35,36}

Delayed Social-Cognitive Development

DHH children are also at risk for delayed social-cognitive development³⁷⁻⁴¹ (eg, theory of mind). This understanding is critical for advanced stages of communicative development (including the understanding of sarcasm). It is considered to develop (at least in part) cumulatively from repeated and varied experience of social interaction.⁴²⁻⁴⁵ DHH children are known to have less exposure to caregivers discussing their mental states,⁴³ including their own feelings, needs, and desires (ie, caregivers sharing about their own internal and mental states), than age-matched peers.⁴⁶

Communication Partners

All children require frequent age-appropriate interactions, with a wide variety of communicative partners, of differing degrees of linguistic richness and interactive quality, to lay the foundations for the stages of pragmatic development through childhood.⁴⁷ DHH children often experience difficulties in their interactions with communication partners^{26,48} whether as a result of it being harder to understand or to make oneself understood, being marginalized from social opportunities,⁴⁹ or being communicated with in ways that do not always facilitate rich conversations⁵⁰ (eg, communication partners who, despite good intentions, share “just enough information” with a DHH child, perhaps believing that information about what is happening “in the background” is not relevant or important).

Natural Conversations

Through everyday communication with caregivers and peers, children

are socialized into appropriate language use. Social exchanges that are natural and reciprocal foster pragmatic development for all children.⁵¹ Because many DHH children require assistance and intensive instruction to learn language, they are routinely subject to formalized approaches to acquisition (with parents and clinicians explicitly teaching language). Yet, children can tell the difference between genuine and contrived language use from early on.⁵² In the absence of plentiful “real interaction” experiences, there is a risk that DHH children will struggle to master the natural dynamics of conversation. This perhaps explains the common clinical impression that many DHH children will sometimes miss social nuances or be rather literal in their interpretations of social interactions. Although further empirical study is sorely needed, research suggests that caregiver interaction with DHH children is more often directive⁵³ and goal-orientated rather than spontaneous and playful. In conversations between DHH children and others, natural correctives within social conversation, either individually or in groups, are less likely to occur.⁵⁴

Incidental Learning

The opportunity to observe others socially and acquire knowledge as an onlooker, outside of direct conversation, is a common and valuable route to communicative proficiency.^{55,56} Yet, incidental learning is a challenge^{57,58} for many DHH children who may not routinely “overhear” conversation or be exposed to information in their environment through a language they can readily access, such as American Sign Language.

RATIONALE FOR MEDICAL PROVIDERS AND ALLIED HEALTH CARE PROVIDERS TO ATTEND TO PRAGMATICS

The responsibilities of medical providers and allied health

professionals supporting DHH children are well engrained:

1. ensuring that audiological assessments are completed;
2. providing education about communication opportunities (or referring to appropriate professionals who can);
3. establishing support for the family;
4. referring for hearing assistive technologies (if appropriate for a child’s hearing levels and if desired by the family and caregivers); and
5. ensuring that pathways to language and communication support (including signed language if desired) are established.⁷

However, scant attention has been given to the identification of pragmatic delay and deficit and planning for appropriate intervention. Yet, social experience is a vital component in ensuring achievement of age-appropriate cognitive and socio-emotional outcomes.⁵⁹ Good pragmatic abilities smooth the path to a range of desirable social, emotional, educational, and economic outcomes; they also underpin positive well-being.²⁴ Poor pragmatic abilities combined with challenges in communication often associated with hearing loss are detrimental to a DHH child. Health care providers are often on the front line in terms of service provision for DHH children and, in many contexts, serve as gatekeepers to services. This is a topic that does, indeed, fall within the scope of health care. Thus, we urge health care providers and allied health professionals to attend to DHH children’s pragmatic abilities.

CALL TO ACTION

Hearing loss is among the most prevalent congenital conditions affecting children today.⁶⁰ Given the breadth and severity of the potential

impact of pragmatics on the development of DHH children, the stakes are high. There is a need and a sense of urgency for medical providers, allied health professionals, and the research community focused on DHH children to attend to pragmatics. It is the missing piece in how best to support DHH children's development and impact on their future social skills, abilities, and well-being. We therefore issue this call to action.

FOR MEDICAL CARE PROVIDERS

- Recognize that it is important to monitor not only the formal language development of DHH children but their pragmatic development as well. Consider whether a DHH child under your care can understand and use language effectively for social interaction.
- Appreciate the significance of pragmatic development in DHH children; reduced abilities in this area have consequences across several domains, immediate and longer term, including socio-emotional and cognitive development.
- Note when DHH children obtain passing scores on developmental screens or surveillance checklists yet do not pass screening tools that monitor language development or social communication. This should be considered a "red flag." Further action may be necessary.
- Refer for intervention for delays in pragmatic development, whether formally evidenced or suspected. This could include early intervention (0–36 months of age) or other specialized supports (>36 months of age). Referrals should be made to monitor pragmatic development through language and communication assessments and/or developmental evaluations.

FOR ALLIED HEALTH AND OTHER PROFESSIONALS DIRECTLY INVOLVED WITH DHH CHILDREN

- Incorporate support of pragmatic development in your regular work with DHH children.
- Enable parents and families to understand and foster the pragmatic development of their DHH children.
- Offer practical strategies to support pragmatic development in DHH children whether in the home, educational, or community environments.

FOR THE RESEARCH COMMUNITY

- Incorporate measures of pragmatic development of DHH children in outcome and effectiveness studies with this population. Researchers are encouraged to develop a Core Outcome Set⁶¹ (ie, an agreed on, standardized group of outcomes, for documenting and reporting research in this domain).⁶² This can help to reduce heterogeneity across studies and facilitate meta-analysis and meta-synthesis. The COMET Initiative⁶³ is the international searchable repository for Core Outcome Sets and is currently being used to track outcomes in studies of DHH children's development and mental health.
- Consider the diversity of developmental contexts and communication partners when conducting research regarding pragmatics in DHH children. Seek to understand strengths as well as vulnerabilities among DHH children in their ability to engage socially with others.
- Prioritize prospective longitudinal studies to understand the short-, medium-, and long-term impacts of pragmatic delays and deficits in this diverse population.

- Embrace the open science agenda, to speed progress and understanding and to enhance replicability and reproducibility of rigorous research, to better understand pragmatics in DHH children.^{64,65}

ABBREVIATION

DHH: deaf and hard of hearing

REFERENCES

1. United Nations. Convention on the Rights of Persons with Disabilities (CRPD). 2016. Available at: <https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities.html>. Accessed July 14, 2020
2. American Academy of Pediatrics, Joint Committee on Infant Hearing (JCIH). 2019 position statement: principles and guidelines for early hearing detection and intervention programs. *J Early Hear Detect Interv*. 2019;4(2):1–44
3. Muse C, Harrison J, Yoshinaga-Itano C, et al; Joint Committee on Infant Hearing of the American Academy of Pediatrics. Supplement to the JCIH 2007 position statement: principles and guidelines for early intervention after confirmation that a child is deaf or hard of hearing. *Pediatrics*. 2013;131(4). Available at: www.pediatrics.org/cgi/content/full/131/4/e1324
4. Yoshinaga-Itano C. Levels of evidence: universal newborn hearing screening (UNHS) and early hearing detection and intervention systems (EHDI). *J Commun Disord*. 2004;37(5):451–465
5. White KR, Forsman I, Eichwald J, Munoz K. The evolution of early hearing detection and intervention programs in the United States. *Semin Perinatol*. 2010;34(2):170–179
6. Alford RL, Arnos KS, Fox M, et al.; ACMG Working Group on Update of Genetics Evaluation Guidelines for the Etiologic Diagnosis of Congenital Hearing Loss; Professional Practice and Guidelines Committee. American College of Medical Genetics and Genomics guideline for the clinical evaluation and

- etiologic diagnosis of hearing loss. *Genet Med.* 2014;16(4):347–355
7. Yoshinaga-Itano C, Sedey AL, Wiggan M, Chung W. Early hearing detection and vocabulary of children with hearing loss. *Pediatrics.* 2017;140(2):e20162964
 8. Yoshinaga-Itano C, Baca RL, Sedey AL. Describing the trajectory of language development in the presence of severe-to-profound hearing loss: a closer look at children with cochlear implants versus hearing aids. *Otol Neurotol.* 2010;31(8):1268–1274
 9. Dettman SJ, Dowell RC, Choo D, et al. Long-term communication outcomes for children receiving cochlear implants younger than 12 months: a multicenter study. *Otol Neurotol.* 2016;37(2):e82–e95
 10. Spencer PE, Koester LS. *Nurturing Language and Learning: Development of Deaf and Hard-Of-Hearing Infants and Toddlers.* Oxford, United Kingdom: Oxford University Press; 2015
 11. Matthews D, Binney H, Abbot-Smith K. Individual differences in children's pragmatic ability: a review of associations with formal language, social cognition, & executive functions. *Lang Learn Dev.* 2018;14(3):186–223
 12. Tomasello M. *Becoming Human: A Theory of Ontogeny.* Cambridge, MA: Harvard University Press; 2019
 13. Donnellan E, Bannard C, McGillion M, Slocombe K, Matthews D. Infants' intentionally communicative vocalizations elicit responses from caregivers and are the best predictors of the transition to language: a longitudinal investigation of infants' vocalizations, gestures, and word production. *Dev Sci.* 2019;23(1):e12843
 14. Grigoroglou M, Papafragou A. Acquisition of Pragmatics. In: Aronoff M, ed. *Oxford Research Encyclopedia of Linguistics.* Oxford, United Kingdom: Oxford University Press; 2017
 15. Peterson C, Slaughter V, Moore C, Wellman HM. Peer social skills and theory of mind in children with autism, deafness, or typical development. *Dev Psychol.* 2016;52(1):46–57
 16. Stevenson J, McCann D, Watkin P, Worsfold S, Kennedy C; Hearing Outcomes Study Team. The relationship between language development and behaviour problems in children with hearing loss. *J Child Psychol Psychiatry.* 2010;51(1):77–83
 17. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. Arlington, TX: American Psychiatric Publishing; 2013
 18. Whitehouse AJ, Watt HJ, Line EA, Bishop DV. Adult psychosocial outcomes of children with specific language impairment, pragmatic language impairment and autism. *Int J Lang Commun Disord.* 2009;44(4):511–528
 19. Lewis FM, Woodyatt GC, Murdoch BE. Linguistic and pragmatic language skills in adults with autism spectrum disorder: a pilot study. *Res Autism Spectr Disord.* 2008;2(1):176–187
 20. Moeller MP. Current state of knowledge: psychosocial development in children with hearing impairment. *Ear Hear.* 2007;28(6):729–739
 21. Stevenson J, Kreppner J, Pimperton H, Worsfold S, Kennedy C. Emotional and behavioural difficulties in children and adolescents with hearing impairment: a systematic review and meta-analysis. *Eur Child Adolesc Psychiatry.* 2015;24(5):477–496
 22. Barker DH, Quittner AL, Fink NE, Eisenberg LS, Tobey EA, Niparko JK; CDaCI Investigative Team. Predicting behavior problems in deaf and hearing children: the influences of language, attention, and parent-child communication. *Dev Psychopathol.* 2009;21(2):373–392
 23. Jeanes RC, Nienhuys TGWM, Rickards FW. The pragmatic skills of profoundly deaf children. *J Deaf Stud Deaf Educ.* 2000;5(3):237–247
 24. 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
 25. Murphy SM, Faulkner DM, Farley LR. The behaviour of young children with social communication disorders during dyadic interaction with peers. *J Abnorm Child Psychol.* 2014;42(2):277–289
 26. Batten G, Oakes PM, Alexander T. Factors associated with social interactions between deaf children and their hearing peers: a systematic literature review. *J Deaf Stud Deaf Educ.* 2014;19(3):285–302
 27. Vaccari C, Marschark M. Communication between parents and deaf children: implications for social-emotional development. *J Child Psychol Psychiatry.* 1997;38(7):793–801
 28. O'Neill DK. The language use inventory for young children: a parent-report measure of pragmatic language development for 18- to 47-month-old children. *J Speech Lang Hear Res.* 2007;50(1):214–228
 29. Roberts MY. Parent-implemented communication treatment for infants and toddlers with hearing loss: a randomized pilot trial. *J Speech Lang Hear Res.* 2019;62(1):143–152
 30. O'Reilly K, Peterson CC, Wellman HM. Sarcasm and advanced theory of mind understanding in children and adults with prelingual deafness. *Dev Psychol.* 2014;50(7):1862–1877
 31. Lederberg AR, Everhart VS. Conversations between deaf children and their hearing mothers: pragmatic and dialogic characteristics. *J Deaf Stud Deaf Educ.* 2000;5(4):303–322
 32. Lloyd J, Lieven E, Arnold P. Oral conversations between hearing-impaired children and their normally hearing peers and teachers. *First Lang.* 2001;21(61):83–107
 33. Most T, Shina-August E, Meilijson S. Pragmatic abilities of children with hearing loss using cochlear implants or hearing AIDS compared to hearing children. *J Deaf Stud Deaf Educ.* 2010;15(4):422–437
 34. Paatsch LE, Toe DM. A comparison of pragmatic abilities of children who are deaf or hard of hearing and their hearing peers. *J Deaf Stud Deaf Educ.* 2014;19(1):1–19
 35. 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
 36. Meinzen-Derr J, Sheldon R, Grether S, et al. Language underperformance in young children who are deaf or hard-of-hearing: are the expectations too low? *J Dev Behav Pediatr.* 2018;39(2):116–125
 37. Sundqvist A, Lyxell B, Jönsson R, Heimann M. Understanding minds:

- early cochlear implantation and the development of theory of mind in children with profound hearing impairment. *Int J Pediatr Otorhinolaryngol*. 2014;78(3):537–543
38. Remmel E, Peters K. Theory of mind and language in children with cochlear implants. *J Deaf Stud Deaf Educ*. 2009; 14(2):218–236
 39. Peterson CC, Wellman HM, Liu D. Steps in theory-of-mind development for children with deafness or autism. *Child Dev*. 2005;76(2):502–517
 40. Holmer E, Heimann M, Rudner M. Evidence of an association between sign language phonological awareness and word reading in deaf and hard-of-hearing children. *Res Dev Disabil*. 2016; 48:145–159
 41. Ketelaar L, Rieffe C, Wiefferink CH, Frijns JH. Does hearing lead to understanding? Theory of mind in toddlers and preschoolers with cochlear implants. *J Pediatr Psychol*. 2012;37(9):1041–1050
 42. Heyes C. *Cognitive Gadgets: The Cultural Evolution of Thinking*. Cambridge, MA: Harvard University Press; 2018
 43. Morgan G, Meristo M, Mann W, Hjelmquist E, Surian L, Siegal M. Mental state language and quality of conversational experience in deaf and hearing children. *Cogn Dev*. 2014;29: 41–49
 44. Astington JW, Baird JA, eds. *Why Language Matters for Theory of Mind*. New York, NY: Oxford University Press; 2005
 45. Devine RT, Hughes C. Let's Talk: parents' Mental Talk (not mind-mindedness or mindreading capacity) predicts children's false belief understanding. *Child Dev*. 2019;90(4):1236–1253
 46. Calderon R, Greenberg MT. Challenges to Parents and Professionals in Supporting Socioemotional Development in Deaf Children. In: Spencer PE, Erting C, Marschark M, eds. *The Deaf Child in the Family and at School*. Mahwah, NJ: Lawrence Erlbaum Associates; 2000
 47. Tomasello M. *Constructing a Language*. Cambridge, MA: Harvard University Press; 2009
 48. Antia SD, Kreimeyer KH, Metz KK, Spolsky S. Peer Interactions of Deaf and Hard-of-Hearing Children. In: Marschark M, Spencer PE, eds. *The Oxford Handbook of Deaf Studies, Language, and Education*, 2nd ed, vol. Vol 1. New York, NY: Oxford University Press; 2010
 49. DeLuzio J, Girolametto L. Peer interactions of preschool children with and without hearing loss. *J Speech Lang Hear Res*. 2011;54(4):1197–1210
 50. Fagan MK, Bergeson TR, Morris KJ. Synchrony, complexity and directiveness in mothers' interactions with infants pre- and post-cochlear implantation. *Infant Behav Dev*. 2014; 37(3):249–257
 51. Schieffelin BB, Ochs E. *Developmental Pragmatics*. New York, NY: Academic Press; 1979
 52. Grosse G, Tomasello M. Two-year-old children differentiate test questions from genuine questions. *J Child Lang*. 2012;39(1):192–204
 53. Ambrose SE, Walker EA, Unflat-Berry LM, Oleson JJ, Moeller MP. Quantity and quality of caregivers' linguistic input to 18-month and 3-year-old children who are hard of hearing. *Ear Hear*. 2015;36(1 suppl 1):48S–59S
 54. Lavelli M, Majorano M, Guerzoni L, Murri A, Barachetti C, Cuda D. Communication dynamics between mothers and their children with cochlear implants: effects of maternal support for language production. *J Commun Disord*. 2018;73:1–14
 55. Akhtar N. The robustness of learning through overhearing. *Dev Sci*. 2005;8(2): 199–209
 56. Oshima-Takane Y, Goodz E, Derevensky JL. Birth order effects on early language development: do secondborn children learn from overheard speech? *Child Dev*. 1996; 67(2):621–634
 57. Hauser PC, O'Hearn A, McKee M, Steider A, Thew D. Deaf epistemology: deafhood and deafness. *Am Ann Deaf*. 2010; 154(5):486–492–496
 58. Marschark M, Hauser PC. Cognitive Underpinnings of Learning by Deaf and Hard-of-Hearing Students. In: Marschark M, Hauser PC, eds. *Deaf Cognition: Foundations and Outcomes*. New York, NY: Oxford University Press; 2008:3–23
 59. De Haan M, Johnson MH, eds. *The Cognitive Neuroscience of Development: Studies in Developmental Psychology*, 1st ed, vol. Vol 3. New York, NY: Psychology Press; 2013
 60. Korver AM, Smith RJ, Van Camp G, et al. Congenital hearing loss. *Nat Rev Dis Primers*. 2017;3(3):16094
 61. Clarke M, Williamson PR. Core outcome sets and systematic reviews. *Syst Rev*. 2016;5(1):11
 62. Webbe J, Sinha I, Gale C. Core outcome sets. *Arch Dis Child Educ Pract Ed*. 2018; 103(3):163–166
 63. Available at: <http://www.comet-initiative.org/Resources/Database>. Accessed October 20, 2020
 64. Munafò MR, Nosek BA, Bishop DV, et al. A manifesto for reproducible science. *Nat Human Behav*. 2017;1(1):1–9
 65. Crüwell S, van Doorn J, Etz A, et al. Seven easy steps to open science. *Z Psychol Z Angew Psychol*. 2019;227: 237–248

Pragmatics Development in Deaf and Hard of Hearing Children: A Call to Action

Amy Szarkowski, Alys Young, Danielle Matthews and Jareen Meinzen-Derr

Pediatrics 2020;146;S310

DOI: 10.1542/peds.2020-0242L

Updated Information & Services

including high resolution figures, can be found at:
http://pediatrics.aappublications.org/content/146/Supplement_3/S310

References

This article cites 50 articles, 2 of which you can access for free at:
http://pediatrics.aappublications.org/content/146/Supplement_3/S310#BIBL

Permissions & Licensing

Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:
<http://www.aappublications.org/site/misc/Permissions.xhtml>

Reprints

Information about ordering reprints can be found online:
<http://www.aappublications.org/site/misc/reprints.xhtml>

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN®



PEDIATRICS[®]

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Pragmatics Development in Deaf and Hard of Hearing Children: A Call to Action

Amy Szarkowski, Alys Young, Danielle Matthews and Jareen Meinzen-Derr

Pediatrics 2020;146;S310

DOI: 10.1542/peds.2020-0242L

The online version of this article, along with updated information and services, is located on the World Wide Web at:

http://pediatrics.aappublications.org/content/146/Supplement_3/S310

Pediatrics is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. Pediatrics is owned, published, and trademarked by the American Academy of Pediatrics, 345 Park Avenue, Itasca, Illinois, 60143. Copyright © 2020 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 1073-0397.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN[®]

