

# The Assessment of Pragmatic Skills in Young Deaf and Hard of Hearing Children

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## abstract

The development of pragmatic skills does not often receive attention by professionals who are recommending or undertaking assessment of deaf and hard of hearing (DHH) children, yet social communication is vital for linguistic, social, emotional, and academic development. We acknowledge the challenges that DHH children have with pragmatic skills, advocate for monitoring of pragmatic development for all DHH children by medical professionals, and provide direction for assessment of pragmatic skills in young DHH children, particularly for clinicians and teachers who are tasked with that work. Pragmatic assessment is challenging because it must involve observations of the child in interaction with a communication partner, either directly during a specific interaction or through the reflections of a familiar adult. In this article, we recommend two complementary assessment procedures for young DHH children who use spoken language. Assessment 1 recommends that a parent or caregiver completes *The Pragmatic Checklist* to provide a picture of the child's functional communication. In assessment 2, the information gained through the checklist is complemented by using direct observations of a child in interaction with an adult or a peer. *The Pragmatic Protocol* uses a video-recorded conversation sample between the child and familiar person that is analyzed by a DHH professional for 30 different pragmatic behaviors. We conclude this article with a recommendation for pediatricians and health care professionals to monitor pragmatic developmental milestones in DHH children, to refer them for pragmatic assessments, and to collaborate with researchers to develop valid, reliable tools that adequately capture the pragmatic skill strengths and needs of DHH children.

**WHAT'S KNOWN ON THIS SUBJECT:** Language and developmental screening tools contain few items related to social communication, yet this is an area of vulnerability for DHH children. Two published reviews provide a useful guide for selecting appropriate assessment tools for pragmatic skills in DHH children.

**WHAT THIS STUDY ADDS:** In this review, we identify the challenges associated with assessing social communication. We summarize studies of pragmatic assessment tools with DHH children, provide health care providers with a time line of pragmatic skill development, and recommend two complementary tools to assess pragmatic skills.

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## THE ASSESSMENT OF PRAGMATIC SKILLS IN YOUNG DHH CHILDREN

### What is Pragmatics? Why Should We Assess Pragmatic Skills in DHH Children?

Pragmatics is the ability to deploy language resources to support effective social interaction, taking the demands of the physical context and the needs of your conversational partner into account.<sup>1</sup> It involves the coordination of a wide range of cognitive, linguistic, and social skills including turn taking, sensitivity to partners' contributions, topic maintenance, contingency on partners' messages, and nonverbal and gestural cues. Pragmatics is language in action and it underpins many aspects of a child's development. When compared with hearing children, many DHH children who use spoken language experience a range of challenges with the development of pragmatic skills.<sup>2-4</sup> Pragmatic skills are strongly associated with social functioning and academic achievement in DHH children.<sup>5-9</sup> Some DHH children who have average language skills on standardized language tests may still have delayed pragmatic skills.<sup>8,10</sup> Assessment of pragmatic skills is vital to identify DHH children who need additional intervention in the area of social communication. Failure to do so may result in underidentifying DHH children in need of targeted intervention to facilitate improved long-term outcomes. The Joint Committee on Infant Hearing (which includes representation from the American Academy of Pediatrics) has established principles and guidelines for early hearing detection and intervention programs. Although not explicitly stated in the Joint Committee on Infant Hearing guidelines, the recommendation to assess pragmatic skills is aligned with the goal to "maximize linguistic competence and literacy development for all children who are deaf or hard of hearing."<sup>11</sup>

Our purpose in this article is to (1) advocate for the monitoring of pragmatic skills as part of routine care for all DHH children, (2) support pediatricians' understanding of pragmatic skill milestones so that they can refer DHH children with pragmatic difficulties for further assessment and intervention, and (3) propose an assessment protocol that clinicians who support DHH children can use to identify and address delays in specific pragmatic behaviors.

### Identifying the Target DHH Child Population

DHH children use various ways to communicate. In addition to spoken language, some use sign language, whereas others use spoken language supported by signs. It is estimated that 90% to 95% of DHH children are born to hearing parents who are likely to be spoken-language users. Researchers of published pragmatic research have mainly focused on DHH children who use spoken language and learn in mainstream settings.<sup>2-4</sup> We know from this literature that DHH children using spoken language face significant challenges in acquiring the more complex and nuanced elements of a spoken language, including pragmatics. Therefore, in this article, we will focus on assessments targeting the pragmatic functioning of DHH children who use spoken language to communicate.

### MONITORING FOR PRAGMATIC DIFFICULTIES IN PEDIATRIC PRACTICES

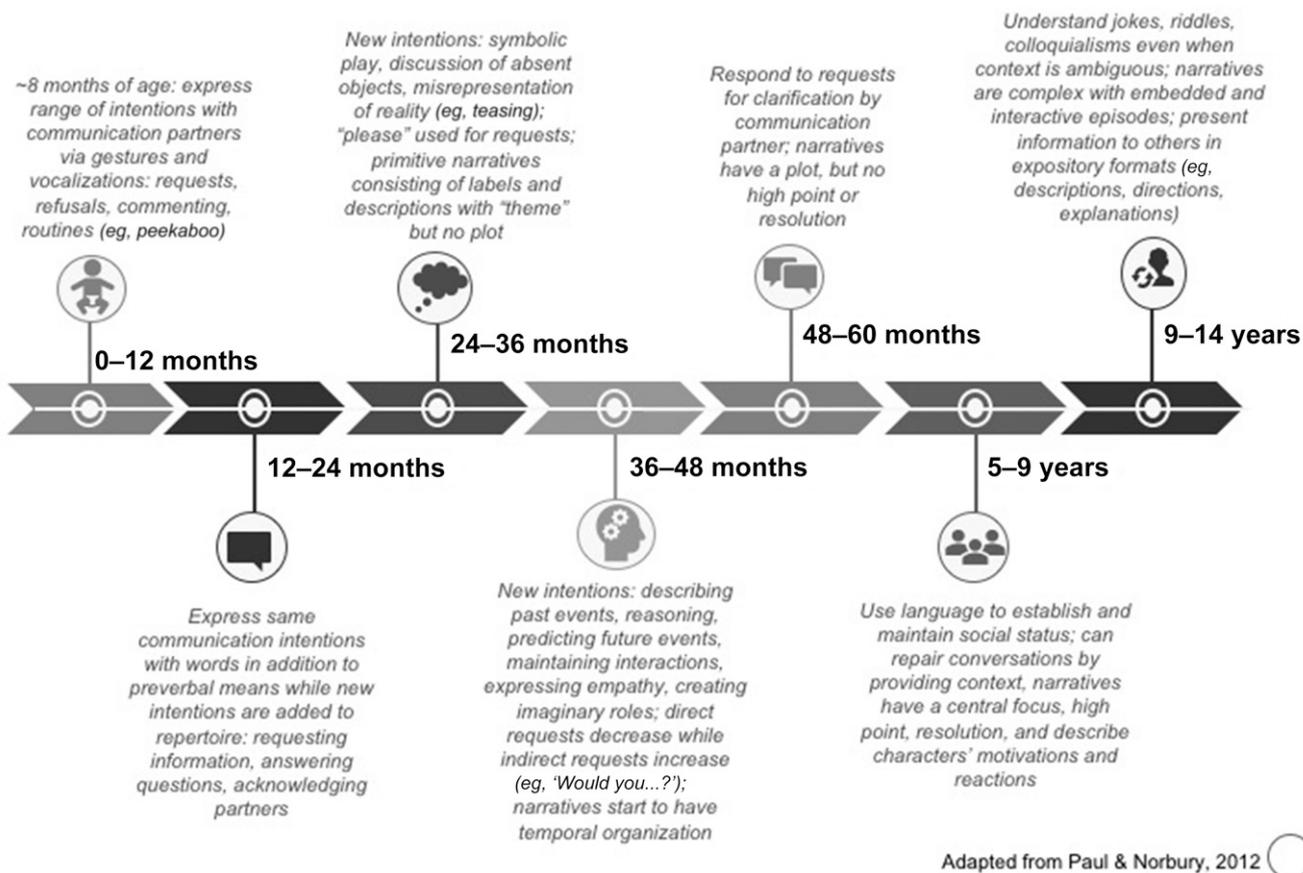
In many clinics and education settings, pragmatic language skills are not part of standard assessments that track DHH children's developmental progress. Developmental screeners that are typically used in pediatricians' offices, such as the *Ages and Stages Questionnaire* commonly administered by pediatricians in the United States, largely focus on vocabulary and grammar and contain only a few items to assess the social

use of language.<sup>12</sup> These screeners often fail to capture the nuanced difficulties with pragmatics described in this article, which are critical for academic, behavioral, and social development in young DHH children.<sup>5-9</sup>

As a starting point, health care providers require understanding of the developmental milestones for pragmatic skills in typically developing children. Therefore, we offer a visual representation of pragmatic development in typically developing children with normal hearing based on the work of Paul and Norbury<sup>13</sup> (see Fig 1). In this figure, we identify some of the key milestones for pragmatic development from birth to adolescence, which may be helpful in guiding physicians with developmental interviewing to monitor for pragmatic difficulties. This practice is best done when providers also collaborate with professionals who are familiar with areas of resilience and vulnerability for DHH children. For example, young DHH children often show relative strengths in areas such as turn taking, greetings, questioning conversation partners, and initiating topics.<sup>2-4</sup> However, they appear to be vulnerable in the area of contingency on conversational partner(s),<sup>2,3</sup> conversational repair<sup>2-4</sup> and topic maintenance.<sup>14</sup> If concerns are raised that a DHH child is not meeting expected pragmatic milestones, referral for further assessment by a speech and language therapist, early interventionist, or teacher of the DHH is strongly recommended.

### APPROACHES TO ASSESSMENT OF PRAGMATIC SKILLS IN DHH CHILDREN FOR ALLIED HEALTH PROFESSIONALS

Although a range of tools have been developed for pragmatic assessment, many were originally designed for child and adolescent populations with challenges such as autism spectrum disorder or developmental language



**FIGURE 1**

Timeline of pragmatic development from birth to adolescence. Figure created for this article based on the developmental milestones published in Paul and Norbury.<sup>15</sup>

disorders. These include checklists, observation protocols, and clinical tasks designed to probe or elicit different pragmatic skills.<sup>13</sup> Some of the tools may not be well suited to the assessment of DHH children because (1) the underlying cause of pragmatic delay relates to the way deafness affects opportunities for interactions with a range of communication partners, (2) DHH children may acquire certain pragmatic skills at a different age than their hearing counterparts, and (3) the pragmatic skills necessary for living in the world as a DHH child may not be captured in these instruments. For example, these tools may be limited in how they assess the behaviors that support strong pragmatic and social skills, which may be unique for DHH children (eg, communication repair, code switching

between users of sign and spoken language, interpreting others' nonverbal and verbal communication to assess effectiveness of one's own message, self-advocacy within difficult listening environments, gathering and incorporating feedback about speech intelligibility).<sup>5</sup> For this review, we will focus specifically on the tools that have been used to assess pragmatics in DHH children while acknowledging that there is a need to further refine pragmatic assessment tools for use with DHH children.<sup>15-17</sup> Although pragmatic skills can be problematic for DHH children at any age, from infancy to adolescence, we have chosen to focus on the assessment of pragmatic skills in young DHH children to highlight the importance of the early years for intervention and support. Although there is limited published reliability

and validity data for pragmatic assessment tools when used with the DHH population (large well-designed studies are needed), there are several assessment tools that appear to be both reliable and valid for use with DHH children. Our purpose with Table 1 is to highlight the range of pragmatic assessment tools currently used with DHH children and to identify those tools that have been most published with this population. In Table 1, we provide a description of the pragmatic assessment tool, its designated age range, identification of the person who assesses the child and the availability of reliability, validity, and norms. In addition, some useful notes relating to the advantages and disadvantages associated with the implementation of each tool have been included in the table. These have been extracted from two reviews of

the assessment of pragmatic skills with DHH children, one completed by Zaidman-Zait and Most<sup>18</sup> and the other by Toe et al.<sup>19</sup>

### RECOMMENDED TOOLS FOR ASSESSING PRAGMATIC SKILLS IN CHILDREN WHO ARE DHH

A practical, evidence-based approach is needed to identify the best assessment tools for this population. There is a notable absence of any focused, large-scale research studies in this field, and this work is sorely needed. We have used Table 1 to identify the most practical and valid pragmatic assessment tools for young DHH children. We recommend two complementary procedures for the assessment of pragmatic skills in young DHH children, *The Pragmatics Checklist*<sup>10</sup> and *The Pragmatic Protocol*.<sup>20</sup> The recommendations for these two tools are based on (1) research evidence that the tool has been well tested on DHH children; (2) availability of norms, validity, and reliability data; and (3) evidence that they are practical tools that can be easily used by clinicians experienced with DHH children. Coded, structured interaction assessment tools were not included as part of this recommended test battery because they are typically research tools. Additionally, pragmatic assessments that involve structured interactions are often time consuming, lacking in reliability, and difficult to apply in a clinical context.

### ASSESSMENT TOOL 1: A CHECKLIST FOR PRAGMATIC SKILLS

A recently published review of checklists used to assess pragmatic skills in DHH children<sup>19</sup> compared a variety of checklists and identified their salient features. We have used this review to guide our selection of a pragmatics checklist. We recommend the use of *The Pragmatics Checklist* adapted from

Simon<sup>21</sup> and reported by Goberis et al<sup>10</sup> on the basis of the following features: (1) it has been researched with DHH children, (2) it is completed by parents who reflect on their child's current pragmatic skills, (3) it has a solid theoretical basis (ie, Halliday's 7 language functions<sup>22</sup>) that was used to develop checklist items, and (4) it provides both validity data and norms based on a sample of 109 typically developing children. Although it is not specifically designed for visual languages, the nature of the items does not preclude its use with children who use sign language. It is readily available, both in a published paper<sup>10</sup> and online at *Supporting Success for Children with Hearing Loss* (<https://successforkidswithhearingloss.com/wp-content/uploads/2013/06/PRAGMATICS-CHECKLIST.pdf>). The checklist can be used to identify whether a DHH child exhibits delays in their pragmatic skills as compared with typically developing children aged 2 to 7 years. It is completed by parents or guardians and therefore time efficient for clinicians and educators. Some parents may require additional support to interpret the checklist items, although they are largely self-explanatory. The scope is limited to the functional aspects of pragmatics as seen through the eyes of a familiar and possibly biased agent; hence, it cannot be considered a comprehensive tool for the assessment of pragmatic skills. It is, nonetheless, invaluable as a tool for monitoring for pragmatic delays and pragmatic strengths. The results of this checklist are best interpreted by a clinician, such as a speech language pathologist, an early interventionist, or a teacher of the deaf. These professionals can compare the results to a set of norms, aggregate the findings using their expertise and familiarity with DHH children's language development, and report to physicians on areas of pragmatic delay.

### ASSESSMENT TOOL 2: CODED NATURAL INTERACTION

According to Hadley,<sup>23</sup> "many aspects of linguistic vulnerability that are not ordinarily evident from performance on standardized language tests may be revealed through language sample analysis" (p 132). This statement is highly relevant for pragmatic skills that benefit from the observation of an interaction and cannot be easily assessed using a standardized test. To complement the *Pragmatics Checklist*, we recommend the use of a well-established coding protocol with a natural interaction between a child who is DHH and a familiar partner (eg, parent, sibling, teacher), *The Pragmatic Protocol*.<sup>20</sup> To select this coding protocol, we used the review of protocols from Zaidman-Zait and Most<sup>18</sup> used for coding natural interactions with DHH children. The *Pragmatic Protocol*<sup>20</sup> is used to code a range of behaviors that occur during a short interaction (10–15 minutes) between a DHH child and a familiar partner. A natural interaction between a child and a familiar partner is videorecorded for ~15 minutes. An observer (eg, interventionist, teacher, clinician) then watches the video and identifies whether the child exhibits the 30 appropriate or inappropriate pragmatic behaviors identified in the protocol, including verbal behaviors (eg, turn taking, contingency, repair), paralinguistic language features (eg, prosody, fluency), and nonverbal behaviors (eg, facial expressions, physical contact, eye gaze). In theory, this protocol can be used with any age group. There is no doubt that this coded interaction procedure is more time consuming for clinicians and teachers than the *Pragmatic Checklist*; however, it can yield valuable complementary data that will not emerge in a functional language checklist completed by a parent. The protocol should be applied by trained professionals who work with DHH children, given that assessors must

**TABLE 1** Pragmatic Assessment Tools Used With DHH Children and Adolescents

Pragmatic Assessment	Description	Age	Assessor	Advantages	Disadvantages	Reliability Validity Norms	Studies with DHH Children
Coded natural interactions							
The Pragmatic Protocol (Prutting and Kirchner <sup>20</sup> )	Videotaped natural spontaneous communication between child and a communication partner. Verbal (eg, turn taking, contingency), paralinguistic (eg, prosody, fluency), and nonverbal (eg, facial expressions, physical contact) pragmatic behaviors (30 in all) are observed and coded as inappropriate or appropriate	Can be used with any age group	Professionals trained to apply the coding protocol	Authentic interaction is objectively observed and rated. Comprehensive with 30 specific pragmatic skills	Professionals need practice and training to apply the protocol. Time consuming. Norms for typically developing children cannot be easily applied	R: yes; V: yes; N: no	Most et al <sup>4</sup> ; Rodda et al <sup>26</sup>
Communicative Intentions Range Checklist (Day <sup>27</sup> )	During an interaction (live or videotaped) in a preschool setting, teachers and child's communicative intentions are coded in 6 categories	3–5 y	Professionals trained to apply coding protocol	Codes both interactive partners. Authentic interaction in preschool setting	Aspects of pragmatics are limited to 6 categories. Time consuming	R: no; V: no; N: no	Beattie and Kysella <sup>28</sup> ; Duncan <sup>29</sup>
Checklists							
The Pragmatic Profile of Everyday Communication Skills (Dewart and Summers <sup>30</sup> )	Parents respond to questions about a range of pragmatic behaviors in these 4 areas: communicative functions, response to communication, interaction and conversation, and contextual variation	2 versions: 0–4 y and 5–10 y	Professional completes the checklist during an interview with a parent	Reflective assessment tool for parents. Interview process provide opportunity for clarification. Inclusive tool for children with or without pragmatic challenges	Time consuming. Lack of norms for comparisons. Provides descriptive rather than quantitative assessment	R: no; V: no; N: yes	Lichtig et al <sup>31</sup> ; Mouvet et al <sup>32</sup>
The Pragmatics Checklist (adapted from Simon <sup>21</sup> ) by Gobenis et al <sup>10</sup>	Parents to assess if children exhibit a range of communicative functions, including states needs, gives commands, personal interactional, wants explanations, shares knowledge, and uses imagination	2–7 y	Completed by a parent or caregiver	Focuses on purpose of pragmatic behaviors	Age range is limited. Some pragmatic skills are not included such as turn taking, nonverbal communication, contingency, etc.	R: no; V: yes; N: yes	Gobenis et al <sup>10</sup>
Children's Communication Checklist (Bishop <sup>33</sup> )	Groups of items from the checklist are combined to give a pragmatic composite score (eg, inappropriate initiation, coherence, stereotyped language, context, and rapport)	5–17 y	Completed by parent, caregiver or teacher	Well-designed checklist with reliability and validity data. Widely used by clinicians	Not solely focused on pragmatics. Screening tool rather than diagnostic. Identifies ASD and LI, may be less useful for DHH children. No version for children <5	R: yes; V: yes; N: yes	Zaidman-Zait and Dotan <sup>34</sup>
Coded structured interactions							
Referential Communication Tasks	Exchange of information between conversational partners separated by a visual barrier. Stimulus tasks such as selecting a shape from an array require the speaker to describe the target and listener to check understanding	3–21 y	Video recorded and analyzed by a professional	Provides insight into clarification strategies. Focuses on referential language	May not represent natural interaction. Assesses limited set of pragmatic skills. Research tool rather than practical clinical or educational assessment task	R: no; V: no; N: no	Ibertsson et al <sup>35</sup> ; Jeanes et al <sup>36</sup>

ASD, autism spectrum disorder; LI, language impairment; N, norms; R, reliability; V, validity.

make judgements about whether the observed behaviors are appropriate or inappropriate for the DHH child's stage of the development.<sup>4,20</sup> Training with the *Pragmatic Protocol* can be completed over several sessions whereby videotaped interactions are observed by the trainee and an experienced user of the protocol, developing their observation skills for each behavior and establishing interrater reliability.

The observed pragmatic behaviors in the *Pragmatic Protocol* can identify some of the key areas in which DHH children might exhibit challenges, such as contingency, repair, and eye gaze,<sup>24</sup> making this tool a good candidate for a more detailed assessment of pragmatic skills. It is a more time-consuming task, yet it can yield reliable results. The original method of scoring for this protocol is dichotic: appropriate or inappropriate for each behavior. If there is a single episode of an "inappropriate behavior" occurring during the 15-minute observation period, this behavior is scored as inappropriate (even if on other occasions this particular behavior was appropriate). We suggest calculating the percentage of appropriate occurrences of each behavior to make it a more sensitive measure. Once the behaviors have been scored, they can form the basis of a report for physicians, parents, early interventionists, clinicians, and teachers to identify pragmatic challenges. The *Pragmatics Checklist* and the *Pragmatic Protocol*, when used together, provide a much more comprehensive picture of a child's social communication skills than a checklist used in isolation.

## FUTURE DIRECTIONS

In this article, we bring together the expertise of a group of scholars with considerable experience in research, assessment, and intervention in the area of pragmatic skills in DHH

children. Recognizing the relationship between pragmatic language skills and social, academic, and behavioral functioning, and acknowledging that pragmatic skills are often delayed in DHH children, we advocate for routinely incorporating assessment of pragmatic language skills in developmental monitoring for all DHH children. Calling on the body of research in this field, along with two key review articles,<sup>18,19</sup> we have recommended using two complementary tools for the assessment of pragmatic skills in young DHH children.

Moreover, in this article, we endorse the call to action<sup>25</sup> for health care providers, allied health and education professionals serving DHH children, and the research community to attend to pragmatics in DHH children. We charge health care providers with monitoring the pragmatic development of all DHH children so that they may provide families with timely and appropriate referrals for additional evaluation as well as early intervention (0–36 months) or other specialized supports (>36 months). We charge allied health and education professionals with incorporating pragmatic assessment and intervention into their work with DHH children and with building parent and caregiver capacities to support their DHH children's pragmatic development through practical strategies. Finally, we charge the research community with incorporating measures of pragmatic development of DHH children in outcome and effectiveness studies, including a prioritization of longitudinal studies with an eye to short-, medium-, and long-term impacts of pragmatic delays and deficits. Future researchers should strive to refine our understanding of culturally relevant pragmatic skills which are most critical for social, behavioral, and academic functioning; this will assist us to further refine

tools which allow us to assess strengths and difficulties specific to DHH children. To be effective, these tools must efficiently capture interactions between DHH children and their varied partners. Although the two assessment tools recommended in this article have been used with DHH children, they require additional field trials and large-scale research studies to confirm the efficacy of the approach.

## CONCLUSIONS

Given the importance of this aspect of development in DHH children, the requirement for an accessible and efficient assessment protocol is urgent. The two-part process recommended in this article provides an excellent starting point for the selection of pragmatic assessment tools by experienced professionals who work with DHH children. Health care providers are frequently placed at the frontline for consulting with parents of DHH children and identifying which areas of development need assessment and intervention to make appropriate referrals to deafness related experts. The recommended pragmatic assessment approach can then be administered by professionals who work with DHH children. The use of the recommended approach will allow professionals to capture information that directly informs intervention and therefore enhances pragmatic skills in DHH children, setting them up for improved social, emotional, and academic outcomes.

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## ABBREVIATION

DHH: deaf and hard of hearing

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