

PEDIATRIC NURSE PRACTITIONERS' PERCEPTIONS OF PRACTICES  
AND NEEDS IN IDENTIFYING COMMUNICATION DISORDERS  
IN YOUNG CHILDREN

by

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## ABSTRACT

The purpose of this study was to examine how certified pediatric nurse practitioners (CPNP) identify children with possible speech and language problems, their perceived confidence in this process, and their perceptions of the adequacy of their pre-professional and professional education experiences preparing them to identify speech and language disorders. CPNPs serving pediatric patients under the age of 18 years were surveyed on their current practices, perceptions, and future recommendations for identifying speech and language disorders during the well-child visit. Survey responses were collected from CPNPs currently practicing within the Cook Children's Health Care System. Results from survey respondents showed inconsistencies in the current practices of CPNPs' identification of possible speech and language disorders in young children across clinical sites. CPNPs identified specific barriers to the identification process such as time, parents, and clinical population. CPNPs recommended further education and professional resources to support their screening process. Findings are discussed in terms of needs for further study and recommendations for enhancing interprofessional speech-language pathologists-nurse practitioner collaborations.

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## INTRODUCTION

This project examined certified pediatric nurse practitioners' (CPNP) perceptions of their ability to identify young children under age five years who have communication disorders (CD). Given the roles and responsibilities of CPNPs and speech-language pathologists (SLPs) in this identification process, the need for interprofessional support for and collaboration in early identification of speech and language problems in young children is evident. The following literature review outlines the role of an CPNP and SLP in the identification and referral processes and current practices in and barriers to identifying communication concerns in pediatric clinics. It concludes with specific research questions addressed in this current study.

## LITERATURE REVIEW

### **Speech-Language Pathologists' and Communication Disorders**

To best understand how SLPs and CPNPs support the identification of communication problems in young children, it is important to understand the scope of practice and roles of these two professions. Speech-language pathologists (SLPs) are professionals in the practice areas of communication, cognition, and swallowing across the lifespan (ASHA, 2021). SLPs are certified, holding the Certificate of Clinical Competence (CCC) to practice. This credential represents a level of excellence in the field, meeting academic and professional standards (ASHA, 2021). According to the American Speech-Language-Hearing Association (ASHA), the role of an SLP is to prevent, assess, diagnose, and treat speech, language, social communication, cognitive-communication, and swallowing disorders in children and adults. The practice of assessment, diagnosis, and management occur in a variety of settings such as private practice, schools, medical, and rehabilitation facilities.

SLPs play a vital role in the early intervention of children with communication disorders. To treat these youngsters, early identification of communication disorders is essential to early intervention (Nelson, 2006; ASHA 2021). SLPs are tasked with identifying children who are at risk for developmental delay or related problems at an early age (Nelson, 2006). These children are often identified through routine speech and language screening processes, which are critical to addressing concerns and improving children's development (Jullien, 2021). Once identified at risk for developmental delays, early intervention (EI) provides needed services and support to infants, toddlers, preschoolers, and their families (ASHA, 2021). Through EI services, communication outcomes are improved and cognitive, physical development, social, and adaptive development may be enhanced (ASHA, 2016).

### **Certified Pediatric Nurse Practitioners and Communication Disorders**

Certified pediatric nurse practitioners are frontline professionals who are essential to the identification of possible speech and language problems in children. CPNPs are Advanced Practice Registered Nurses (APRNs) who specialize in pediatric care and complete an accredited graduate-level educational program. CPNPs in primary care assess, screen, evaluate, and diagnose children from birth through young adulthood to provide the full spectrum of primary care health services (Pediatric Nursing Certification Board [PNCB], 2021). CPNPs work closely with patients and develop close relationships with children and their families. These connections often lead to enhanced trust and communication amongst the CPNPs and families. According to the American Academy of Nurse Practitioners (AANP), APRNs work in all arenas of the healthcare field including inpatient and outpatient settings (AANP, 2021). These settings include, but are not limited to, clinics, hospitals, emergency rooms, private practices, and nursing homes. CPNPs are licensed practitioners who have autonomy in the healthcare setting; this autonomy

allows the CPNP to diagnose and coordinate care for their patients and work collaboratively with physicians and other healthcare providers to develop treatment plans for children (AANP, 2021). APRNs can focus on a variety of subspecialties including geriatrics, mental health, women's health, family health, neonatology, and pediatrics. Pediatric nurse practitioners are specifically prepared to work with children and adolescents, and their training prepares them to become certified to practice as a Certified Pediatric Nurse Practitioner (CPNP) (PNCB, 2021). CPNPs have an essential role in identifying young children who may be at risk for delays or disorders in speech and language during well-child examinations. CPNPs' and APRNs' knowledge of screening techniques and referral and follow-up processes greatly impacts children's future developmental outcomes, including in the area of speech and language.

Through interactions with children at different times in the youngsters' lives, SLPs and CPNPs both play a critical role in the identification process of possible speech and language disorders. The CPNPs serve as a consistent care provider, seeing the child throughout multiple stages of development. SLPs, on the other hand, become involved during early screenings and once a developmental delay or disorder is noted. Typically, this involvement is through EI services which occur in a variety of settings such as pediatric clinics, preschools, and private practices. Since both professions play a role in early identification, it is important that pediatric SLPs and CPNPs understand each other's professional practices and together support early speech and language intervention in children.

Interprofessional collaboration (IPC) is one way to support each other's professions. IPC is the practice of approaching patient care from a team-based perspective. The World Health Organization (WHO) states that collaboration amongst disciplines results in improved health services and appropriate treatment for the patient (Dondorf, 2016). Dondorf (2016) describes the

relationship between CPNPs and SLPs with nurses as the eyes and ears for the SLP throughout the well child visits. This synergistic relationship allows nurses and SLPs to better understand the patients who they serve.

## **Identifying Communication Concerns in Pediatric Clinical Settings**

### ***Well-Child Examination***

The well-child examination is the primary means used by pediatricians and CPNPs to assess a child's development and identify any abnormalities, including communication problems (Turner, 2018). The patient history, which is part of the subjective data collection during the well-child examination, includes birth history, diet, sleep, dental care and hygiene, and other medical or surgical information regarding the family of the patient (Turner, 2018). The well-child exam also includes a full head-to-toe examination during the visit. Patient development growth intervals are compared to average growth based on sex, chronological age, and gestational age. The American Academy of Pediatrics (AAP) has recommended a specific timeline for conducting well-child visits (Turner, 2018). This timeline is the standard used in pediatric clinics and recommends checking developmental competence and progress at each well-child visit, with more formal developmental screenings conducted at the 9-, 10-, and 30-month appointments (Turner, 2018). The AAP also recommends that children be screened for autism at the 18- and 24-month well-child visits. The well-child appointments facilitate communication between the parents, pediatrician, and CPNP, and allow parents an opportunity to discuss their concerns and gain more insight on the health of their child (Turner, 2018).

### ***Pediatric Developmental Screening Tools***

Through their role in well-child examinations, CPNPs complete screenings and assist in determining if children are meeting developmental milestones. Early speech and language

milestones such as responding to directions of sounds, saying as many as 10 words, understanding simple instructions, and recognizing names are evident at the 18-month baby well visit (Mayo, 2021; Thomas, 2016). These developmental milestones are a foundation for the child's future speech and language acquisition. The developmental screening for each child during the well-child examination plays a large role in identifying possible concerns affecting the child's future outcomes. These screening tools vary based on the age of the child (Sexton, 2015; Thomas, 2016). Examples of such tools can be found in Table 1. Some of the available screeners for CPNPs include the Parents' Evaluation of Developmental Status (PEDS) (Nelson 2006; Thomas 2016); the PEDS-Developmental Milestones (PEDS-DM) (Thomas, 2016); the Modified Checklist for Autism in Toddlers (M-CHAT) (Thomas, 2016); Ages and Stages Questionnaire (Sexton, 2015; Thomas, 2016; Wallace, 2015); the Language Development Survey (Nelson, 2006; Sexton, 2015); and MacArthur-Bates Communicative Development Inventory (Sexton, 2015; Thomas, 2016). Well-child visit screening procedures for speech and language development are performed between the ages of 2 to 3 years, when speech and language growth is significant (Sansavini, 2021).

**Table 1**

*Screening Instruments Commonly Used by CPNPs to Screen Developmental Domains of Young Children*

Instrument	Age	Developmental Domains
Brief Early Childhood Screening Assessment (Lipkin, 2020)	1.5-5 years	Screening tool developed to facilitate primary care pediatrician's identification of young children who need further assessment of their emotional and social development
Communication and Symbolic Behavior Scales Developmental Profile: Infant Toddler Checklist	6-24 months	Communication and symbolic abilities up to the 24-mo level

(Lipkin, 2020)		
Early Language Milestone Scale (Walker, 1989)	0-3 years	Language and development of children
First Year Inventory (Lipkin, 2020)	12 months	Parent questionnaire: population screening tool to identify 12-mo-old infants
Fluharty Preschool Speech and Language Screening Test (Eisenberg, 2019)	3-5 years old	Expressive and receptive language
Language Development Survey (Rescorla, 2001)	0-3 years	Expressive language
MacArthur-Bates Communicative Development Inventory (CDI) (CDI, 2019); (Heilmann, 2005)	8-37 months	Early language skills
Modified Checklist for Autism in Toddlers, Revised with Follow-up (Thomas, 2016)	16-30 months	Assess risk for autism spectrum disorders (ASD)
Parent Evaluation of Developmental Status (PEDS) (PEDStest, 2018)	0-8 years	Language, motor, self-help, early academic skills, behavior, and social/emotional health
Parents' Evaluation of Developmental Status- Developmental Milestones (PEDS-DM) (PEDStest, 2018)	7-11 years old	Fine and gross motor, expressive language, receptive language, self-help, social-emotional, reading, math
PSC-17b (Lipkin, 2020)	4-16 years	General psychosocial screening and functional assessment in the domains of attention, externalizing, and internalizing symptoms
PSC-35b (Lipkin, 2020)	Less than or equal to 11 years	Pictorial version available with English, Spanish, Filipino subtitles
Rapid Interactive Screening Test for Autism in Toddlers 13 (Lipkin, 2020)	12-36 months	Clinician observation: administered by trained examiner

Screening Kit of Language Development (SKOLD) (Bliss, 1984)	2.5-4 years old	Expressive and receptive language
Screening Tool for Autism in Toddlers and Young Children 24-35 mo (Lipkin, 2020)	24-35 months, < 24 months	Clinician-directed, interactive and observation measure. Requires training of clinician for standardized administration. Not for population screening
Social Communication Questionnaire (Lipkin, 2020)	4+ years	Parent-completed questionnaire. Designed to identify children at risk for ASD from the general population
SWYC: milestones (Lipkin, 2020)	1-65 months	12 age-specific forms, keyed to pediatric periodicity schedule. Includes cognitive, language, and motor skills
Test for Examining Expressive Morphology (TEEM) (Shiple, 1983)	3-7 years old	Expressive morpheme development
The Ages and Stages Questionnaires (ASQ) (Paul, 2019)	1 month-5.5 years	Communication, gross motor skills, fine motor skills, problem solving, personal-social skills

### Barriers to the Early Identification Process

Identifying the optimal age to screen children and the most appropriate using easily administered screening tools are often challenging for pediatric providers. Nelson (2006) and Wallace (2015) note that although there are many available standardized screening tools, they often are not being used in the primary care setting to identify children with problems. Additional reports suggest a lack of uniformity in screening procedures throughout pediatric practice settings (Thomas, 2016; Nelson 2006). In addition, many screenings rely heavily on parent questionnaires such as the PEDS-DM to inform the CPNP about the developmental milestones of the child. Parent reports have been identified as a strong factor that influences referrals for young children in examinations (Winters, 2020). However, not all pediatric health

care providers rely on parent reports and perceive these parent reports as a stand-alone screener do not prompt identification. Parent reports are often partnered with other screening procedures or observed behaviors by the pediatrician. Parent questionnaires were designed for diagnostic purposes and have not been thoroughly evaluated in their effectiveness for screening (Sansavini, 2021).

Further, although a plethora of standardized screening tools are available (Nelson, 2006; Wallace 2015), current studies suggest that CPNPs may not be using these screening tools consistently and correctly (Sansavini, 2021). Sansavini (2021) found that 43% of parents reported that their child (ages 10-35 months) did not receive developmental assessment, including consideration of speech and language developmental milestones. In addition, 30% of parents in this study stated that their physician did not discuss their child's communication at all during the well-child examination (Sansavini, 2021).

### RESEARCH QUESTIONS

The following research questions and hypotheses were addressed:

1. What are the CPNPs current practices in identifying speech and language problems in children under the age of five years?
2. What are CPNPs' perceptions of their current process of identifying possible speech and language disorders?
3. What is the relationship between perceived confidence of CPNP's and nursing demographic characteristics including: years of experience, pre-professional education (i.e., undergraduate and graduate education), professional education, practice setting, and age?

*Hypothesis:* CPNPs who are older, with more years of experience, and who have reported more professional educational opportunities will have more confidence in their understanding of speech and language disorders in children than CPNPs who are younger, with fewer years of experience, and reported fewer professional educational opportunities.

4. How do CPNPs perceive the adequacy of their pre-professional and professional education and resources (e.g., academic journal, webinar) in preparing them to identify possible speech and language disorders in young children?

*Hypothesis 1:* CPNPs perceive less than adequate educational preparation in identifying speech and language disorders in their pre-professional education.

*Hypothesis 2:* CPNPs perceive less than adequate resources to support their identification of speech and language disorders

5. What do CPNPs perceive as barriers to identifying possible speech and language problems in young children?
6. What do CPNPs recommend to improve their identification of possible speech and language problems in young children?

## METHODOLOGY

### **Participants**

The initial study recruitment plan was to contact potential participants through the Greater Texas National Association of Pediatric Nurse Practitioners (NAPNAP). Once learning that NAPNAP had a moratorium on survey distribution, CPNP recruitment was completed through Cook Children's Health Care System. Participant criteria included 1) holding current

CPNP certification, 2) over 18 years of age, 3) currently work for Cook Children's Health Care System.

## **Procedures**

Following expedited approval of Institutional Review Boards (TCU IRB #2022-34 and Cook Children's Healthcare System IRB #2022-029), a Qualtrics survey link (Appendix B) was initially emailed to CPNPs currently practicing within the Cook Children's Health Care System. The first page of the survey was the informed consent (Appendix A). The survey included three sections that collected both quantitative and qualitative information, including 1) personal and professional demographic information; 2) current practices in identifying communication disorders; and 3) perceived barriers to and recommendations for identifying disorders in young children. A second reminder email was sent to the nurses a week after the initial communication. Responses were analyzed using SPSS v. 27 (IBM Corp., 2020) and included descriptive statistics and correlational analyses.

## **RESULTS**

### **Survey Respondents**

Respondents who completed the survey were predominantly white, not Hispanic or Latino women, aged between 28-63 years ( $M = 42.7$ ;  $SD = 9.8$ ;  $N = 35$ ) (see Table 2). Respondents reported either a master's degree or a PhD as the highest degree completed and held certifications in pediatric primary care and pediatric acute care and as a family nurse practitioner. All respondents reported serving patients in the range of 0-18 years of age and primarily worked in hospitals (50%), pediatric offices (23.8%), and urgent or convenient care clinic (20.59%). Other employment settings reported included pediatric specialty office/inpatient and hospital

clinic, specialty care. The CPNPs reported practicing as a nurse from 7 to 41 years ( $M = 19.7$ ;  $SD = 9.1$ ) and as a CPNP from 1 – 30 years ( $M = 11.4$ ;  $SD = 8.5$ )

**Table 2**  
*Demographics of Survey Respondents*

Characteristic		N	%
Gender	Female	34	91.9
	Males	1	2.7
Race	White	33	89.2
	Asian	1	2.7
	Other	1	2.7
Ethnicity	Not Hispanic/Latino	34	91.9
	Hispanic/Latino	1	2.7
Practice Setting	Pediatric Office	8	21.6
	Hospital	16	43.2
	Family Practice Clinic	2	5.4
	Other	7	18.9
Highest Education Level	Master's Degree	22	88
	PhD	3	12
		M	Range (SD)
Age		42.66	2.66 (28-63)
Years of Practice as RN		18.33	18.83 (6-41;8.95)
Years of Practice as CPNP		10.77	10.77 (1-30;8.32)

### Current Practices

Current practices for identifying possible communication disorders in children were identified through specific survey questions (see Table 3). Although survey respondents reported they screen children for communication disorders at every age group provided (i.e., 0 to 72

months), 43.2% of the respondents reported that they do not screen. The most frequently reported time periods for screening for speech and language disorders was between 13-24 months (43.2%) and 25-36 months (45.9%). CPNPs reported that they spend an average of 19.7 minutes with a child during well-child visits, with visit times ranging from 0 to 48 minutes. Professional judgement was reported by 59.5% of the CPNPs as the main determinant to whether they screened a child for speech and language problems. Only 16.2% of the nurses reported following clinical site protocols or using screening schedules to decide whether or not to screen. When asked about the frequency of using different procedures to identify speech and language problems, observing and listening to the child was the most frequent procedure used, with CPNPs reporting use of this practice an average of 85.7% of the time ( $SD = 22.3$ ;  $Mdn = 100$ ; Range = 30 – 100). Talking with the parents also was a frequent practice ( $M = 79.1\%$ ;  $Mdn = 85$ ;  $SD = 25.5$ ; Range = 0 – 100). Use of a well child screening tool to identify communication problems was less frequent ( $M = 28.5\%$ ;  $Mdn = 0$ ;  $SD = 36.3$ ; Range = 0 – 100), with 37.8% of the respondents reporting that they never used well-child screening tools. Of the screening tools listed, the Modified Checklist for Autism in Toddlers (Kleinman, 2008; Thomas, 2016), The Ages and Stages Questionnaires (Sexton, 2015; Thomas, 2016; Brookes, 2019), Parent Evaluation of Development Status (Thomas, 2016) and Bright Futures Materials and Tools-AAP (Bright Futures Materials & Tools, 2022) were chosen as most often used in a well-child visit for children ages 0-5 years.

**Table 3**

*What are the CPNPs Current Practices in Identifying Speech and Language Problems in Children under the Age of Five Years?*

Characteristic		N	%
Age of Patients Served	0-5 years old	34	91.9
	6-18 years old	34	91.9
	Over 18 years old	4	10.8
Time in well-child visit	0-20 minutes	16	43.2
	21-45 minutes	7	18.9
	Over 46 minutes	1	2.7
Screening decision	Follow site protocol	6	16.2
	Follow screening schedule	6	16.2
		22	59.5
	Use my professional judgement	5	13.5
	Decision based on other		
Screening age of patient	0-12 months	12	32.4
	13-24 months	16	43.2
	25-36 months	17	45.9
	37-48 months	14	37.8
	49-60 months	14	37.8
	61-72 months	10	27
	I don't screen	11	29.7
Frequency of observing/listening to child	100% of the time	16	43.2
	96%	1	2.7
	95%	1	2.7
	80%	2	5.4
	75%	1	2.7
	70%	1	2.7
	54%	1	2.7
	50%	1	2.7
	45%	1	2.7
	41%	1	2.7
	30%	1	2.7
Frequency of talking to parents	100% of the time	12	32.4
	85%	2	5.4
	84%	1	2.7

	80%	3	8.1
	75%	1	2.7
	60%	2	5.4
	55%	1	2.7
	50%	3	8.1
	42%	1	2.7
	0%	1	2.7
Frequency of using a screening tool	100% of the time	2	5.4
	85%	1	2.7
	81%	1	2.7
	75%	2	5.4
	50%	4	10.8
	25%	1	2.7
	20%	1	2.7
	9%	1	2.7
	0%	14	37.8

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## Perceived Competency in Identifying Speech and Language Problems

### *Adequacy of Time, Resources, and Parent Report*

To determine the CPNPs' confidence in and the adequacy of their knowledge, time to identify, and SLP connections, a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree) was used to rate a series of statements. Half of CPNP respondents reported a four or less on sufficient time to screen for speech and language during a well-child examination with a mean rating of 4.4 ( $SD = 1.9$ ) (see Table 4). Most CPNP respondents (80%) reported a good understanding of the behaviors that may suggest a speech and/or language disorder ( $M = 5.38$ ;  $SD = 1.61$ ) (see Table 4). Only 20% of CPNPs stated a less than adequate understanding of speech and language development. Most CPNPs (71%) reported they know an SLP as a resource to consult with regarding speech and language development issues ( $M = 4.57$ ;  $SD = 2.09$ ). However, nearly half (47%) of the CPNPs rated the adequacy of having a current list of SLPs to refer patients as 4 or lower ( $M = 4.29$ ;  $SD = 2.13$ ).

**Table 4**

*What are CPNPs' Perceptions of Their Current Process of Identifying Possible Speech and Language Disorders?*

Perceptions (1= strongly disagree; 7- strongly agree)		N	%
Sufficient time to screen for speech and language (SL)	1-3	6	30
	4	4	20
	5-7	10	50
Good understanding of SL behaviors	1-3	2	10
	4	2	10
	5-7	17	80
Know an SLP to consult	1-3	5	23
	4	1	5
	5-7	15	71
Current list of SLPs to refer to	1-3	7	33
	4	3	14
	5-7	11	52

### *Adequacy of Training in Identifying Speech and Language Disorders*

CPNPs' perceptions of the adequacy of preparation in identifying possible speech and language problems in young children were explored in the survey using a 7-point scale (1 = not at all adequate; 7 = extremely adequate). Nearly half (i.e., 45.9%) of respondents stated they received training in identifying speech and language disorders in their advanced practice academic coursework, with 10.8% reportedly receiving training as in their undergraduate programs (see Table 5).

**Table 5**  
*Training in Identifying Speech and Language Disorders*

Training Responses		N	%
Received training in identifying possible speech and language disorders	BS Coursework	4	10.8
	Advanced Practice coursework	17	45.9
	Post-Grad Coursework	2	5.4
	Post-Graduate Continuing Education	5	13.5
	No Training	2	5.4
	Other	3	8.1

However, CPNPs' ratings of their adequacy of their preparation in these undergraduate and graduate educational courses averaged 3.76 ( $SD = 1.79$ ), with 43% and 33% of CPNP respondents reporting less than adequate preparation in their undergraduate and graduate training, respectively. Their ratings of post-graduate educational experiences and currently available resources averaged 4.62 ( $SD = 1.56$ ) and 4.85 ( $SD = 1.49$ ), respectively with 62% of the nurses rating the adequacy of these experiences and resource as adequate (i.e., ratings of 5-7) (see Table 6).

**Table 6**  
*How do CPNPs Perceive the Adequacy of Their Pre-Professional and Professional Education and Resources in Preparing Them to Identify Possible Speech and Language Disorders in Young Children?*

Education (1= not at all adequate; 7= extremely adequate)		N	%
Adequacy of undergraduate/graduate education	1-3	9	43
	4	4	19
	5-7	8	38
Adequacy of post-graduate educational experiences	1-3	7	33
	4	1	5
	5-7	13	62
Adequacy of currently available resources	1-3	3	14
	4	4	19
	5-7	13	62

### Perceived Confidence and CPNP Background Relationships

Spearman's rank correlations were computed to assess the relationship between confidence scores and age, years of practice, practice setting, and the adequacy of undergraduate and graduate preparation, post-graduate education. Strong positive correlations were only found between CPNP confidence and adequacy of post-graduate education ( $r_2 (19) = .64 (p < .002)$ ) and adequacy of currently available resources ( $r_2 (18) = .68 (p < .001)$ ). No other statistically significant correlations between confidence and these variables were observed.

### Content Analyses of Barriers and Recommendations

Content analyses were completed to examine CPNPs' responses to questions related to barriers to and recommendations for improving the identification of possible speech and language disorders in young children. When examining barriers, five major themes were identified, including: time, inability to obtain a representative sample, parents, nature of the clinical population served, and expectations of the practice setting (See Table 7).

**Table 7**

*What do CPNPs Perceive as Barriers to Identifying Possible Speech and Language Problems in Young Children?*

Themes	Exemplifying CPNP responses
Time	<ul style="list-style-type: none"> <li>• Time</li> <li>• We see the child for limited time in clinic to get sufficient data</li> <li>• Time, we have 15 minutes per child including arrival time and rooming time; actual time with provider is limited</li> <li>• Time spent with family during visits</li> <li>• Time</li> </ul>
Inability to obtain a representative sample	<ul style="list-style-type: none"> <li>• Different behaviors during a visit compared to when in a home environment</li> <li>• My barrier is there crying, they are scared, they do want to speak to me and there parents talk for them</li> <li>• Patient not cooperative</li> </ul>

Parent	<ul style="list-style-type: none"> <li>• We see the child for limited time in clinic to get sufficient data</li> <li>• Parent denial</li> <li>• I do ask questions and take my parents seriously</li> <li>• Parent hesitation for further evaluation</li> <li>• Getting a good history from caregiver</li> <li>• Parental acceptance and compliance</li> <li>• Parents unwillingness to communicate or their lack of understanding importance of speech/language</li> <li>• Parents with lack of knowledge regarding speech and language development</li> </ul>
Nature of clinical population served	<ul style="list-style-type: none"> <li>• Parental resistance</li> <li>• My children are ill</li> <li>• I currently work in acute care</li> <li>• The focus of my current practice which is survivorship</li> </ul>
Expectations of the setting	<ul style="list-style-type: none"> <li>• I personally work in an emergency department</li> <li>• We typically do not screen hospitalized ill children</li> <li>• I do not do well visit</li> <li>• Urgent care setting, only identify if it is very obvious-such as autism spectrum</li> <li>• Urgent care does not (and cannot) provide longevity care</li> </ul>

Recommendations for improvement centered around five major themes including:

uncertainty, accessibility and insurance, education, evaluation process, and available professional resources (see Table 8).

**Table 8**

*What do CPNPs Recommend to Improve Their Identification of Possible Speech and Language Problems in Young Children?*

Themes	Exemplifying CPNP responses
Uncertainty	<ul style="list-style-type: none"> <li>• Unsure</li> </ul>
Accessibility and insurance	<ul style="list-style-type: none"> <li>• Easier access</li> <li>• Insurance coverage for formal evaluations</li> </ul>
Education	<ul style="list-style-type: none"> <li>• Offer more pre-licensure educational training (UG and Graduate education)</li> <li>• Education</li> <li>• Possible group classes for parents</li> <li>• Improved explanation of significance</li> </ul>

Evaluation process	<ul style="list-style-type: none"> <li>• Know red flags and specific questions about speech/lang to ask caregivers to know if ST is needed</li> <li>• I can review patient's previous medical history</li> <li>• I do utilize play therapy if the child to speak with me</li> <li>• Identify early</li> <li>• Epic pop up</li> <li>• More time with patients and families</li> <li>• Providing parents with more information to help them identify issues early</li> <li>• Use a self-reporting tool with parents at each visit</li> <li>• Supporting parents who cannot read, results with inaccurate reporting</li> <li>• Screening tool parents can complete prior to appointment</li> <li>• Screening tools and discussions regarding importance of early intervention</li> </ul>
Available professional resources	<ul style="list-style-type: none"> <li>• We do have a child life specialist</li> <li>• More evaluation in schools by SLP</li> </ul>

### DISCUSSION

Survey results were consistent with the previous reports reviewed of CPNPs' practices when identifying children with possible speech and language problems. As seen in other studies, CPNPs' reported practices appeared to be inconsistent both within individual practitioners and across practitioners in various settings. Previous studies showed uncertainty in the consistent practice of screening for possible speech and language problems across settings, specifically showing inconsistencies in primary care practice (Nelson, 2006). Respondents from the survey practiced in settings such as the hospital setting, critical care, and primary care. Inconsistencies in reports of completing the screening process occurred within individual settings and across the settings. The screening and observational practices of CPNPs appeared to be related to the practice setting, with, as expected, less screening in critical care sites (e.g., urgent care).

An additional finding of the current practices used by CPNPs to screen for possible speech and language problems in children was the use of different screening instruments. Based

on previous studies, respondents were given a list of used screening tools often used in the well-child visit. Consistent with previous studies such as Nelson, there was no “gold standard” of screening instrument chosen (Nelson, 2006). A multitude of screening tests are available for CPNPs to use. CPNPs reported that they choose to screen children for possible speech and language problems based on their professional judgement. This coincides with reports in which professionals are encouraged to familiarize themselves with a multitude of screening tests and make the professional decision which test best fits the needs of the population and their personal knowledge of the procedure (Lipkin et al., 2020).

In previous studies, aspects of screening such as screening age, instrument to use, and method used proved to be inadequately studied (Nelson, 2006). The AAP has created guidelines for screening and recommendations for infants and young children (Turner 2018). In these guidelines, the AAP recommends checking developmental competence and progress in the well-child visit through formal screenings at 9-, 10-, and 30-month appointments. Results from this study showed that CPNPs screened across these milestones (Turner, 2018). The majority of CPNPs selected the optimal screening age to identify possible speech and language disorders in children between 13-36 months, However, CPNP’s responses did not show specific age in which they believed was optimal for screening, as seen in studies completed previously (Wallace et al., 2015).

Parent reports have previously been a factor in gaining evaluation and assessment of children with possible speech and language disorder. Studies in referral practices have previously stated that pediatricians rely heavily on parent reports in the identification process, but that these parent reports alone are not enough to prompt accurate referrals (Winters, 2020). Nearly 80% of CPNP respondents stated that they use a parent report to decide whether to screen. However,

CPNP responses in this study revealed a lack of confidence in the ability of parents to accurately report their child's development of speech and language. This prompts discussion of the screening tools in which pediatricians in healthcare use, and if tools relying on parent report alone are adequate in gaining an understanding of the child's development.

CPNPs rated the adequacy of pre-professional and professional education and professional resources. The majority of CPNPs stated their undergraduate and graduate education of speech and language disorders was not adequate. Additionally, CPNPs reported inconsistencies in their currently available resources regarding speech and language disorders. These findings of CPNPs' perceived educational adequacy were consistent with previous reports of limited opportunities for education in speech and language disorders in children.

Upon completion of Spearman's rank order correlations, it was found that CPNPs' perceived confidence in the identification process was related to their perceptions of the adequacy of post-graduate and currently available resources. This was consistent with findings in literature that professional educational opportunities would increase confidence in understanding of speech and language disorders (Thomas, 2016). Other variables such as age, years of practice, practice setting, adequacy of undergraduate and graduate preparation were not related to their reported confidence. This was inconsistent to previous discussion in which it was expected that age and years of practice would increase confidence of CPNPs in their understanding of speech and language disorders in children.

Previous studies discussed barriers in identification of speech and language disorders in children. In the United States, developmental delays such as speech and language are under-identified due to a variety of reported reasons (Thomas, 2016). In this study, research questions addressed the barriers and recommendations of CPNPs in the screening process to identify these

developmental delays. CPNP participants in this study identified specific barriers to the screening process related to time, ability to obtain a representative sample, parents, clinical population, and expectations of the setting. Parents are important reporters of a child's developmental milestones. The lack of understanding of these developmental milestones by may cause parents to inaccurately report the child's speech and language development. Due to the limited time, many healthcare professionals have reported struggles in the implementation of suggested screenings and explaining the possible speech and language concerns to parents to ensure they follow through (Thomas, 2016). About 30% of CPNP respondents stated that they do not have sufficient time to screen for speech and language disorders in children, and 50% stated that they believe they have enough time to screen for possible speech and language disorders. This inconsistency in the reported barrier may be a result of the setting and clinical population served. CPNPs serve patients in a variety of settings, which may have different screening tools or methods that allow them to screen for possible speech and language disorders in children.

To overcome these barriers in identification, CPNPs recommended more accessibility and insurance for evaluations, further education, explanation of the screening process, and professional resources. Studies of screening processes have shown there is a need for training of pediatric healthcare professionals on the benefits of proper referrals for their clients. This referral process begins with implementing consistent screenings in practice (Thomas, 2016). Families that have children with identified possible speech and language problems may not seek further formal evaluation as a result of lack of insurance coverage (Nelson, 2006). The coverage of these services by insurance companies in the referral process may motivate caregivers to seek further evaluation for early identification services. Educational opportunities for CPNPs as well as caregivers may lead to more consistent parent reports and proper referrals (Nelson, 2006). Lack

of education in parents of the family history and developmental milestones can deter referrals for formal evaluations by SLPs. By providing educational resources about speech and language disorders to families, there may be better screening outcomes. Additional educational resources for CPNPs about possible speech and language problems detected in screenings are important to differentiate false positive from true negatives in results for referrals (Thomas, 2016).

## CONCLUSIONS

### **Implications**

Survey responses from CPNP's were collected and analyzed using both descriptive and inferential analysis. Results indicated a need for further collaboration between SLPs and CPNPs. As inferred from the literature review, inconsistencies were noted in the screening process across clinical sites in which CPNPs serve clients. Future studies may be necessary to locate the root of these inconsistencies. These findings support the need for SLPs to partner with CPNPs on their screening processes and how SLPs can best support the identification of children with possible speech and language disorders. Through the facilitation of these conversations, SLPs can better understand their role in supporting CPNPs through interprofessional communication and collaboration. Other implications include those directly related to CPNP basic educational preparation and training.

### **Study Limitation**

A limitation of the study was the limited number of respondents from CPNPs in primary care facilities. This may have been a result of the group of survey respondents which participated, as they were from various settings in the Cook Children's Healthcare System.

### **Future Directions**

Future considerations for the study should be mindful to solicit responses specifically from more practitioners in primary care settings, as they reported more routine screenings. A qualitative study may be completed to gain further understanding of how CPNPs' processes can be enhanced, including perceptions for partnering with SLPs. Future studies of this interprofessional collaboration between SLPs and CPNPs to promote accurate and prompt referrals of children with possible speech and language disorders may include an intervention study of CPNPs' referral process. Additional interprofessional research may continue to provide meaningful data in to develop bidirectional partnerships between CPNPs and SLPs for early identification.

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## Appendix A

### Informed Consent to Participate in Research

Title of Research: Pediatric Nurse Practitioners' Perceptions of Practices and Needs in Identifying Communication Disorders in Young Children

Principal Investigators: Jennifer Watson, Ph.D. and Lisa Bashore, Ph.D.

[Co-investigators:] Sarah Woodford, Anastasia Helms

Overview: You are invited to participate in a research study. To participate, you must be a current paying member of the Greater Texas Chapter of the National Association of Pediatric Nurses and Advanced Practitioners (NAPNAP).

Study Details: This study is being conducted via the completion of an online Qualtrics survey and is supported/sponsored by Texas Christian University (TCU). The purpose of this study is to examine how Certified Pediatric Nurse Practitioners (CPNP) identify children with possible speech and language problems, their perceived confidence in this process, and their perceptions of their pre-professional and professional education experiences in identifying speech and language disorders. The survey will ask you about your perceptions of current practices and the needs in supporting the identification of possible speech and language problems in children under the age of five years.

Participants: You are being asked to take part because you are a current member of Greater Texas Chapter of the National Association of Pediatric Nurses and Advanced Practitioners (NAPNAP). We want to gain insight on the current practices and needs of those serving pediatric patients under the age of five years.

Voluntary Participation: Your participation is voluntary. You do not have to participate and may stop your participation (withdraw from the study) by quitting the survey at any time without penalty. You are free to not answer any question. Whether or not you complete the survey will not be shared with anyone.

Confidentiality: This survey is anonymous, and your responses to questions will remain confidential. If you would like to have a chance to win one of eight \$25 Amazon gift cards, you may provide your email address at the end of the survey. This is completely optional and your email address will not be shared with anyone nor will it be linked to your responses to the survey. Your email address will be destroyed once the gift card winners have been identified. No information identifying you as a respondent will be collected or retained unless you choose to have a chance to win an Amazon gift card.

Every effort will be made to limit the use and disclosure of any personal information, including

research study records, to people who have a need to review this information. We cannot promise complete secrecy. Your records may be reviewed by authorized University personnel or other individuals who will be bound by the same provisions of confidentiality. We will not keep your research data to use for future research or other purposes. Data will be destroyed 3 years after the completion of the project in May 2025.

Even if we publish the findings from this study, we will keep your information private and confidential. Anyone with authority to look at your records must keep them confidential.

What is the purpose of the research?

The purpose of this study is to examine how CPNPs identify children with possible speech and language problems, their perceived confidence in this process, and their perceptions of their pre-professional and professional education experiences in identification of speech and language disorders.

What is my involvement for participating in this study?

You will complete a survey that asks you about your perceptions of current practices and future needs when identifying children with possible speech and language problems under the age of five years. You will provide some background information about yourself (e.g., age, gender, where you practice, years of practice, certifications you hold). You will be asked to rate current processes used to identify speech and language problems and your agreement with statements based on current processes (e.g., screening tools used, age of screening, time spent in well-child exam). Additionally, you will be asked to rate your agreement with statements on factors in identification of possible speech and language problems in children and perceptions of your individual preparation for referral practices.

We expect that it will take you about 5-10 minutes to complete the survey.

Are there any alternatives and can I withdraw?

You do not have to participate in this research study. There are no alternatives to participating in this study.

You should only take part in this study if you want to volunteer. You should not feel that there is any pressure to take part in the study. You are free to participate in this research or withdraw at any time by quitting the survey and/or not answering questions. There is no penalty for not starting or not completing the survey.

What are the risks for participating in this study and how will they be minimized?

As with any survey, you may experience a variety of emotions while completing the survey due to personal reflection. You are free to not answer any question. You also may withdraw without penalty from the study by quitting the survey at any time.

What are the benefits of participating in this study?

You may benefit from this study because it will allow you to reflect on your current practices for identifying possible speech and language problems in young children. Also, your responses will provide ideas for possibly improving referrals to improve the quality of care.

Will I be compensated for participating in this study?

You have the opportunity at the end of the survey to voluntarily provide your email address for a chance to win one of eight \$25 Amazon gift cards. If you decide you want a chance to win and you provide your email address, your address 1) will not be shared with anyone who is not an investigator, 2) will not be linked to your responses to the survey, and 3) will be destroyed from all data files once the winners have been identified.

What are my costs to participate in the study?

There will be no costs to you as a result of participating in this study.

How will my confidentiality be protected?

Every effort will be made to limit the use and disclosure of any personal information, including research study records, to people who have a need to review this information. We cannot promise complete secrecy. Your records may be reviewed by authorized University personnel or other individuals who will be bound by the same provisions of confidentiality. You have the opportunity at the end of the survey to voluntarily provide your email address for a chance to win one of eight \$25 Amazon gift cards. If you decide you want a chance to win and you provide your email address, your address 1) will not be shared with anyone who is not an investigator, 2) will not be linked to your responses to the survey, and 3) will be destroyed from all data files once the winners have been identified.

What will happen to the information collected about me after the study is over?

We will not keep your research data to use for future research or other purposes. Data will be destroyed 3 years after the completion of the project in May 2025.

Who should I contact if I have questions regarding the study or concerns regarding my rights as study participant?

If you have any questions about this study or have a research-related problem, you may contact Sarah Woodford (s.woodford@tcu.edu), Anastasia Helms (anastasia.helms@tcu.edu), Dr. Jennifer Watson (j.watson@tcu.edu), or Dr. Lisa Bashore (lisa.bashore@tcu.edu). If you have any questions about your rights or are not satisfied with any part of the survey you may anonymously call the Office of Research at (817) 257-7104. You may also contact Dr. Dru

Riddle, Chair, TCU Institutional Review Board, (817) 257-6811, [d.riddle@tcu.edu](mailto:d.riddle@tcu.edu); or Dr. Floyd Wormley, Associate Provost of Research, [research@tcu.edu](mailto:research@tcu.edu).

## Appendix B

### Survey

By clicking the arrow at the bottom of the screen to move on to the next page, you are indicating that you have read and understood the consent form and agree to participate in the research study. Thank you for your time and participation.

Q1 What is your age in years?

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Q2 What is your gender?

- Woman
- Man
- Transgender
- Non-binary/non-conforming
- Prefer not to respond

---

Q3 What is your race?

- American Indian or Alaskan Native
  - Asian
  - Black or African American
  - Native Hawaiian or Other Pacific Islander
  - White
  - Other
- 

Q4 What is your ethnicity?

- Hispanic or Latino
  - Not Hispanic or Latino
- 

Q5 In what setting do you primarily practice? Select all that apply.

- Pediatric office
  - Hospital
  - Family practice clinic
  - School-based health center
  - Urgent or convenient care clinic
  - Other \_\_\_\_\_
-

Q6 How many years have you practiced as a nurse?

---

Q7 Select all the nurse practitioner certifications that you currently hold

- Pediatric primary care
- Pediatric acute care
- Family nurse practitioner
- Pediatric primary care mental health specialist
- None

Q8 How many years have you been in practice as a CPNP?

---

Q9 What age patient do you primarily serve? Select all that apply.

- Ages 0-5 years
- Ages 6-18 years
- Over 18 years

Q10 What is your highest level of education?

- Master's Degree
- Doctor of Nursing Practice (DNP)
- PhD

Q11 In what state do you currently practice?

Select

▼ Alabama ... Wyoming

Q12 On average, how much time (in minutes) do you spend with each patient during a well-child visit?

0 6 12 18 24 30 36 42 48 54 60

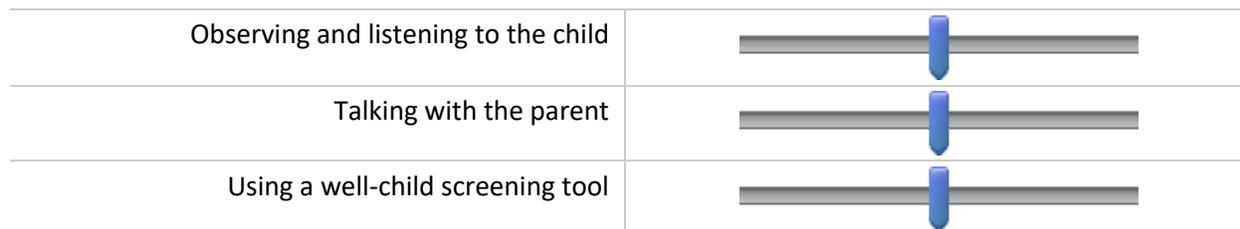


Q13 How frequently do you use the following procedures to identify possible speech and language problems?

0% of the time = Never; 100% of the time = Every time

Percentage of Time Used

0 100



Q14 At what age do you screen pediatric patients for possible speech-language disorders?  
Select all that apply.

- 0-12 months
  - 13-24 months
  - 25-36 months
  - 37-48 months
  - 49-60 months
  - 61-72 months
  - I don't screen
- 

Q15 How do you decide whether or not to screen for possible speech and language problems in a child? Select all that apply.

- Follow my clinical site protocol
  - Screening schedule
  - Professional judgement
  - Other \_\_\_\_\_
- 

Q16 With what percentage of children do you use a screening tool to identify possible speech and language problems?

0 10 20 30 40 50 60 70 80 90 100

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Percentage of children

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Q17 Which of the following screening tools do you use during a well-child visit for children ages 0-5 years old? Select all that apply.

- Bright Futures Materials and Tools-AAP
- Early Language Milestone Scale
- Fluharty Preschool Speech and Language Screening Test
- Language Development Survey
- MacArthur-Bates Communicative Development Inventory
- Modified Checklist for Autism in Toddlers (M-CHAT)
- Parent Evaluation of Development Status (PEDS)
- Parents' Evaluation of Developmental Status-Developmental Milestones (PEDS-DM)
- Screening Kit of Language Development
- The Ages and Stages Questionnaires (ASQ)
- Test for Examining Expressive Morphology

Q18 Rate your agreement with each of the following statements.



I have confidence in my ability to identify possible speech and language problems in children under 5 years of age.

I have confidence in my ability to use screening tool results to refer patients for possible speech and language problems.

I know a speech-language pathologist with whom I may consult regarding speech and language development issues.

I have an up-to-date list of speech-language pathologists to whom I may refer patients.

I have confidence that I have explained to my patients' parents the importance of undergoing a formal evaluation with a speech-language pathologist if my screening suggests the need for further evaluation.

Q19 Where have you received training in identifying possible speech and language disorders in young children? Select all that apply.

- Bachelor's Degree Coursework
- Advanced Practice Academic Coursework
- Post-Graduate Academic Coursework
- Post-Graduate Continuing Education Experiences
- I never received any training
- Other \_\_\_\_\_
-

Q20 Rate the adequacy of the following in supporting your ability to identify speech and language disorders in young children.

	Not at all adequate						Extremely adequate
Undergraduate and graduate education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Post-graduate educational experiences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Currently available resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q21 What are the barriers to identifying possible speech and language problems in children?

---

Q22 How do you think we could overcome barriers to identifying possible speech and language problems in children?

---

Q23 Participants have a chance to win one of eight \$25 Amazon gift cards upon completion of the study by providing their email addresses at the end of the survey. Participants are not required to participate in this chance to win. Provided email addresses will be destroyed once the winners are selected. Addresses will be saved in a database separate from the other responses to the survey, will not be shared with anyone who is not a project investigator, and will be destroyed once winners are identified.

- Yes, I would like to enter for a chance to win.
- No, I would not like to enter for a chance to win.

Q24 Provide your email address for a chance to win one of eight \$25 Amazon gift cards

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