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An SLP Graduate Student's Analysis of Language in Children with Speech Sound Disorders

Abstract

Purpose

Students in allied health professional (AHP) programs are instructed in evidenced-based evaluation practices and participate in interprofessional education and practice in order to identify disorders (e.g., speech, language, gross motor, fine motor) and provide effective treatment. The purpose of this paper is to present a small-scale research study of one graduate student in an AHP program that trains speech-language pathologists.

Method

A graduate student used retrospective methodology to examine the language skills of nine children with speech sound disorders (SSD) to determine if language impairment (LI) co-existed. The student learned and used a method of language sample analysis known as Sampling Utterances and Grammatical Analysis Revised method ([SUGAR], Pavelko and Owens, 2017) to examine the language skills of children with SSD.

Results

Results of this examination revealed that 6 of the 9 children with SSD exhibited deficits in language skills. This finding supports previous research into the co-occurrence of SSD and LI (Hayiou-Thomas et al., 2017).

Conclusion

Identification of LI is the important first step toward provision of language supports and interventions as part of a multidisciplinary educational team. Training students in AHP programs in diagnostic procedures can facilitate the student's ability to 1) accurately diagnose speech and/or language impairments, and 2) collaborate with other members of the assessment team to develop an appropriate intervention plan. Instructors in speech-language pathology (SLP) graduate programs can consider teaching alternative methods of LSA such as SUGAR, and other AHP programs may consider searching for valid, reliable, efficient alternative methods in which to train students.

Keywords

Assessment, speech-language graduate student clinical training, Language Sample Analysis, Speech Sound Disorders, Language Disorders, Multidisciplinary team

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Introduction

Instruction in diagnostic procedures is foundational for graduate students in communication sciences and disorders (CSD) programs (Flippin, 2023). The performance of a child with a suspected speech or language disorder on both formal and informal measures provides critical information for the CSD student to make a diagnosis, determine eligibility for speech-language services, and create a functionally relevant intervention plan under the guidance of their clinical instructor (Ebert & Scott, 2014). Accordingly, instructors in courses and clinic at the university level must teach evidenced-based, valid, and reliable approaches to assessment. One such informal measure of language skills is language sampling analysis ([LSA]; Owens, 2024).

Speech-language pathologists (SLPs) in clinical practice have been surveyed regarding their use of LSA practices (see Bawayan & Brown, 2022). Many SLPs do not regularly include LSA in their diagnostic procedures, identifying lack of time to complete LSA and inadequate training in LSA as barriers (Pavelko & Owens, 2016). Therefore, training in the functional use of LSA for students in CSD programs is essential for both clinical training and future clinical practice.

Significance Statement

The purpose of this paper is to report results of a small-scale research study completed as a master's thesis by a CSD graduate student (Janney, 2019). The graduate student learned the Sampling Utterances and Grammatical Analysis Revised method of language sample analysis ([SUGAR], Pavelko and Owens, 2017), then transcribed and analyzed language samples for nine children (M age = 6;9) with speech sound disorders (SSD). Results were compared to typically

developing (TD) children of the same age to determine if the children with SSD also exhibited a co-existing language impairment (LI).

Literature Review

Speech Sound Disorders

Children typically master the production of adult-like speech sounds by the age of 8 (Crowe & McLeod, 2020). When typical speech sound production is disrupted, errors in speech sound production may occur as a result of difficulty in perceiving a sound, producing a speech sound, and/or a phonological misrepresentation of speech sounds or speech segments (American Speech- Language-Hearing Association [ASHA], n.d.-a). SSD in children sometimes has a known cause, such as a motor-based disorders (e.g., apraxia) or sensory based conditions (i.e., hearing impairment), but can also frequently occur without a known cause. These impairments can affect articulation (motor aspects of speech) or phonology (linguistic aspects of speech). SSDs occur in 5% of children between the ages of 3;0 and 17;11 (NIDCD, 2015).

Spoken Language Disorders

TD children acquire language skills from birth onward in five language areas (i.e., phonology, morphology, syntax, semantics, pragmatics). ASHA (n.d.-b) notes that spoken language disorders (SLD) occur when children exhibit deficits in acquiring or using language across one or more of these areas. SLD may accompany other conditions such as autism spectrum disorder, hearing loss, or developmental disabilities, or they may exist as a primary disability or specific language impairment (LI). LI affects 3.3% of children ages 3;0 to 17;11 (NIDCD, 2015).

SSD and Co-Occurring LI

SSD may be diagnosed as a primary disability or can occur in conjunction with LI in 14% of 6-year-old children (Pennington & Bishop, 2009). Children with co-occurring SSD and LI exhibit poorer literacy outcomes than children with SSD alone (Haiyou-Thomas et al., 2017), thus resulting in poorer outcomes in attainment of academic skills. Therefore, it is important to assess

the language skills of children who are initially diagnosed only with SSD early to prevent poor academic development.

Assessing Language Skills Using LSA

LSA is a widely recognized measure of naturalistic language and is considered an important component of a diagnostic evaluation to identify LI in school-age children (Pavelko & Owens, 2017). Multiple tools are available to aid in the examination of language skills using LSA; however, a full tutorial on how to implement various LSA methods is beyond the scope of this current paper (see Heilmann et al., 2020 for a summary).

Current Aims

Graduate students in CSD programs are instructed in a variety of clinical assessment practices and LSA is an evidenced-based tool that can help identify language disorders in children. The aim of this paper is to report a small-scale research study that one CSD graduate student completed. The graduate student learned the SUGAR method (Pavelko & Owens, 2017), transcribed and analyzed the language samples of nine children with SSD, and compared the results to TD age-matched peers. The graduate student sought to determine if the nine children with SSD exhibited LI in the area of morphosyntax.

Methods

CSD Graduate Student Training

The graduate student was trained to use SUGAR (Pavelko & Owens, 2017) by the master's thesis chair, a Ph.D.-level licensed and ASHA certified SLP. The SUGAR method was chosen because it is a valid, effective, and efficient procedure for identifying LI in school-age children. A step-by-step protocol is provided free of charge (see Owens & Pavelko, n.d.). Institutional review board approval was obtained to conduct the small-scale research study.

Report of the Small-Scale Study

Participants

Language samples were selected from an original group of 30 children between the ages of 6;0 and 7;11 with SSD who were participants in a previous study conducted by Thomas et al. (2018). Fourteen children met the selection criteria. The 14 language samples were transcribed, and samples that had at least 50 utterances were retained. The final sample included five girls (one Black/African American, four White) and four boys (four Black/African American) (n = 9; M age = 6;9) (see Thomas et al., 2018).

Procedure

The nine language samples originally audio recorded in the Thomas et al., 2018 study were transcribed and analyzed by the graduate student according to the Pavelko and Owens (2017) SUGAR protocol for the following four metrics: mean length of utterance (MLUS), total number of words (TNW), clauses per sentence (CPS), and words per sentence (WPS). Results were compared to TD age-matched peers. To establish interrater reliability, two samples were independently transcribed by the thesis chair, with 88% agreement noted.

Results

To determine if the nine children with SSD in this study exhibited deficits in morphosyntax, the graduate student compared the results of the samples from the SSD children (n = 9) aged 6;6 to 7;9 (M = 6;9) to the norms (means and standard deviations) for TD children aged 6;0 to 6;11 (n = 33) and 7;0 to 7;11 (n = 23) obtained by Pavelko and Owens (2017). Results indicated that 6 of the 9 participants (67%) with SSD exhibited LI in the area of morphosyntax when compared to means and standard deviations of TD children. (Tables 1 and 2).

Table 1*LSA Results by Participant*

Participant	Age	MLUs	TNW	WPS	CPS
1	6;11	9.44	421	10.75	1.83
2	7;4	6.42	294	7.35	1.35
3	7;0	4.2	198	4.18	1.15
4	6;6	4.78	229	6.67	1.14
5	7;0	4.74	227	6.4	1.12
6	7;2	6.82	308	6.86	1.23
7	6;11	7.98	357	9.14	1.66
8	7;9	10.02	449	11.05	1.67
9	6;8	6.54	291	7.82	1.18

Note: LSA = language sample analysis; MLUS = mean length of utterance; TNW = total number of words; WPS = words per sentence; CPS = clauses per sentence (SUGAR; Pavelko & Owens, 2017).

Table 2*Means and Standard Deviations by Metric and Age of TD Group (Pavelko & Owens, 2017)*

Age		MLUs	TNW	WPS	CPS
6;0-6;11	<i>M</i>	7.60	337.73	8.05	1.36
<i>n</i> = 33	<i>SD</i>	1.60	72.50	1.42	0.14
7;0-7;11	<i>M</i>	8.19	364.52	8.61	1.39
<i>n</i> = 23	<i>SD</i>	1.32	54.24	1.14	0.14

Note: *M* = Mean; *SD* = Standard Deviation; MLUS = mean length of utterance; TNW = total number of words; WPS = words per sentence; CPS = clauses per sentence (SUGAR; Pavelko & Owens, 2017).

Discussion

The purpose of this paper was to present a small-scale research study conducted by a CSD graduate student who examined the language skills of nine children with SSD to determine if deficits in morphosyntax existed. Children who exhibit SSD are at an increased risk of LI (Hayiou-Thomas et al., 2017), and results of this study corroborate this finding as 67% of the children with SSD exhibited LI in morphosyntax. Deficits in language, specifically in morphosyntax, can cause disturbances in other areas of development in language and academics (Kaderavek, 2015).

The study has several implications. First, identification of LI in these children with SSD is crucial in the graduate student's development of a relevant, comprehensive intervention plan. Second, the graduate student learned the SUGAR method, which is a valid, effective, and efficient method for identifying LI in school-age children (Pavelko & Owens, 2017). Finally, this supports the notion that the development of knowledge and skills in LSA in a graduate program is essential in supporting clinical learning for current and future clinical practice (Bawayan & Brown, 2022). Instructors in CSD graduate programs can include the SUGAR method of LSA approach in courses and clinic instruction for improvement of clinical learning.

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