Journal of Child Language Acquisition and Development – JCLAD
Vol: 9 Issue: 2 284-287, 2021, June
ISSN: 2148-1997

Intonation patterns in children with learning disability

Received : 05.10.2019
Accepted : 08.04.2021
Published : 30.06.2021

H. N. Shilpashri[1]
JSS Institute of Speech and Hearing Mysore
Saraswathi[2]
JSS Institute of Speech and Hearing Mysore

Abstract

Intonation is defined as the variation in pitch superimposed on the sentences. The aim of the present study was to understand intonation patterns used by children with a learning disability to express different types of Kannada sentences (Command, Happy, Request and Sad) in comparison with typically developing children. This study also evaluated sentence duration. The recorded sentences were analyzed for intonation contours and sentence duration using Praat software. The results of the study indicated a change in the terminal F0 pattern across the different sentence types used by children with learning disability in comparison to language age matched typically developing children.

Keywords Kannada sentences, expressive intonation patterns, learning disability, typically developing children

1. Introduction

Suprasegmental aspects, or prosody, are defined as the characteristics of speech that enhance and regulate the meaning of what is said (Paul, Augustyn, Klin, & Volkmar, 2005). Acoustically, the prosodies of oral language involve variation in syllable length, loudness, pitch, and the formant frequencies of speech sounds. Intonation is one of the suprasegmental aspects of speech refer to distinctive patterns of vocal melody. The melodies of speech are related to virtually all levels of verbal communication, including emotional expression, pragmatics, and syntactic structure. Intonation is attributed with four main functions (Roach, 2000): 1) the attitudinal function (affect), 2) the accentual function (focus), 3) the grammatical function (chunking); and 4) the discourse function (interaction). Several research studies have been conducted in order to determine the role prosody plays in the organization of early language production in typically developing children (Allen & Hawkins, 1980; Gerken & McGregor, 1998). Disordered expressive prosody is widely reported to occur in the speech of children with language disorders. Weinert (1992) reported that children with Specific Language Impairment (SLI) did not use prosodic cues when learning rules of language, or in repeating sentences accurately, which suggested that prosodic deficits may be associated with language deficits. Findings on intonation in children with autism suggest that, compared with typically

[1] Bio: Dr. H. N. Shilpashri is a lecturer in JSS Institute of Speech and Hearing, Mysore 570004 Karnataka State, India. Corresponding author shilpashrihn@gmail.com
[2] Bio: Mrs. Saraswathi is a lecturer in JSS Institute of Speech and Hearing, Mysore 570004 Karnataka State, India.

developing (TD) controls, children with autism produce pitch contours with high F0 range and high pitch variability (Diehl et al. 2009; Bonneh et al., 2011). Reilly, Klima and Bellugi (1990) reported abnormally high use of affective expressive prosody (pitch changes, vocalic lengthening and modifications in volume) by adolescents with William Syndrome. Catterall, Howard, Stojanovik, Szczerbinski and Wells (2006) evaluated prosody in children with William syndrome using the manual version of Profiling Elements of Prosodic Systems for Children (PEPS-C) battery (Wells and Peppé, 2001). They reported that children had impaired expressive and receptive prosodic abilities and had pervasive difficulties, compared to chronological age (CA) matched controls.

Variation in F0 contours can lead to changes in prosodic patterns at various levels of linguistic units (e.g., word, phrase, sentence, and discourse). Prosody play a role in language development, it serves to follow that children with deficits in language may also have difficulty with prosody. Prosodic problems are not a diagnosis per se, but symptoms that occur at different levels of language. Expressive intonation in children with learning disability is an under researched area. Hence, the present study was undertaken.

The aim of this study is to understand expressive intonation patterns, sentence duration to express different types of Kannada sentences - Command, Happy, Request and Sad, by children with Learning disability in comparison with typically developing children.

2. Methodology

1.1. Participants

Ten children with learning disability (as per the diagnosis done by speech language pathologist) with normal intelligence (as per the diagnosis done by clinical psychologist) studying in V. VI & VII grade. Ten language ages matched typically developing children studying in V. VI & VII grade participated in this study. All participants were from native Kannada speaking families studying in English medium school. Participants were evaluated for Speech and Language skills, reading / writing / mathematical skills, hearing ability, motor development and IQ assessment.

1.2. Stimuli

Four Kannada sentences depicting four emotions - Command, Happy, Request and Sad formed the stimuli.

1.3. Procedure

The participants were seated comfortably in a quiet room and were tested individually. Each sentence was spoken by the examiner and the participants were instructed to repeat back the sentences using four different emotions - Command, Happy, Request and Sad. The responses were recorded in Praat software.

1.4. Acoustic analysis

Intonation contours were analyzed using Praat software, type of F0 contour, sentence duration for each sentence was noted.

3. Findings

The findings on expressive intonation patterns and sentence duration to express different types of Kannada sentences - Command, Happy, Request and Sad, by children with Learning disability in comparison with typically developing children are as discussed below.

Table 1
Fo contours pattern of typically developing children and children with learning disability for different type of sentences

	Type of sentence	**Intonation pattern**	
		Typically developing children	**LD**
1	Command	fall-rise-fall-rise-rise	fall-fall-flat-fall-fall
2	Happy	rise-rise-rise-rise-rise	rise-rise-rise-rise-fall
3	Request	fall-fall-rise-rise-rise	rise-rise-rise-rise-fall
4	Sad	fall-flat-fall-fall-fall	rise-rise-rise-fall-fall

Table 2
Sentence duration

	Type of sentence	**Typically developing children**		**LD**		**Sig**
		Mean (ms)	**SD**	**Mean (ms)**	**SD**	
1	Command	2022	372.86	2508	312.80	.005
2	Happy	2277	323.38	2340	302.23	.657
3	Request	2307	231.36	2551	311.87	.062
4	Sad	2165	269.96	2314	360.81	.310

The intonation pattern for four different sentences are presented in Table 1. In typically developing children the terminal pitch contour for command, happy and request sentence was a rising contour. For sad sentence type it was a falling contour. Children with learning disability used falling contour for all the four type of sentences. Table 2 shows the sentence duration for four types of sentences. There was a statistically significant difference at .05 level of significance for command type of sentence. For sentences – happy, request and sad there were no differences between the two groups. The results of the present study have indicated the possibility of change in intonation pattern used by children with learning disability in comparison to language age matched typically developing children.

4. Discussion and Conclusion

The suprasegmental properties of speech play an important role in human communication. Spoken language provides information about the intention and the emotional state of a speaker. Linguistic prosody is used to mark the internal organization of sentence constituents or to convey the intonation contour of a sentence (Lieberman, 1968). It is generally assumed that pitch errors will be seen in phonetic disorders of pitch. However, one must also

look into the pitch errors in phonological disorders with no evident organic lesions or neurological issues to account for it, where the use of pitch is abnormal. This information will be very important for Speech- Language Pathologists in assessing and treating persons with speech and language disorders. Future research on intonation patterns for different type of sentences and on large group of children with learning disability is warranted.

Acknowledgements

We thank the Almighty for giving us strength to carry out this study. We acknowledge with thanks the cooperation of our participants and their family members during this study.

References

Allen, G., & Hawkins, S. (1980). Phonological rhythm: Definition and development. In G. Yeni-Komshian, J. Kingston & M. Beckman (Eds.), *Child phonology*, Vol. I*: Production*. New York: Academic Press.

Bonneh, Y. S., Levanon, Y., Dean-Pardo, O., Lossos, L., & Adini, Y. (2011). Abnormal speech spectrum and increased pitch variability in young autistic children, *Frontiers Human. Neuroscience*. 19(4), 237-243.

Catterall, C., Howard, S., Stojanovik, V., Szczerbinski, M., & Wells, B. (2006). Investigating prosodic ability in Williams Syndrome. *Clinical Linguistics and Phonetics*. 20(7-8), 531-538.

Diehl, J. J., Watson, D., Bennetto, L., McDonough, J., & Gunlogson, C. (2009). An acoustic analysis of prosody in high-functioning autism, *Applied Psycholinguistics*. 30(3), 385-404.

Gerken, L. & McGregor, K. (1998). An overview of prosody and its role in normal and disordered child language. *American Journal of Speech-Language Pathology*, 7(2), 38-48.

Lieberman, P. (1968). *Intonation, Perception, and Language*. Cambridge: MIT Press.

Paul, R., Augustyn, A., Klin, A. & Volkmar, F.R. (2005). Perception and production of prosody by speakers with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 35, 205–220.

Roach, P. (2000). *English phonetics and phonology*. Cambridge: CUP Robin

Reilly, J., Klima, E. S., & Bellugi, U. (1990). Once more with feeling: affect and language in atypical populations. *Development and Psychopathology*, 2(4), 367-391.

Weinert, S. (1992). Deficits in acquiring language structure: The importance of using prosodic cues. *Applied Cognitive Psychology*, 6(6), 545-571

Wells, B., & Peppé, S. (2001). Intonation within a psycholinguistic framework. In J. Stackhouse., and B. Wells. (Eds). *Children's speech and literacy difficulties: Identification and intervention*. (pp. 366-395). London: Whurr.