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Production of Complex/Compounds Sentences in the Spontaneous Speech of Typically Developing Children and Children with Williams Syndrome

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Abstract

Literature claims individuals with Williams syndrome (WS), a rare congenital genetic mental retardation syndrome, easily engage in conversation and demonstrate unique and advanced linguistic skills compared to typically developing peers (TDP). These claims are supported by limited empirical evidence, however. One method of judging advanced linguistic skills is to compare the production of complex/compound sentences of children with WS and their TDP. The purpose of the study was to determine whether children with WS use more complex/compound sentences than children who are typically developing. Twelve subjects participated in the study. Six subjects with WS (SWS), mean age 15, and 6 subjects who are typically developing, mean age 6-4. Subjects were matched according to gender and verbal performance. Two judges evaluated 100 utterances (oral statements) from each of the12 subjects and determined the sentence type of each utterance. Compound, complex and complex/compound sentences were coded. Data were analyzed employing Systematic Analysis of Language Transcripts (SALT), a set of computer programs designed to analyze and interpret language samples. The range, mean and standard deviation for each sentence type were computed. Results indicate TDP display a greater number of complex, compound and complex/compound sentences compared to SWS. Implications are discussed.

Introduction

Williams syndrome (WS) is a rare congenital genetic mental retardation syndrome (Udwin, Davies & Howlin, 1996). The etiology is a micro deletion on the long arm of chromosome seven. WS affects nearly 1 in 20,000 live births and is a multiple anomaly/malformation syndrome often characterized by dental malformation, renal anomalies, heart disease and central nervous system disorder (Franceschini et al., 1996). Facial features accompanying WS may include curly hair, full cheeks, wide mouth, stellate iris pattern (Udwin et al., 1996), prominent lips, small upturned nose and a long philtrum (Franceschini et al., 1996). Cognitively, a number of individuals with WS present with mild to moderate mental retardation (Bellugi, Wang, & Jernigan, 1994). Often, the intelligence of individuals with WS is compared to those individuals with Down syndrome (Bellugi, Bihrle, Jernigan, Trauner, & Doherty, 1990). Behaviorally, a majority of individuals with WS are obsessive, anxious, suffer from hyperacusis (sensitivity to sound) (Udwin et al., 1996) and are incapable of living independently (Bellugi et al., 1994). Fine and gross motor skills are reportedly inferior to their linguistic skills. Individuals with WS possess outgoing, friendly and sensitive personalities (Udwin et al., 1996). Literature reports that individuals with WS possess strong linguistic skills, despite lack of normal cognitive development (Doherty & Bellugi, 1992). Due to the unique gap in cognitive and linguistic skills, these individuals are of interest to many individuals in the speech-language pathology field. Literature claims that individuals with WS easily engage in conversation, speak more eloquently and demonstrate unique and advanced linguistic skills compared to their TDP (Bellugi et al, 1990; Bellugi et al., 1994). However, this research is supported by limited evidence. Hence, the purpose of the study was to find if children with WS display unique and advanced linguistic skills compared to their TDP. One method of judging advanced linguistic skills is to compare the

production of complex/compound sentences of children with WS and their TDP. Predictions, based upon published literature, were that the SWS would produce more frequent and more complex/compound sentences than their TDP (Bellugi et al., 1990; Bellugi et al., 1994). After the prediction was made, the mean, range and standard deviation for each sentence type were computed.

Methodology

Subjects

To be eligible to participate in the study, each subject was required to pass a hearing screening, complete the Kaufman Brief Intelligence Test (K-BIT) (Kaufman & Kaufman, 1990) and engage in spontaneous conversation. Six SWS and six TDP were selected for the study. The subjects were matched according to gender and verbal performance on the K-BIT. Each subject group was composed of three females and three males. The SWS ranged in age from eleven to seventeen years; mean fifteen years. The TDP ranged in age from three to eight years; mean six years four months.

Student clinicians visited each of the twelve subjects in their homes and engaged in spontaneous conversation. The conversations (language samples) were audio recorded. Two independent judges transcribed the language samples, word for word. A third judge compared the transcriptions of judge one and two and highlighted any differences in the transcriptions. While viewing the highlighted transcriptions, a fourth judge listened to the audio recording and reconciled the differences between the three judges. The reconciled transcriptions were then entered into a computer utilizing SALT.

Procedure

The study was based on 100 consecutive, complete, intelligible (understandable) utterances from each of the twelve subjects. Data collection started at the eleventh utterance. This allowed each subject to become familiar with the clinician and more readily engage in conversation. Unintelligible (utterances that were unable to be understood) and abandoned utterances (utterances that were ceased mid-sentence) were eliminated from the data collection. Judge 1 judged each utterance as a complex, compound or complex/compound sentence according to definitions previously chosen. Judge two completed the same procedure. Judge 2 also reconciled differences for purpose of higher reliability. Judge 1 then entered a customized code, representing the type of sentence uttered, into SALT.

The Mann Whitney U test, a non-parametric test was used to discover if there were significant differences between the two groups. This non-parametric test was used due to the small numbers of subjects in each group. The Mann Whitney U test is often compared to the t Test, a parametric test.

Results

The analyses (Figure 1) revealed that for production of complex sentences SWS produced a mean of 9.83 (SD= 7.9), compared to the TDP who produced a mean of 13 (SD=8.4). For compound sentence production, SWS produced a mean of 3 sentences (SD=2.58), compared to a mean of 11.16 produced by the TDP (SD=6.79). SWS produced a mean of 1.33 for complex/compound sentences (SD=1.37), while the TDP produced a mean of 4.66 (SD=2.86). To gain a better overall understanding of the sentence productions, the range, mean and standard deviation for all three-sentence types combined were analyzed. The mean for the SWS

production of all three (complex, compound and complex/compound sentences) was 14.33 (SD=10.17), compared to 30.16 (SD=13.81) produced by the TDP. Based on the Mann Whitney U test, the SWS did not display significantly more frequent use of complex, compound or complex/compound sentences compared to their TDP, as had been predicted from the literature (Bellugi et al., 1990; Bellugi et al., 1994).

Conclusion

These findings perhaps contradict previous literature due to two factors listed. One factor may have been the small number of subjects in each subject group. The second factor, perhaps most relevant, may be due to past studies comparing the two subject groups according to intelligence quotient (IQ), rather than verbal ability. SWS? verbal performance often accounts for a majority of their overall IQ even though they lack equivalent cognitive abilities of TDP. Conversely, their TDP often possess a roughly equivalent verbal and nonverbal IQ. Therefore, despite an overall equal IQ, there is a difference in linguistic skills of the two subject groups (Figure 2). However, when the two subjects are matched based on verbal performance, as in this study, the SWS do not display more unique and advanced language skills compared to their TDP using complex, compound and complex/compound sentences.

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