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Speech and Language Characteristics of Monozygotic Twins – A Case Study

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Abstract

There are several reports of twins having a risk of language deviancy which may be because of one twin modelling the immature or disordered speech pattern of their co-twin, which results in the incorrect use of speech sounds and grammar by both the twins. This gives the impression of a secret language between the twins which is called as 'Idioglossia'.

Although the concept of *Idioglossia* is a popular belief, the language of twins have rarely been described in detail or analyzed satisfactorily by the researchers especially in the Indian context.

The present case report aims to describe the speech and language characteristics of a pair of monozygotic male twins of 5.6 years with Kannada as their mother tongue. The paper discusses the concept of *Idioglossia;* whether it is a myth or a fact? The paper also discusses the speech language characteristics and the speech and language therapy reports of the two twins.

The study finds that though the phonological errors in the twins are similar, they are not identical.

Key words: monozygotic twins, phonological errors, *idioglossia*

Interest in Speech and Language of Twins

Speech and language of twins have attracted the interest of innumerable researchers. According to reports, twin children have higher rates of language delay when compared to single-born children. There is a greater risk in twins than singletons that language development may at some stage deviate from the norms expected in singletons (Mittler, 1970). Sometimes the difference may be a direct result of twin ship but indicate neither a delay nor a disorder.

Speech and Language Characteristics of Twins

Twins have been reported to have delays in speech onset, and or slow and atypical development compared to that of singletons for semantics, syntax and phonology. Twin language children combine their own personal vocabulary with normal use of language.

The language consists of onomatopoeic expressions and some invented words. These words may be hardly recognizable and the language may turn out to be completely unintelligible to speakers of the model languages. They lack morphology, and the word order is based on pragmatic principles such as the use of content words which convey the meaning of what they want to express. It is also reported that they exhibit short mean length of utterances (Mc Evoy and Dodd, 1992).

Hay, Prior, Collett and Williams (1987) studied speech and language development in preschool twins. Language, articulation and reading problems were well documented in the young twins. The twin boys were found to be behind their age matched singletons and the twin girls, on expressive language, verbal comprehension and symbolic play.

Day (1932) and Davis (1937) reported measures of language complexity (such as sentence length, number of different grammatical categories in a sentence) to be two years behind in twins compared to singletons by the age of five. Lytton (1980) and Conway, Lytton, and Pysh (1980) like in the earlier studies reported that twins use shorter sentences, they have less speech overall, less speech directed towards the mother, and a slight difference in vocabulary.

Some Features

Studies indicate that multiple birth children are prone to phonological disorder and consequently their speech is often unintelligible. McEvoy and Dodd (1992) reported higher incidence of atypical phonological errors in twin children in their study.

The children typically use a smaller number of different speech sounds than are used in the adult language. The structure of words may be simplified and there are systematic substitutions of one sound for another. Twins tend to talk faster and may abbreviate their words or leave out consonants as they produce words, perhaps in a competitive attempt to talk over their co-twin and grab their parents' attention first.

Keenan and Klein's (1975) finding suggests that multiple birth children begin to interact vocally with their sibling earlier than singletons. This acquisition of imitative patterns of interactive vocal play pre verbally may affect their later acquisition of word phonology. They may continue to imitate each other's phonological forms for words and consequently

mentally represent their twin's pronunciations of particular words. This might hinder the acquisition of knowledge about the phonological rules that govern their native language and lead to some multiple birth children showing atypical patterns of speech errors.

Language Systems may be Similar but not Identical

Evidence from twins with unintelligible speech suggests that language systems may be similar but not identical. Luchsinger (1953, 1961) reported that the similarity of articulation is greater for monozygotic twins compared to dizygotic twins.

Articulatory performance of monozygotic twins were analysed by Locke and Mather (1989) which revealed that individual monozygotic twins achieved a mean score of 55% correct on the Templin Darley Test and the dizygotic twins achieved a mean score of 71%. Also most of the errors made by the monozygotic twins involved the same items on the Templin Darley test while less errors made by the dizygotic twins involved the same phonological targets.

The profile showed similar errors for both groups. Fricatives were more frequently misarticulated than liquids, approximants and affricates, and consonant clusters were generally more difficult than single consonants. Also, some of the Speech Language Pathologists have reported that twins having a delay may have other associated problems of reading and writing which can be diagnosed as 'Specific Language Impairment' or 'Learning disability' in due course.

Causes of Speech Language Delay or Deviancy in Twins

Both biological and environmental variables contribute to language delays in twins. Lytton (1980) in his study comparing twins and singletons on language measures reported that environmental variables such as maternal speech to child accounted for more of the variance in the language measures than several biological variables that separated the two groups (including birth weight, Apgar score, and time of gestation). Akermann and Thomassen (1991) compared a group of twins and singletons and found that low birth weight accounted for differences on standardized language and locomotor tests. Several authors have now found that young twins receive less directed speech from their caretaker and participate in fewer situations where their attention is jointly engaged with the caretaker. Both these situations are thought to be necessary for language learning which is lacking for most twins.

Concept of *Idioglossia*

The language of twins has rarely been described satisfactorily earlier. The degree of unintelligibility is often so extreme that clinicians earlier found it difficult to determine what words were intended by the children. This leads to the development of the concept of Idioglossia.

Idioglossia refers to twin language which describes the way two or more close siblings use words and/or gestures that are largely unrecognizable or even completely unintelligible to others. It is also known as Cryptophasia or Autonomous language and is also commonly referred to as twin talk or twin speech. It is a peculiar phenomenon of a language developed by monozygotic twins that only the two children can understand. It is described as a

telepathic communication between twins.

Hay et al., (1987) concluded that secret language characterised most of the twin boys in their study. Dodd and McEvoy (1994) reported that twins were better able to understand their siblings' mispronunciations than were other children of the same age. They showed that twin children could recognise single words of their co-twins better than singleton controls. Bakker (1987) suggested that the phenomenon in twins is very different from true secret languages, where the intention of the inventors is to obscure meaning from others. These are usually created by peers and are rule-governed transformations of standard language forms.

Baker rightly points out that the intention to obscure meaning cannot be attributed to twins who use their only form of language with all others and may show frustration when not understood. Bakker favours the term autonomous language than secret language. He said that autonomous languages exist in about 40% of all twins.

Sharing an Idiolect?

The idea that twins share an idiolect, has gained wide spread acceptance among parents of multiple birth children. Twin language is actually one twin modelling the immature or disordered speech pattern of their co-twin, which results in the incorrect use of speech sounds and grammar by both the twins, which then give the perception of a secret language. They do not employ the adult models as much as singletons, and the motivation to learn the adult system is reduced by the ease of communication between the twins as they have common experiences which will necessitate very little communication through spoken language (Hormann,1971). A sociability questionnaire completed by the teacher revealed that all children advanced on sociability, but twins remained just as far behind with poor sociability relating to poor articulation even after joining preschool. Twins are self sufficient and have a constant communication partner because of which they do not feel the need of communicating with others.

Need for Speech and Language Report of Twins

Despite the popular belief in the secret language of twins, the language has rarely been described in detail or analyzed satisfactorily by the researchers. There has been several western studies involving comparison of speech and language characteristics of twins and singletons, but studies in the Indian context are scarce. Moreover the incidence of multiple birth children is increasing due to various reasons. Two fifths of the IVF babies are twins, as many embryos are returned to the womb. Hence it becomes essential for the speech language pathologists to study the speech language characteristics of twin children and to examine whether the phenomenon of *Idioglossia* is a myth or a fact.

Objectives of the Case Report

- To describe the speech and language characteristics of a pair of monozygotic twins and thereby attain a better understanding of the nature of speech and language disorder in these twins.

- To discuss the concept of *Idioglossia*; whether it is a myth or a fact?

The following are details of a pair of monozygotic twins who reported with the complaint of unintelligible speech.

Client Details

Demographic data: The clients (A & B) considered in the study included two 5.6 year old twin boys studying in U.K.G with Kannada as their mother tongue.

Brief history: The clients reported with the complaint of unclear speech. They exhibited speech sound production errors of various sounds like /tʃ/, /r/, /t/, /d/ etc. Substitutions and omissions of sounds were reported. Parents complained of difficulty in understanding the twins' speech while the twins could understand each other's speech and communicate easily with each other. They had a history of delayed speech and motor milestones. Mental abilities and hearing sensitivity were reported to be normal for both the clients. The problem was noticed since early childhood.

Developmental milestones: The clients showed a delay in the acquisition of speech and motor milestones. The respective milestones for both the clients are as follows:
Speech milestones:

Babbling 6-7 months; First word- 1 year 6 months; First sentence-3 years

Motor milestones:
Neck control - 7 months; Sitting- 9 months; Standing- 1 year 6 months; Walking- 2 years.

Family history: No significant history of speech and language disorders was reported in the family.

Consanguinity: Positive as per the report of parents. The parents are first degree relatives.

Sibling history: The twins are the only off springs of the parents.

Medical history: History of jaundice at the age of 4 years for client B whereas no significant medical history for client A.

Earlier investigations: There are no earlier investigations done for the clients.

Recommendations: The recommendations after the clinical interview included Speech Language evaluation, Psychological evaluation, Counseling and Follow up.

Speech Evaluation

Phonology Based on the administration of The Kannada Articulation Test (Babu, Ratna, & Bettagiri, 1972) the articulatory errors obtained in the order of severity of occurrence for both the clients is presented in Table 1 and Figure 1 depicts the percentage of various phonological errors in the two clients.

Client A	Client B
1. Unvoiced/ Voiced & Distortion : /r/ 2. Cluster reduction 3. Fronting errors	1.Fronting errors & Cluster reduction 2. Unvoiced/ Voiced 3. Distortion: /r/

Table 1: Order of the severity of occurrence of phonological processes in the pre-test.

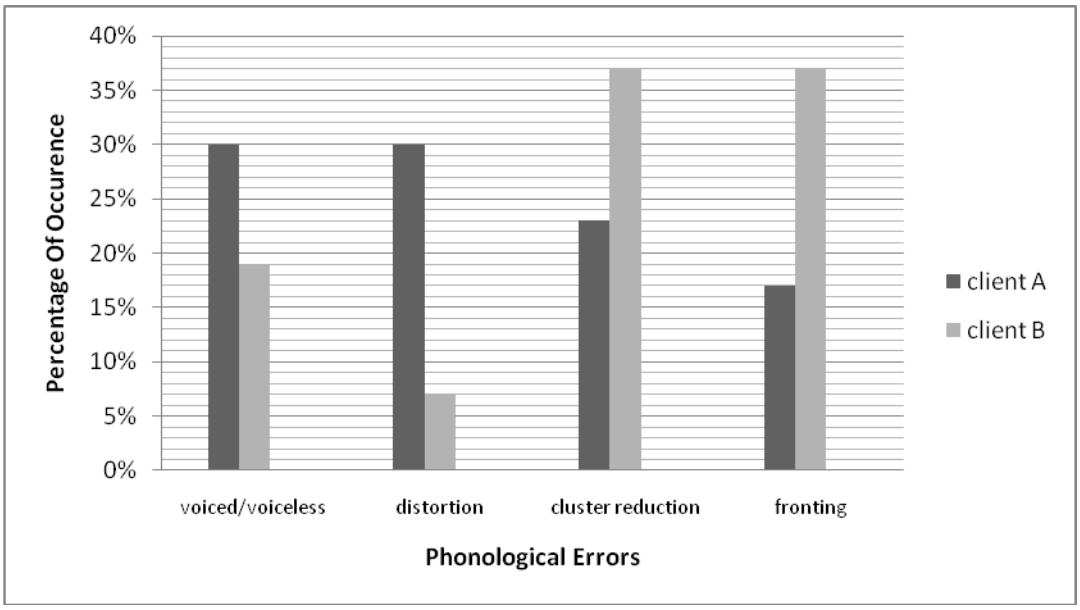

Figure 1: Percentage of occurrences of different phonological processes in client A & B.

Speech intelligibility Speech Intelligibility was estimated for both the clients using the transcription of an unfamiliar judge for the meaningful spoken words of the twins. A measure of the percentage of intelligible words was estimated. The speech intelligibility was approximately 35% in both clients. The scores improved after therapy to different extents in the clients.

Oro motor examination Normal structure and function of the oral structures for both the clients were established.

Language Evaluation

The language proficiency of the clients was assessed using the Kannada Language Test (UNICEF project, 1990). The results obtained for the clients are given in Table 2.

	Client A	Client B
Total receptive score	4-5 years	3-4 years
Total expressive score	3-4 years	<3-4 years
Total language score	3-4 years	<3-4 years

Table 2: Scores obtained in Kannada Language Test (KLT).

A language delay can be observed in the results. Client A was found to be marginally better than client B in the language skills. This correlates with the mother's report that client A is relatively more intelligible than client B. Both the clients exhibited shorter mean length of utterances of around 2-4 word sentences. They obtained poorer scores in sections of case markers, plurals, sentence types, participle constructions etc.

Also the clients in the present study are reported to have spelling errors in writing and recitation of rhymes and story narrations are unintelligible. Client A reads short sentences with assistance while client B does not. Both the clients have poor auditory memory and sequencing skills as well.

Provisional Diagnosis

The Provisional diagnosis postulated based on the results of the speech and language evaluation was **Phonological disorder** (for both clients).

This diagnosis was coined for the clients because of the inconsistency the clients exhibited in the various speech sound errors and also because of the evident presence of various phonological processes in their speech on detailed analysis. Motoric production was achieved for some of the sounds but the correct and consistent use of these sounds in words was not observed. For example, the clients used /k/ for /g/ as well as used /t/ for /k/ in words.

Other Evaluations

Psychological evaluation: A social age (SA) and developmental age (DA) of 5 years was calculated through the administration of Vineland's Social Maturity Scale (VSMS) and Developmental Screening Test (DST) in the Psychological Evaluation. The impression made was Average intelligence for both the clients.

ENT evaluation: Impacted wax was revealed in both the ears for both clients which were cleared on a second visit after the administration of ear drops.
Audiological evaluation: The evaluation covered Puretone audiometry, Immittance audiometry, Speech and Noise test (SPIN) and administration of Screening checklist for auditory processing disorders (SCAP)

Provisional Diagnosis

Evaluation brought up the provisional diagnosis as follows:

Client A: Bilateral normal hearing sensitivity in both the ears
Client B: Bilateral normal hearing sensitivity in both the ears (with reduced hearing sensitivity at high frequencies in the right ear).

Both the clients achieved adequate scores in Speech and Noise test but did not pass the Screening checklist for auditory processing disorders. The clients were recommended for further CAPD evaluation which will be accomplished at a later stage.

The clients were recommended for periodic ENT and Audiological follow-up once in 3 months. The clients were further recommended for Speech and language therapy and regular Follow-up.

Speech Language Therapy

After all the initial detailed evaluations, the clients attended Speech Language Therapy. The initial therapy included group therapy for the clients which was later replaced by individual therapy sessions because improvement was not seen in the clients in group therapy sessions. Also, since the order of severity of articulatory errors and phonological processes in the children were different, individual therapy was found to be more beneficial. The clients were less attentive when they were together. The therapy mainly focused on speech and language aspects. The same goals were selected for both the clients.

Speech: The therapy goals for the clients included auditory discrimination and correct production of speech sounds. The techniques used in the therapy sessions were Phonetic Placement, Imitation and Picture Naming. The clients were made to discriminate between various speech sounds through the auditory mode. The phonetic placement technique was used by instructing the clients where to place the articulators to produce target speech sounds. Verbal description was supplemented with visual and tactile cues. Tongue depressor, feedback through mirror and drawings were used to show the position of articulators. Also, imitation of the sounds in isolation, syllables, words, phrases and sentences were carried out. Picture cards were used for eliciting responses.

Language: Plurals and case markers were taken as the therapy goals as these concepts were poor in these clients when compared with age matched peers. Modelling and Prompting techniques were used. Appropriate picture cards and objects were used for the same.

Re-evaluation: The post therapy evaluation was carried out after six, forty five minute therapy sessions spanned over a period of two weeks and the progress can be noted as the following.

Client A	Client B
• Correct use of unvoiced & voiced sounds. • Speech intelligibility: 43%	• No significant improvement. • Fronting errors had reduced marginally. • Speech intelligibility:39%

Table 3: Post-therapy results for the clients

The speech intelligibility scores of both the clients before and after therapy are depicted in Figure 2.

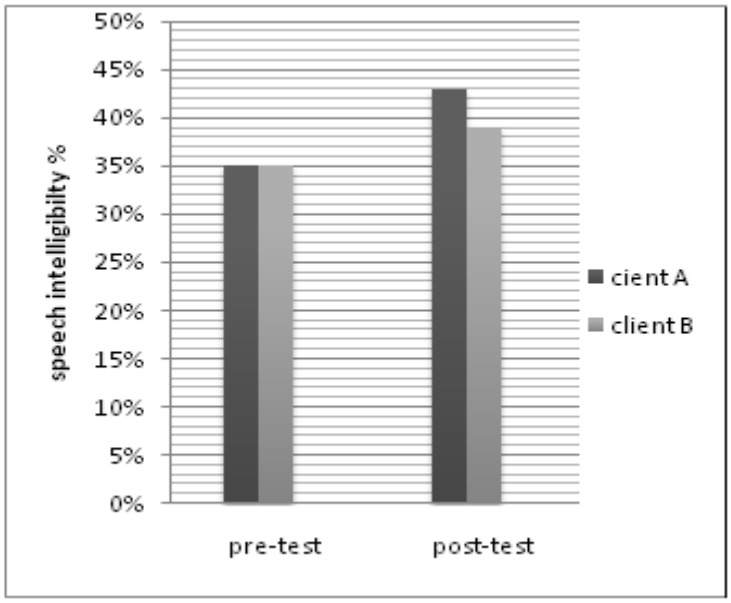

Figure 2: The pre-test post-test speech intelligibility in client A & B.

Discussion

The present study has discussed the various speech and language characteristics of monozygotic twin children. The results of the study corroborate the results of some of the western studies (McEvoy and Dodd, 1992, & Hay et al., 1987). The clients in the present study had language delay and had atypical phonological processes as reported in the earlier studies. They had shorter mean length of utterances and poor syntax.

The analysis of the children's speech samples revealed the presence of various phonological processes which reduced the speech intelligibility resulting in poor understanding of their speech by parents and others. Their speech reflected the use of new words which were understood only by each other which gave the impression of a secret language as reported in other studies (Hay et al., 1987).

Detailed articulatory assessment showed that the poor understanding of their speech was due to the various phonological errors present in their speech, developed due to an incorrect

model which each formed for the other. The most intensive period of speech and language development for children is during the first three years of life, a period when the brain is developing and maturing.

These skills appear to develop best in a world that is rich with sounds, sights, and consistent exposure to the speech and language of others. The twins communicated less with adults as they already had a communication partner. Therefore they lacked a good model and feedback resulting in deviant speech and language.

This is in concordance with the study by Keenan and Klein (1975). Also, the twins in the present study lacked early exposure to other children and adults for play because they did not have children of the similar age group in the neighbourhood. In a study by the Wisconsin Twin Project which is under way, researchers found that toddler use of expressive language was mostly influenced by the environment.

It can also be noted from our study that although the same type of phonological errors occurred in both the clients, the order of their severity was different. Evidence from twins with unintelligible speech suggests that language systems may be similar but not identical as per studies (Sandbank, 1999). In the present twins, the atypical phonological processes that occurred most commonly included voicing errors, distortion, cluster reduction and fronting errors.

The language test revealed that client B was slightly more delayed than client A. Even in identical twins, there can be differences in language and phonology. As per the reports of the mother, client B is weaker and is more susceptible to illness compared to client A. Also, Client A seems to be a spokesperson for client B and corrects him often. The general causes of speech and language delay in twins may be prematurity, low birth weight, poor speech stimulation or, one twin dominating the other twin.

Also the clients in the present study have problem with reading, spellings, writing, recitations, narrations and, auditory memory and sequencing skills suggesting chances of a Learning Disability in the long run. Therefore all twins and multiple birth children should be closely monitored for the susceptibility of Learning disability. The present study is only a preliminary study on the speech and language aspects of twin children. Further studies on the speech and language of multiple birth children as triplets, is warranted. The incidence of multiple birth children is ever rising. Since 1980, the birth rate of twins has increased by 53% (Wikipedia). This, in turn, will increase the occurrence of speech language disorders in twins and other multiple birth children.

It is also of importance to note that individual therapy is preferred to group therapy in such children. Individual therapy sessions can be tailored to the particular twin or child according to the errors or difficulties he/she has. The frequency of occurrence of the error in his/her speech and the impact of the error production on the speech intelligibility can be considered for selecting the target goals.

Additional advantages of individual therapy include less distraction, better cooperation with therapist and progress according to the individual child's pace of learning. In the present study, group therapy was given for a few sessions initially for the purpose of convenience till

the clients built a rapport with the therapist. This was immediately followed by individual therapy sessions attributing to the poor progress and reciprocal imitation of speech by the two twins during the group therapy.

Since there are scanty studies on speech and language aspects in twins in the Indian context, it is important to gather more information on this. We need to know more about the aspects of speech language disorders in twin children.

Parents should be conscious of the speech language development in twins as their likelihood to develop speech language disorders are more. They need to carefully observe the speech language development and note any subtle deviancies in the milestones. Proper stimulation and a good model need to be provided for these children at home. The parents should spend more time with the children providing a greater amount and better quality of speech patterns for imitation, especially during formative years. Speech Language Pathologists should create awareness regarding the problems rising in the speech and language of twins and the role of parents in ensuring sufficient speech stimulation.

Conclusion

The present study has focussed on the speech and language characteristics of monozygotic twins and the hypothetical existence of the concept of *Idioglossia*. Twins have been reported to exhibit deficiencies in one or more aspects of speech and language including semantics, syntax and phonology. Occasionally twins use unique speech patterns and words that are understood by the twins themselves. These unusual and unique patterns are produced due to the presence of various phonological processes in their speech which portrays the wrong impression of the existence of *Idioglossia* or secret language. Twins and multiple birth children require appropriate speech production models to learn the correct speech patterns. The speech language delay or disorders in twins need to be addressed at an early stage before it affects the later developments in the speech of such children.

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