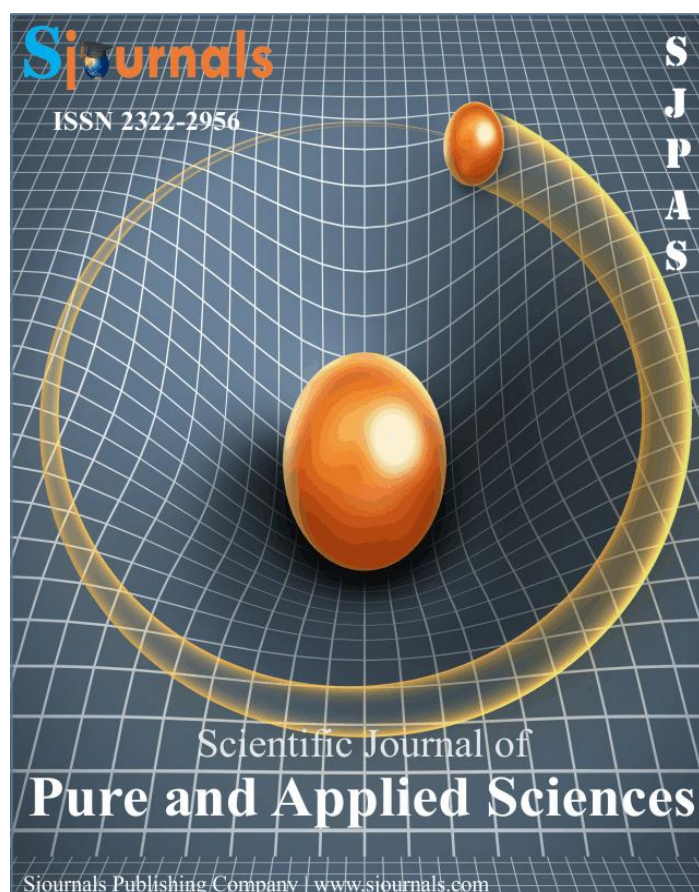


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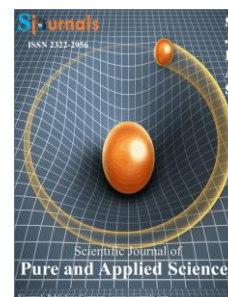
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### Review article

## De-mystifying sign language acquisition and development in deaf children

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### ABSTRACT

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Quite often people think that deaf children acquire language differently from their hearing peers. People often wonder whether deaf children go through the same or different language development milestones from their peers. Some people even wonder whether these children develop any language at all because for them sign language is not a formal language after all. It is also not surprising to find even deaf education scholars hesitant about whether deaf children develop sign language in a pre-determined style at all. This paper is intended to demystify these doubts. The paper explores the nature of sign language acquisition and development by comparing with typical oral language processes. Developmental milestones are provided to allay the tension scholars often go through when required to outline, let alone examine stages of language development in deaf children. The conclusion of this paper is that sign language acquisition and development in deaf children is the same as oral language acquisition and development in their hearing peers. This is because sign and not oral language is the native language for the deaf.

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### 1. Introduction

In the past and even today some people equate language to a vocal code or speech. They believe language can only be aural-oral yet language is far more complex than that. What these people lack understanding is that

language is resident in the human mind and can be expressed in more ways than just speech. Since the genesis of research on sign language in the 1960s and 1970s, there has been overwhelming consensus that sign language develops as systematically as spoken language does, follows the same milestones and is as complex as spoken language is. Of course there are similarities and differences concerning the development of spoken and sign languages, but the similarities outweigh the differences. This paper synthesizes sign language acquisition and development cognizant of these diversities. The paper outlines stages/milestones of sign language development and suggests strategies that include family involvement in deaf children's development of language.

## **2. Sign language acquisition**

As has been persistently pointed out in sign language linguistic literature, sign languages are as complex and systematic as spoken languages. It should be predictable from such arguments that sign language is acquired in a similar fashion as that of spoken language. According to Sandler and Lillo-Martin (2001) the claim that all languages are significantly similar to each other strongly supports the hypothesis that humans are genetically endowed with the fundamental underpinnings of language. Thus children, whether deaf or hearing, acquire language automatically and naturally. It follows therefore, that sign languages represent the same cognitive system as that of spoken languages. Sandler and Lillo-Martin (2001) argue, "If sign languages represent the same cognitive system as spoken languages do, then they should be acquired in a similar way and at the same rate." Studies on deaf children of deaf parents have found that when these children are exposed to sign language early, they acquire it in very similar ways to those of spoken languages by hearing peers. The linguistic status of sign language is strongly supported by the findings that it is acquired naturally (Humphries et al., 2014) and takes the course that parallels that of spoken language (Nodoushan, 2008; Mason et al., 2010; Harris, 2010; Enns and Price, 2013). In other words, natural acquisition of sign language is quite parallel to the natural acquisition of oral language and both modalities of language develop in line with the ideals of a fixed universal biological timetable for language acquisition (Sandler and Lillo-Martin, 2001). One way in which sign language is different from spoken language is that it is executed in space, but follows the same rules and its acquisition typically follows the same stages as those of acquiring oral language.

## **3. Stages of sign language acquisition**

The universal biological timetable for language which is proposed in the foregoing section presupposes a stage theory approach to the acquisition of sign language. A close examination of these stages in conjunction with the stages of oral language acquisition exposes striking similarities (Table 1).

## **4. The language acquisition device (LAD) and the critical period hypotheses**

According to the language acquisition device (LAD) proposed by Chomsky (1938), all humans have an innate or in-born propensity to learn language even in the absence of experience and exposure. Chomsky (1986) theorizes that children are born with an inner capacity for language development, that is, the LAD. They use this LAD to take in vast quantities of language from birth, process it in their minds and then produce sentences which they have never witnessed before (Deaf Children Australia, 2010). As children grow older, the LAD progressively closes down leading to what we call the critical period hypothesis.

The universal biological timetable for language acquisition is compatible with the critical period hypothesis which was theorized by Lenneberg (1967). The critical period hypothesis proposes that there is a time limit during which exposure to language is required in order for the natural mechanisms used for its acquisition to be triggered (Sandler and Lillo-Martin, 2001). Learning language after the critical period which is believed to extend only up to puberty is qualitatively depressed due to loss of brain plasticity (Newport, 1990; Squires, 2006; Humphries et al., 2012). This is true for both oral and sign language. As such, the late acquisition of sign language just like spoken language has implications for the learning of its grammatical structure and rules. Consequently, this would affect educational and social cognitive outcomes.

### **4.1. Factors affecting the deaf child's acquisition of language**

There are several factors that affect the deaf child's ability to acquire language. Some of them include:

- Age of onset of deafness
- Age at which the deafness was first diagnosed
- Parental hearing status
- Mode of communication the child is exposed to
- Type and benefit of amplification
- Co-morbidity of additional disabilities
- Quality of sign language input
- Quantity of sign language input
- Time of intervention (i.e. early intervention or not)

**Table 1**  
Stages of sign language acquisition.

Stage	Age range	Milestone
1	0 – 1 Year	• Sign babbling
		• Understands that signs are symbols for communication
		• First signs emerge
2	1 – 2 Years	• Combines pointing with signs
		• Uses two-sign combinations
		• Uses over 50 signs
		• Follows simple directions
		• Appreciates the importance of eye gaze
3	2 – 3 Years	• Asks and understands basic ‘wh’ questions i.e. ‘who’; ‘what’
		• Begins to use finger spelling
		• Uses over 250 signs
		• Uses negation (e.g. no, none, not, want)
		• Expresses emotions (e.g. happy, sad, mad)
4	3 – 5 Years	• Uses sign language to share daily experiences and events
		• Maintains visual attention to sustain a conversation
		• Asks and understands the ‘wh’ questions ‘why’? ‘Where? And ‘how’
		• Uses basic sentences
		• Complex sentences emerge
		• Uses sign language to find out and to explain phenomena

#### 4.2. Barriers and difficulties in the learning of oral language by deaf children

Deaf children encounter a number of difficulties and barriers in their endeavors to learn and acquire language. These difficulties and barriers are more evident when the child is not exposed early to sign language. The barriers to learning language are either physical or social while most of the difficulties are related to cognitive processing of language. For instance, the rapid auditory processing deficit hypothesis claims that the language deficit experienced by deaf children stems from difficulties in processing the rapid temporal changes that characterize speech (Mason et al., 2010; Tallal, 2003). This deficit impacts most severely on the processing of acoustically non-salient material such as inflections and function words. Similarly the generalised slow processing hypothesis (Kail, 1994) postulates that deaf children generally process information at a slower rate than their hearing peers while the limited phonological working memory hypothesis (Gathercole and Baddeleg, 1990) posit that deaf children have limited phonological working memory which impedes processing of novel and complex syntactic structures (Mason et al., 2010). Quite specifically deaf children may experience the following barriers to learning language:

- When it comes to learning spoken language, deaf children cannot hear.
- Late identification of the deafness hence delayed language acquisition.
- Lack of or delayed naturalistic exposure to sign language. More often there is also lack of sign language models.

- Deaf children cannot overhear oral conversations.
- Failure of significant others to understand or use sign language.
- Negative attitudes towards deafness and towards sign language.
- Lack of qualified teachers of the deaf who are fluent in sign language.
- Lack of access to oral language modality within hearing environments.
- Frequent communication breakdown between the deaf and their hearing parties.

Besides these barriers, deaf children also experience specific language difficulties which include the following, (Many of these relate to oral language but some relate to sign language as well).

- Limited vocabulary.
- Difficulty comprehending spoken language grammar and syntax.
- Difficulty with grammatical markers such as 'ed', ing, 'er'.
- Difficulty managing paralinguistic markers of language such as turn-taking, control, asking for clarification, eye contact, greetings.
- Poor reading of social moods or contexts.
- Misunderstanding of common expressions and idioms.
- Difficulty requesting information.
- Difficulty in asking and answering questions.
- Difficulty in making appropriate greetings and in repairing breakdowns in conversations.

It follows from the foregoing that the perceived insurmountable difficulties that deaf children experience relate to oral and not sign language. This does not suggest that all deaf children, despite that, they cannot speak, cannot acquire oral language skills such as writing and reading. These are the basic literacy skills every child is expected to possess in order to access academic learning. In the classroom, some defined strategies could be adopted to facilitate language acquisition and development among the deaf children.

### **5. Strategies for talking or signing to deaf children**

In order to facilitate communication with deaf children, there is need for consciousness that these children are visualisers. This means that while their hearing peers use their ears to access language, deaf children use their eyes. It is also critical to remember that sign language which is the primary medium of communication for the deaf is a visuo-spatial language. Thus, deaf children rely on vision more than audition for their acquisition of sign language. Meanwhile, sign language expression primarily depends on the visual sense and is executed in space (Brentari, 2013). The following are some of the critical strategies for ensuring effective communication with deaf children:

- Maintain eye contact, that is, visual engagement through eye gaze.
- Ensure that the child is watching you.
- Always call for the child's visual attention.
- Do not eat, drink or smoke while communicating. Trim mustache or beard. That is minimize behaviors that make lip-reading difficult.
- Be wary of background noise and reverberation for hearing aid users.
- Avoid shouting; speak naturally and at a moderate uniform rate. Thus speak in a normal tone of voice.
- Use facial expression and gestures naturally. Do not exaggerate expressions.
- Seat child where there is enough light for if him / her to follow visual aspects of the communication environment.
- Use new technologies which provide richer visual experiences and provide additional access to information.

### **6. Family involvement in sign language development for deaf children**

On average, over 90% of deaf children are born to hearing parents who often have no family history of using sign language (Humphries et al., 2014). Many of these parents are initially uninformed about deafness and sign

language development matters. They often turn to medical professionals, spiritual healers and these days to the internet too. Meader and Zazove (2005) laments that too often those they turn to for help are equally under-informed or mis-informed about the language needs of the deaf children. Consequently, deaf children of hearing parents do not experience sign language input that is as rich as that of deaf children of deaf parents. A study by Calderon (2000) indicated that, while parental involvement in school based sign language development programmes can positively contribute to positive academic and language outcomes, maternal communication skill is a more significant predictor for positive language and academic development. Meanwhile, according to Dickson and Tabors (2001), children with more communication opportunities with family develop better language skills. Deaf children need access to family members since they can communicate with them more easily than with strangers. Family provides the much needed naturalistic exposure required by deaf children to develop sign language (Nodoushan, 2008). For parents, it is particularly important that they consistently and persistently sign to the best of their abilities when communicating with deaf children since this leads to long term cognitive and linguistic benefits (Enns and Price, 2013). Following is a summary of strategies families can employ to create opportunities for improving the language skills of deaf children:

- Spend as much time as possible signing and talking to the child. Play games, read books and work with child.
- Visit new places, talk and sign about these places. Tell the stories related to the new places using sign.
- Use pictures and photos to create contexts for discussion.
- Limit the number of activities to converse about.
- Avoid too many abstract events at a time. Provide visual experience.
- Provide meaningful interactions.
- Repeat until the child understands the context of events.
- Reinforce every child's effort at using sign language.
- In all the endeavors, collaborate with the school.

## 7. Conclusion

This paper concludes, based on the fact that sign language is a formal language just like spoken languages, that sign language acquisition and development follows the same universal biological time-table to that of oral language. The stages of sign language acquisition by deaf children, especially those born to deaf parents, are comparable to those experienced by hearing peers. For deaf children of hearing parents, there could be a number of barriers and difficulties affecting oral language acquisition. While some of these barriers and difficulties may also relate to sign language acquisition many of them are of aural-oral origin. When transcended to sign language, the same barriers and difficulties could be explained by the fact that the children lack adequate and timely exposure to sign language. However, some theories attribute these barriers and difficulties to cognitive processing limitations. The consequences of these barriers and difficulties can be devastating for the deaf child's timely and naturalistic exposure to sign language. To mitigate these barriers and difficulties there is need to consequently provide strategies for ensuring full sign language development among deaf children.

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