

Expressive Language Comparisons between Nigerian Children with SLI and those with Features of Asd**HELEN NWANZE (Ph.D)****&****O.O. WILLIAMS (M. PHIL.; CCSP.LST)****Senior Research Fellows****Department of Surgery****College of Medicine****University of Lagos****P.M. B 12003, Surulere****Lagos, Nigeria.****E-mail: nwanze_126ho@yahoo.co.uk****Telephone: +2348023151105****Abstract**

Controversy surrounds a suggestion of overlap between specific language impairment (SLI) and a subgroup of people with autism spectrum disorders (ASD) plus language impairments. This study examines syntactic complexity in 56 Nigerian SLI children matched for age, sex and socio economic status with 56 children with features of autism (FASD). They had a mean age of 4 years old. The ratio of boys to girls was 4:1 in favour of boys. The two groups were compared on their mean length of utterance (MLU) a standard measure of syntactic complexity in child language. The results adduced a significantly higher MLU in children with SLI than for the FASD group. There were 3 times as many non-verbal children in the FASD than in the SLI group. More SLI than FASD children had emerging grammars. The indication that syntactically, these were too mutually exclusive groups was discussed. Also observed was that language development in both groups appeared to be poorer than that documented in the West. Further research was suggested to explore the linguistic challenges inherent in each group.

Key words: Specific language impairments, autism, syntactic complexity, Nigeria.

Introduction

ASD and SLI are both neuro-developmental disorders (Leyfer, et al., 2008). SLI indicates structural language impairments in the presence of otherwise normal development (Bishop, 2003). ASD on the other hand includes an inherent communication disorder in conjunction with social and behavioral dysfunction (CDC, 2012). Some controversy has arisen concerning a possible overlap between SLI and a subgroup of ASD sufferers with structural language impairments (Whitehouse, et al., 2007). It has been proposed that both may perhaps share a common etiology (Taylor, et al., 2012). There have been instances in which children diagnosed with SLI at a young age when older exhibit frank symptoms of ASD and are then re-diagnosed as such (Conti-Ramsden, et al., 2000 & Mawhood, et al., 2000). De Fosse et al (2004) scanned the frontal cortex in the brains of ASD and SLI children. This contains the broca region of the brain responsible for expressive language production. They adduced asymmetry in the cortexes in SLI and a subgroup of ASD children with structural language impairments. Their left side which coordinates language was smaller than the right. The cortexes of ASD sufferers without structural language impairments were symmetrical. The inability to accurately repeat multisyllabic nonsense words has proven to be an accurate diagnostic marker for SLI. Studies indicate that ASD children also have difficulties with this task suggesting for some that in a subgroup of ASD, SLI is perhaps co-morbid

(Roberts et al., 2004; Whitehouse, et al., 2008 & Williams, et al., 2013). It was discovered by Whitehouse, et al., (2008) that while ASD children did exhibit this difficulty, their errors were different in nature than those made by SLI children indicating a different cause. There are indications of other similarities between ASD and SLI. When cognitive skills are held constant, the pattern of language acquisition appeared similar for the two groups. Impairments in syntactic complexity, lexical limitations and word association deficits were also averred to be comparable for both groups (Bishop, 2003; Weismer, et al., 2011 & Karla, et al., 2012). Leyfer, et al (2008) indicated an overlap in the 2 groups on social deficits even though the behaviour disorder is specific to ASD.

A contrasting argument is that the overlap between ASD and SLI is limited (Williams, et al., 2008 & Whitehouse, et al., 2008). In many ASD children, there is a history of the initial acquisition of an emerging grammar followed by regression. This loss of language is extremely rare in SLI children (Pickles, et al., 2009). Research by McConnell, (2010) observed that accurate sentence generation was better in high functioning ASD children than in SLI children. A study of ASD and SLI adolescents also adduced that those with SLI displayed more syntactic difficulties than did the ASD youth (Riches, et al., 2010). Verhoeven et al (2012) averred that although language impairments when present in ASD sufferers are similar to difficulties found in those with SLI. There are different neuroanatomical substrates in the two brain types.

The present research compares the development of syntactic complexity in a group of Nigerian SLI children and children with features of ASD (FASD). A decision was taken to obtain and analyze spontaneous speech samples due to suggestions that they may more accurately reflect the children's skills (Hewitt, et al., 2005 & Rice, et al., 2010). The mean length of utterance (MLU-m) is a standard measure of syntactic complexity for child language. It computes the average number of morphemes employed per utterance (Brown, 1973, Hewitt, et al., 2005 & Rice, et al 2010). MLU-ms of a matched group of SLI and FASD children were compared.

Method

Participants

There were 112 children in this study. Fifty six SLI children were matched with 56 FASD children for age, sex and socio-economic status. Socio- economic status was held constant all the bread winners headed middle income families and held white collar jobs. English was the medium of communication to their children. The children ranged in age from 2-12 years. There were 90 boys and 22 girls. Each was recruited for the study at their initial referral to the speech therapy clinic of the Lagos university teaching hospital, Lagos Nigeria. Prior to their referral, audiological screening revealed normal hearing in each. None of these children had commenced with speech therapy at the time of this study.

Materials

1. A doll's house with a boy and girl doll.
2. A toy car with a slot in doll.
3. A toy plate, cup, cutlery and a water bottle, plastic food: - apple, banana, orange, bread, biscuit, chicken, egg, ice-cream, tomato, corn on the cob, a milk bottle and a juice packet.
4. A toy train, boat, bus and aeroplane.
5. Shape sorter.
6. Stacking disc and/or a set of graduated cups.
7. A set of 12 flash cards each depicted a child performing one of the following actions: - sitting, standing, walking, eating, crying, sleeping, running, waving, crawling, hopping and talking.

Procedure

Selection of FASD group

The DSM-IV checklists were completed for each child referred for speech therapy who exhibited a behaviour disorder. The DSM-IV stipulates that for a diagnosis of ASD, a minimum of 4 characteristics

from the checklist be evident: two from category A and one each from Category's B and C. (American Psychiatric Association 1994) the children selected for this study met the DSM-IV criteria for a diagnosis of ASD. A parent interview also included only children whose motor developmental milestones were attained within normal limits.

Selection of SLI group

For the purpose of this study, the term *specific language impairment* refers to children with language impairments interfaced with an otherwise average profile of abilities. Children whose parents reported delays in speech alone were recruited for the study. A parent interview selected children with normal development in the areas of self help skills (e.g. toilet training, feeding, and dressing) and no delays in early motor developmental milestones. They had delayed speech as their only concern.

Socio Economic Status

The children were matched for the educational level of their father (or primary breadwinner) occupation and locale. Within the Lagos metropolis, locale distinguishes between the various economic strata of society.

Speech assessment

A spontaneous speech sample was elicited informally from each child during a 2 hour play session. It was conducted in a clinical setting in the presence of a parent. The authenticity of the speech obtained during play was validated by the parent.

A set of toys and flash cards were presented to each child. The investigators' comments ran as follows as they presented the items: - take/look at this or *what are you/is he or she doing?* The toys were presented in separate sets as listed above.

The MLU-m was computed for each child as instructed by Brown (1973).

Results

Table 1: Mean ages and MLU-ms of children

	AGE		MLU-m	
	Years	SD	Morphemes	SD
FASD	4.06	1.97	0.6	0.77
SLI	4.08	2.02	1.86	1.37

The table displays the ages and MLU-ms of the FASD and SLI children. Both groups were on average slightly over 4 years of age with a standard deviation of approximately 2 years. Forty-six percent of the children were 3 years old and below, while only 14% were 6 years and above. There was no correlation between age and MLU-m in either group (FASD $r = -0.053$; SLI $r = 0.19$). For FASD children, MLU-m ranged from 0 to 3.4 morphemes. The range was 0 to 6.4 morphemes in the SLI group. With age held constant, the SLI children had a significantly higher MLU-m than did the FASD children ($t = 6.0$; $p < 0.05$). As many as 61% of the FASD children, had no speech at all. This contrasts with 20% of the SLI children with no speech. Many (64%) of the SLI children had an MLU-m of above one word. This was so for just (25%) of the FASD children. The ratio of boys to girls was 4:1 in favour of boys

Discussion

The results adduced few similarities between the two groups. There were 3 times as many non-verbal children in the FASD group than there were in the SLI group. In addition close to two-thirds of the children in the SLI group had emerging grammars indicated by an MLU-m of above one morpheme. This was true for only (25%) in the FASD group. Even amongst FASD children who had speech, it was significantly below that in the SLI group. This differs from some studies which report an overlap between the two groups (Leyfer, et al., 2008). Weismer, et al., (2011) found that at 30 months old toddlers with ASD performed equivalently to 25 month olds with SLI, on linguistic tasks. Riches, et al. (2010) indicated that high functioning ASD youth were making less syntactic errors than were a matched group of SLI teenagers. Receptive and expressive language skills were equivalent for both groups in a report by (Verhoeven, et al., 2012).

In the present study, the total sample exhibited poorer speech than did children documented in the West. Rice, et al., (2010) indicated an MLU-m of 2.6 morphemes for SLI children between 2 ½ and 2 years 11 months and 3.64 morphemes for 4 year olds with SLI. This is less than a year beneath the norms for typically developing children which are 3.2 morphemes at 36 months and 4.4 morphemes at 48 months (Otto, 2002). The SLI group in this study approximated the norm for typically developing 2 year olds placing them behind by 2 years.

Between 10 and 25% of ASD sufferers are adduced to be non-verbal. (Koegel, et al., 2009). In the present study, a much higher proportion, over 60% of the children in the FASD group were as yet non-verbal. In a review of ASD research in Africa, Bakare & Munir (2011) also indicated an excess of non-verbal children. This may be so because of the absence of language intervention. Children tend to seek assistance at a later age in Africa than they do in the West (Bakare & Munir 2011 & Nwanze, 2013). The limited size of this sample in no way represents SLI or FASD populations in Nigeria. It does however suggest that perhaps there may be a different linguistic presentation for our children, than that documented in the West. Further research is required to better explore the language challenges of these two groups.

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