GRAMMATICALITY JUDGEMENT IN ENGLISH AMONG TYPICALLY DEVELOPING PRIMARY SCHOOL CHILDREN: A PRELIMINARY INVESTIGATION

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Abstract

The present study assessed grammaticality judgment abilities among typically developing children in English in the Indian context. Grammaticality judgment was studied using sentence acceptability and sentence correction tasks in two groups of children; one group of children studying in grade II (7-year-olds') and another group of children studying in grade V (10-year-olds'). Results revealed a developmental trend in performance of the two groups of children on the two grammaticality judgment tasks in English. Consistent with earlier findings from English speaking children, word order reversals were easier to detect in sentence acceptability task and also easier to correct relative to other errors in sentences such as morpheme deletions and wrong syntactic agreements for children in both grades. The current study provided preliminary developmental data on syntactic awareness task of grammaticality judgments in typically developing children within the Indian context. Such developmental data has may be used for developing protocols for assessing metalinguistic performance of children with language impairments and language based learning disabilities in comparison to typically developing children.

Key Words*: Syntactic awareness, metalinguistics, ESL, linguistic awareness*

Metalinguistic awareness refers to the ability to deliberately reflect upon and manipulate the structural features of spoken language, treating the language system itself as an object of thought, as opposed to using the language system to comprehend and produce sentence (Tunmer, Pratt & Herriman, 1984). It is categorized into four main categories namely phonological, word, syntactic, and pragmatic awareness. Phonological and word awareness refers to the subunits of spoken language (the phonemes and words) and involves the ability to segment words into their constituent phonemes, blending of phonemic units, segment sentences or phrases into words, separation of words from their referents. Pragmatic awareness refers to the relationships that obtain among sets of interrelated propositions and involves the ability to detect the inconsistencies between sentences, recognition of message inadequacy, and awareness of macrostructures. Finally, syntactic awareness refers to the structural representation of the linguistic meaning associated with an utterance and involves the ability to make judgment of semantic and grammatical well formedness of strings, correction of word order violations, and completion of sentences with missing words. Various syntactic awareness tasks (grammaticality judgment, correction, repetition and localization) have been used to effectively access the children's ability to manipulate their syntactic knowledge. Grammatically judgment is one of the most effective tasks used to understand the syntactic awareness skills in young children (Correa, 2004). The centrality of grammatical judgments in the linguistic theories of the 1970s was reflected in concurrent research on the acquisition of language in children. Early research on grammaticality judgment tasks in children since 1970's has documented that acquisition of grammatical judgment ability is a gradual process and is qualitatively different at different ages (e.g., Gleitman & Gleitman, 1970; Hakes, 1980; Scholl & Ryan, 1980 among others). Judgments for linguistic forms are attention demanding and it requires children, attend to and discern the language unit targeted by the metalinguistic task (Kamhi & Koenig, 1985). Although children may comprehend or produce a given utterance before the age of four years, they might not be able to make linguistic judgments about the grammaticality of these sentences until they are older (Bever, 1970).

There is considerable evidence that syntactic awareness plays a significant role in performance on reading. Syntactic processing or awareness of syntactic information relates to reading comprehension by facilitating sentence- and text-level integration and monitoring skills (Tunmer & Bowey, 1984). Syntactic awareness along with phonological awareness, and naming speed was found to be a predictor of reading and spelling performance in first graders (Plaza & Cohen, 2003). A theoretical model of reading acquisition

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proposed by Tunmer & Bowey, (1984) considers metalinguistic abilities as essential in the development of cognitive processes necessary to sustain rapid fluent reading. The model predicts that the each of the metalinguistic ability (phonological awareness, word awareness, syntactic awareness and pragmatic awareness) differentially contribute to variability in reading achievement as a function of stage of reading development. In the early stages, focus is primarily on the acquisition of decoding skills, phonological and word awareness skills. However, as the child progresses to advanced stage, focus shifts more towards comprehension of text, syntactic and pragmatic awareness skills. Children with good reading comprehension skills performed better on syntactic awareness tasks in comparison to children with poor reading comprehension skills (Nation & Snowling, 2000). In addition, children's performance was influenced by the syntactic complexity and semantic ambiguity of the sentences. It was noted that poor comprehenders have language processing difficulties encompassing grammatical as well as semantic weaknesses, although their phonological processing skills are normal.

Metalinguistic skills allow an individual to use language to talk about language. It is commonly agreed among second language acquisition researchers and classroom teachers that student best demonstrate their grammatical competence via production and interaction. For general language proficiency, bilingual children tend to have smaller vocabulary in each language than monolingual children in their language. However, their understanding of linguistic structure i.e, their metalinguistic awareness is at least as good as and often better than that of comparable monolinguals (Bialystok, 1988).

The acquisition of literacy skills in these children depended on the relationship between the two languages and the level of proficiency in the second language. In the case of second language reading, the learner needs to develop a sense of grammatical judgment (or of correct linguistic form and function) in the target language in order to gain access to the automaticity of interacting with text via meaning. Additionally, the learner needs to develop his or her own way of judging and interpreting textual meaning using what is more accessible to him or her. This kind of cognitive functioning requires conscious reflection on language structures (Widdowson, 1979).

The metalinguistic abilities of school going children speaking Indian languages are limited but various Indian studies reveal its importance and role in respective language development in the Indian context. Studies have investigated grammaticality judgments of Telugu speaking elementary school children (Vasanta, Sastry & Maruth, 1995), grammaticality judgment in Marathi speaking typically developing children and children with mental retardation (Bhishe, 2002). Studies have also investigated relationship between syntactic awareness and reading abilities in typically developing children speaking Oriya (Prakash & Mohanty, 1995), and Kannada (Karanth & Suchitra, 1993), as well as in adults (Karanth, Kudva & Vijayan, 1995). All the above studies involved investigations of syntactic awareness in the primary language or L1 with children attending schools having medium of instruction as their first language.

Overall, the studies found that metalinguistic ability as revealed in grammatically judgments tasks (sentence acceptability and sentence correction) improved with age or grade in which children are studying. As age increased, the children's judgment became increasingly like those of the adults. Similar to the findings among English speaking children, metalinguistic abilities were acquired gradually, strengthening as the child grows older and with increasing command over his or her language. Considerable increases in performance of children observed at around middle childhood (6 -7; 6 years or 7 - 8 years) were suggested to indicate the effect of acquisition of literacy on one's ability to master grammaticality judgment (Karanth & Suchitra, 1993; Vasanta et al., 1995). Findings by Karanth & Suchitra (1993) revealed that children below the age of six years were unable to grammaticality judgments of sentences. Beginning at ages 6-7 and with a rapid spurt at ages 7-8, children did not demonstrate ceiling performance even till the age of 11 years suggesting that children continue to became increasingly proficient in the grammaticality judgment tasks, probably attaining adult like sensitivity to grammaticality only much later into adolescence. Performance in sentence correction task on the whole was reported to be better in comparison to sentence acceptability task suggesting that it was more sensitive in getting the children to focus on the grammatical considerations as opposed to the content (Vasanta et al., 1995). There was some evidence of language specific syntactic characteristics influencing grammatically judgments. While word order reversals were reported to be easier to detect among English speaking children, children made increased accurate judgments of morpheme deletions in comparison to word order reversals in Telugu (Vasanta et al., 1995).

Need for the study: In the Indian context, a majority of children attend primary schools with English as the medium of instruction and begin literacy instruction in English, a non-dominant language rather than in the primary language spoken at home. With the increase in awareness of learning disabilities, language based learning disabilities are increasingly being identified among school going children. Often, assessment of reading and writing assessments of children at risk for literacy or academic difficulties are performed in English. Increasingly, intervention for language based learning difficulties is being sought in English language in order for the child to function successfully in the educational setting. Considering, the strong relation between syntactic awareness and reading comprehension, assessment of syntactic awareness becomes important for children with language impairments as well as language based learning difficulties. There is some evidence of role of syntactic awareness on sentence comprehension among second language learners as well. For example, sentence comprehension in second language readers (Spanish speaking learners of French), correlated strongly with syntactic awareness in addition to overall oral competence in L2 (Lefrançois & Armand, 2003).

Although several studies have investigated syntactic awareness in Indian languages among typically developing children (e.g., Vasanta et al., 1995; Karanth & Suchitra, 1993 among others), investigations of performance of typically developing children on syntactic awareness in English are lacking. There is a need to assess syntactic awareness skills in English among typically developing children who attend English medium schools and speak English in addition to their primary home language. Such studies would provide insights for assessment of syntactic awareness among children with language based learning disabilities.

Aim of the study: The current study was planned to assess grammaticality judgment of typically developing children in English. Grammaticality judgment was studied using sentence acceptability and sentence correction tasks by including two groups of children; one group of 7- year-old children studying in second grade and another group of 10-year-olds' studying in fifth grade. All children were from primarily Kannada and English speaking homes and studied in English medium schools.

Method

Participants

A total of 46 typically developing children including 23, 7-year-olds' and 23, 10 year olds' participated in the study. Children were divided into two groups based in their grade in school: children studying in grade II and children studying in grade V. Each group consisted of a total of 23 children with nearly equal number of boys and girls. Children were recruited from different schools in the city of Bangalore. All children were from primarily Kannada speaking families and reported use of English in addition to Kannada at home. Children were studying in English medium schools since preschool. Children fulfilled the following inclusionary and exclusionary criteria: i) No history of developmental delay, speech deficits, psychological or neurological problems as per parental report, ii) No oromotor problems as per an informal oral motor examination, iii) No hearing loss on the basis of informal screening and iv) Satisfactory academic performance on the basis of teachers' reports.

Table 1: *Distribution of children in grade II and grade V*

	n	Number Female/ Male	Age (years; months)		
			Mean	SD	Range
Grade II	23	13/10	7;6	0;7	7;0 - 8;6
Grade V	23	14/9	10;5	0;6	10;0 - 11;4

Language assessment

Children's receptive and expressive language skills were screened using the Assessment of Language Development (ALD; Lakkanna, Venkatesh & Bhat, 2008). ALD is an assessment tool to measure language development in Indian children from birth to 7;11 years. The assessment covers both receptive and expressive language skills and includes aspects of language such as vocabulary, syntax, semantics as well as thinking/reasoning skills. For the purposes of the current study, ALD served to ascertain typical development of language development in both groups of children. Both groups of children achieved ceiling performance on ALD indicating that the receptive and expressive language skills of children in grade II was age appropriate and those of children in grade V was at least in the range of 7;0-7;11 years. In addition to ALD, all children were administered the Test for Auditory Comprehension of Language - revised

(TACL-R; Carrow-Woolfolk, 1985). The TACL-R assesses auditory comprehension of specified lexical and grammatical forms of English forms grouped into three categories: word class and relations, grammatical morphemes and elaborated sentences. The items in TACL-R have been adapted to assess children within the Indian context by administering the test on 200 children between the age range of 3;0 to 9;11 years (Varghese, 2007). Items were modified based on the responses of children. The modified items were used for administration of TACL- R.

Task and stimuli

Grammaticality judgment tasks were constructed to assess children's ability to judge the correctness of sentences and revise ungrammatical sentences. Two tasks were included in the study.

Task – 1: Sentence acceptability and sentence correction task: The first task involved judgments of sentence acceptability as well sentence correction. A set of 40 sentences comprising of 30 deviant and 10 non- deviant were included in this task. Of the 30 deviant sentences, 10 sentences were made unacceptable on the account of word order reversal (e.g. 'ate I an orange'); ten sentences were made unacceptable by deleting the morphemes (e.g. 'the glass empty', the copula verb 'is' is deleted) and in the remaining 10 sentences there was a breakdown of agreement between the subject and verb (e.g. 'she knows what it is kept', in which the correct verb form should have been 'where'). The 10 non- deviant sentences were combined with the 30 deviant sentences to make up the final list of 40 sentences. The following instructions were given to children: "Let us play a sentence game. In this game, I'm going to read you some sentences, sometimes, I will speak correctly and at other times, I will make mistakes. Sometimes there won't be any mistakes. You are going to be my teacher today. When I say a sentence correctly, you must say "correct". If you think the sentence I said was wrong, you must tell me so and correct it for me. O.K? Shall we begin?"

Scoring: *Sentence acceptability*: In scoring the forty items in the sentence acceptability task, a score of one was given when the child judged the control (non deviant) sentences as correct or deviant sentences as incorrect. Judgment of incorrect for control sentences and correct for deviant sentences received a zero score. If the child judged a deviant sentence as incorrect, but failed to give a reason why he/she thinks it is wrong, a score of one was given.

Sentence correction: Responses were counted as correct if the child first stated that the grammatical sentence was 'wrong' and then corrected it syntactically without significantly altering meaning. Two types of corrections were possible which did not alter the meaning of the sentences:

- *Exact correction:* The sentences are corrected appropriately to its syntactic structure while preserving the remainder of the sentences.

For e.g. Target sentence: The girl are going to school
Child: "The girl is going to school."

- *Correction of syntax:* The sentences corrected are not significantly addressing the target error but forms a grammatical sentence without significantly altering its meaning.

For e.g. Target sentence: Rohit are drinks milk.
Child: "Rohit drinks his milk."

Responses were counted as incorrect when the subject judged an ungrammatical sentence to be 'right' and if they were able to judge the sentence as 'wrong' but was unable to provide a syntactic correction. A score of zero were given for each of the incorrect responses.

Task – 2: Sentence correction task: An additional task of sentence correction was included. This task was constructed with a total of 30 sentences. 10 of these involved change of word order (e.g. 'the fan she switched on'); 10 required replacement of wrong morpheme with the right one (e.g. 'there are two man standing'. The correct morpheme which should be replaced to, is morpheme irregular plural 'men') and the remaining 10 sentences required correction of syntactic agreement (e.g. 'this knife are very sharp', in which the correct copula verb should have been 'is'). The instructions for sentence correction task were similar accept that this time the children were told that whatever sentence the examiner now says, was wrong and that they must correct everything she says. *R*esponses were counted as correct if the child corrected the incorrect sentences without significantly altering meaning.

All sentences used were between four and seven morpheme in length, and contained lexical choices that would be familiar to young elementary school-age children. The sentences were initially shown to a linguist for its grammatical correctness and were then given to teachers of grade II and III for assessing familiarity of sentences. Only sentences judged as familiar by teachers were included in the final list for the two tasks.

Procedure

All children were tested individually in relatively quiet and familiar surroundings, i.e. in their respective schools. Informed consents were taken from parents before administering the protocol. Task administration procedures were carried out in two days. On day one, all children were administered the ADL and TACL, followed by the administration of the first task involving sentence acceptability judgments and sentence correction. On day two, the second task of sentence correction was administered. Sentences were randomized within the two sets and presented to children. Instructions were provided in English. Initially, rapport was established with the child and the child was given intermittent breaks when required depending on the temperament of each child. Experimental items were preceded by practice items in which feedback was given to establish the kinds of judgments of interest. A number of practice items were given to the subjects to ensure that they were able to perform the task. No feedback was given during the experimental items. Items were repeated once if the child did not give a response and appeared to be distracted or requested repetition. All responses were recorded by using a Philips digital audio recorder using an external microphone placed around 10 cm from the child's mouth. The responses of children were scored online by the experimenter as the testing continued. In addition, where ever needed, the experimenter listened to the audio samples and confirmed the scoring for each child.

Statistical Analysis: Independent sample t-tests were used to compare the performance of children in two grades on the different sections of the sentence acceptability and sentence correction tasks.

Results and Discussion

Sentence Acceptability

The performance of children in grade II and grade V on the sentence acceptability task are described in Table 2. Independent sample t-test used to compare the overall performance of children in grade II and grade V on the sentence acceptability task found that children in grade V (M = 34.26, SD = 2.90) performed significantly higher in comparison to children in grade II [(M = 30.04, SD = 4.49); t(44) = 3. 787, p = 0.000].

Table 2*: Performance of children on sentence acceptability task*

	Grade II			Grade V			t - test (df = 44)	
Sentence Acceptability	Mean	SD	Min - Max	Mean	SD	Min - Max	t	p
Word Order Reversal	9.61	0.89	6 - 10	9.96	0.21	9 - 10	-1.822	0.075
Morpheme Deletion	7.04	1.74	2 - 10	7.04	1.69	4 - 10	0.000	1.000
Wrong Syntactic Agreement	6.83	2.29	0 - 10	8.09	1.70	4 - 10	-2.119	0.040
Non Deviant Sentences	6.57	2.57	1 - 10	9.17	0.83	8 - 10	-4.625	0.000
Total (40)	30.04	4.49	19 - 36	34.26	2.90	29 - 40	-3.787	0.000

Comparisons between the two groups of children for the different categories of sentences showed that children in the two

grades did not differ in their performance on sentences with word order reversals and morpheme deletions. Children in grade II and grade V were able to accurately identify word order reversals in sentences as incorrect. The group mean for word order reversals was 9.61 (SD = 0.89) for children in grade II and 9.96 (SD = 0.21) for children in grade V. Morpheme deletions were relatively difficult for both groups of children to identify accurately. The performance of children in grade II (M = 7.04, SD = 1.74) was not significantly different (t (44) = 0.000, p = 1.0) from the performance of children in grade V (M = 7.04, SD = 1.69) on judgments of morpheme deletion. Some examples of which morpheme deletions which were difficult for children to identify in the sentence acceptability judgment included, 'it is the elephant trunk' and 'I see plane in the sky', In these sentences, the morphological markers, possessives 's' and articles 'a', were deleted respectively.

The performance of children in the two groups differed significantly for sentences with wrong syntactic agreement and the non-deviant sentences. Children in grade V were able to identify wrong syntactic agreements with greater

accuracy in comparison to children in grade II. The difference between the performance of children in grade V (M = 8.09, SD = 1.70) and grade II (M = 6.83, SD = 2.29) was statistically significant (t(44) = 2.119, p = 0.04). Some examples of sentences in which erroneous judgments were made include, 'He is washing his car that it is dirty' and 'I know what she went'. In the first sentence (conjoining sentence), 'because' was deleted to cause a wrong syntactic agreement. In the second sentence (embedded wh-question sentence) 'where', was deleted to cause a wrong syntactic agreement. Similarly, there was a statistically significant difference in the performance of children in grade V (M = 9.17, SD = 0.83) and grade II (M = 6.57, 2. 57) on accurate judgments of non deviant sentences (t(44) = 4.625, p = 0.000). Children in grade V were able to identify non-deviant sentences as correct. However, children in grade II tended to identify non-deviant sentences as incorrect and attempted to correct the sentences by changing the syntax of the sentences. For example, sentences such as 'He pointed at the door' and 'The girl is walking to school' were identified as incorrect and children corrected the sentences as 'He is pointing at the door' and 'The girl is going to school' respectively. This finding of poor performance on non-deviant sentences in comparison to some deviant sentences (word-order reversal and morpheme deletion) among the younger children is in contrast to earlier findings of sentence acceptability in Kannada and Telugu (Karanth & Suchitra, 1993; Vasanta, et.al., 1995). Children consistently performed better on non-deviant sentences in comparison to deviant sentences in Kannada and Telugu. Poor performance of younger children on the non-deviant sentences suggests that 7-year-old children are continuing to master the morphosyntactic characteristics of English.

Overall, the results of sentence acceptability task showed that children in grade II were able to make accurate judgments of incorrect sentences; their performance on judgments of wrong syntactic agreement and the non-deviant sentences was significantly lower in comparison to children in grade V. The total scores obtained by children in grade II ranged from 19 -36. The findings of the current study in terms of the ability of 7-year-old's to perform acceptability judgments is in consonance with findings from several studies (e.g., Hakes, 1980; Vasanta *et al*., 1995; Karanth & Suchitra, 1993; Bhishe, 2002). These studies included children in younger age groups as well and found that performance of children on sentence acceptability typically showed a spurt in performance around the age of 7 years (Vasanta, et al, 1995; Karanth, Kudva & Vijayan, 1995; Karanth & Suchitra, 1993) consistent with increased demands on literacy performance in formal school. Performance of children continued to improve with age and did not reach adult like even till the age of 11 years (Karanth, Kudva & Vijayan, 1995). Similar results were obtained in the current study.

Word order reversals were easier to judge relative to judgment of other errors in sentences such as morpheme deletions and wrong syntactic agreements for children in both grades. In fact, word order reversals were even easier to judge in comparison to non-deviant sentences by children in grade II. This finding is in agreement with the findings of Hakes (1980) who reported that children performed better on the word order condition, reflecting the fact that word order changes lead to more gross violations than other changes and therefore are easier to detect. Hakes and colleagues further suggested that around the age 7 or 8, a linguistic criterion is added and children reject a sentence based on the linguistic form rather than content. Similar findings were reported by Wulfeck, (1993) in terms of significantly lower response time to word order condition task, in comparison to the other syntactic acceptability tasks. Children could spontaneously detect the inappropriate reversals of the sentence structures given. English being a strong word order language with a weak inflectional morphology system resulted in children noticing violations of word order more easily. Overall, word order was a powerful cue that develops early compared to rules of agreement or morphology, which are mastered slowly.

The findings of the current study differed from those of Vasanta et al., (1989) on sentence acceptability in Telugu speaking children. Children performed poorer on word order violations in comparisons to other deviations in sentences such as morpheme deletion and syntactic agreement. Differences in language structures explain the differences in results. The inflectional morphology permits a wide variation in word order in Telugu when compared to that of English making violations in word order difficult to detect in Telugu. Therefore the role of word order in determining grammatical well-formedness of sentence is language specific.

Sentence Correction Tasks

Two sets of sentence correction tasks were administered. The first set of sentence correction task followed the sentence acceptability judgments in that children were also asked to correct sentences identified by them as incorrect.

Another set of sentence correction task was performed separately with different sets of morpheme deletions and incorrect syntactic agreements.

Sentence Correction Task – 1

The sentence correction task- 1 followed the sentence acceptability task. Children corrected the sentences which were identified as deviant by them. The 10 non deviant sentences were not taken into account for correction. Although the task included a total of 10 deviant sentences each for word order, morpheme deletions and syntactic agreement, the number of opportunity for corrections in this task were dependent on the number of sentences which were accurately identified as deviant by children in the acceptability task. For example, word order reversals were found to be accurately judged as deviant by children in both groups as seen the results of the sentence acceptability task. Hence children had more number of opportunities to correct sentences with word order reversals. Table 3 presents the results of sentence corrections made on sentences judged as deviant in the sentence acceptability task.

Table 3: *Sentence corrections scores for sentences judged as deviant in the sentence acceptability task*

	Grade II			Grade V			t - test (df = 44)	
Sentence Correction – I	Mean	SD	Min - Max	Mean	SD	Min - Max	t	p
Word Order Correction	9.09	1.08	6 - 10	9.83	0.39	9 - 10	-3.081	0.004
Morpheme Correction	4.83	2.01	1 - 8	6.70	1.69	4 - 10	-3.409	0.001
Correct Syntactic Agreement	3.74	1.98	0 - 8	7.26	2.24	2 - 10	-5.646	0.000
Total (30)	17.65	3.64	10- 25	23.78	3.48	17 - 30	-5.842	0.000

Independent sample t-test used to compare the overall performance of children in grade II and grade V on the sentence corrections found that children in grade V (M = 23.78, SD = 3.48) performed significantly higher (t (44) = 5.842, p = 0.000) in comparison to children in grade II (M = 17.65, SD = 3.64). Comparisons between the two groups of children for the different categories of sentences showed that children in the two grades differed in their performance on sentences involving word order corrections; morpheme correction and correction of syntactic agreement.

Children in grade II and grade V were able to accurately identify word order reversals in sentences as incorrect. The group mean for word order reversals was 9.09 (SD = 1.08) for children in grade II and 9.83 (SD = 0.39) for children in grade V. As seen from table 4.2, there was increased variability in the performance of children in grade II in comparison to children in grade V. This resulted in significant difference in the performance of children in both groups (t (44) =3.081, p= 0.004); children in grade V performed higher in comparison to children in grade II.

Morpheme corrections and corrections of syntactic agreement were relatively difficult for both groups of children to perform. For morpheme corrections, performance of children in grade II (M = 4.83, SD = 2.01) was significantly lower in comparison to the performance of children in grade V (M = 6.70, SD = 1.69). Children in grade V were able to correct syntactic agreements with greater accuracy in comparison to children in grade II. The difference between the performance of children in grade V (M = 7.26, SD = 2.24) and grade II (M =3.74, SD = 1.98) was statistically significant (t (44) = 5.646, p = 0.000). Some examples of sentences which were difficult for children include: 'He is eating chappati or he is hungry' and 'I know where is hiding'; the conjoining sentence element 'because' and embedded wh-question 'who', were replaced by incorrect forms in the above sentences respectively and children were required to correct them by including them in the sentences. Children in grade V were accurate in making corrections for the incorrect syntactic agreement compared to children in grade II.

Sentence Correction Task- 2

The sentence correction task- 2 involved a new set of 30 sentences. Of which 10 deviant sentences were used for word order correction task, 10 deviant sentences for morpheme correction task and 10 deviant sentences for correct syntactic agreement tasks. The sets of morpheme deletions and incorrect syntactic agreement differed from those used in the task-1. In this task the children were asked to correct all the sentences presented. Table 4 shows the results of the second sentence correction task.

Table 4: *Performance of children in sentence correction task*

	Grade II			Grade V			t - test (df = 44)	
Sentence Correction – II	Mean	SD	Min - Max	Mean	SD	Min - Max	t	p
Word Order Correction	9.30	0.82	7 - 10	9.83	0.49	8 - 10	-2.613	0.012
Morpheme Correction	3.91	1.65	1 - 7	7.00	1.54	4 - 9	-6.567	0.000
Correct Syntactic Agreement	4.52	1.78	2 - 8	8.43	1.44	6 - 10	-8.194	0.000
Total (30)	17.74	2.67	13 - 22	25.26	3.09	19 - 29	-8.834	0.000

Independent sample t-test used to compare the overall performance of children in grade II and grade V on the sentence correction task found that children in grade V (M = 25.26, SD = 3.09) performed significantly higher in comparison to children in grade II (M = 17.76, SD = 2.67). Children in grade II and grade V were able to accurately correct word order reversals in sentences. The group mean for word order reversals was 9.30 (SD = 0.82) for children in grade II and 9.83 (SD = 0.49) for children in grade V. The performance of children in grade II (M = 3.91, SD = 1.65) was significantly lower (t (44) = 6.57, p = 0.000) in comparison to the performance of children in grade V (M = 7.00, SD = 1.54). Examples of morpheme correction which were difficult for children to perform in the sentence correction task: 'There are five sheeps' and 'The girl buying a dress', here the morphological markers, irregular plurals 'sheep' and auxiliary 'is', were deleted respectively. This difficulty was seen greater for children in grade II compared to children in grade V. It was also noted that the grade V children attempted to correct the sentences by changing the syntax of the sentences.

The performance of children in the two groups differed significantly for sentences which required correct syntactic agreement. Children in grade V were able to correct syntactic agreements with greater accuracy in comparison to children in grade II. The difference between the performance of children in grade V (M = 8.43, SD = 1.44) and grade II (M = 4.52, SD = 1.78) was statistically significant. Some examples include 'It rain heavily yesterday' (regular past tense'ed' is deleted); 'This flower was beautiful' (copula verb 'is' is replaces with was). Children in grade V showed more instances of accurate corrections of sentences involving such in correct syntactic agreements, in comparison to children in grade II.

Analysis of the types of correction made by children revealed the corrections used by children in grade II involved the use of 'exact corrections'. However, children in grade V attempted correct the sentences by changing the syntax (without altering the meaning). Analysis of incorrect attempts at correction showed that children's incorrect responses includes, exact repetition of the target sentence, corrections focused on the syntactic error but did not result in grammatically correct sentence and occasional semantic modifications. Children in grade II tended to repeat the target sentence more often. Both tasks of sentence correction revealed a similar pattern of results across grades as well as across the sentence types, validating the results further. No attempts were made at comparing the two tasks as both tasks included different sets of morpheme deletions and incorrect syntactic agreements.

Overall the results of the sentence correction task revealed that performance on correction task improved with age, with children in grade V performing significantly higher in comparison to children in grade II in all the categories of sentence correction. Findings are consistent with several other studies which have reported that performance in sentence correction tasks increased with age (e.g., Pratt, Tunmer & Bowey, 1984; Vasanta, et al, 1995; Bhishe, 2002). Similar to the finding in the sentence acceptability task, comparisons of types of sentences in the sentence correction tasks indicated that word order reversals were easier to correct relative to other errors in sentences such as morpheme deletions and wrong syntactic agreements for children. Such differences are more apparent for younger children in grade II. The gross violations caused by word order reversals were easier to correct by children in both grades. In contrast correction of morpheme deletions and syntactic agreements required mastery of grammatical morphemes and other complex grammatical forms to mark finer changes in the sentence structures. This may have posed limitations on the ability of younger children to correct morpheme deletions and more complex incorrect syntactic agreements in sentences.

Indeed, the sentence correction task was more challenging in comparison to the sentence acceptability task. Children received lower scores on sentence correction task in comparison to sentence acceptability task. Sentence

correction task requires the subject to hold the sentence in the working memory, articulate the response and in this process makes it more taxing than the acceptability judgment task. Similar results were obtained by Bhishe (2002) in a study of grammaticality judgment in typically developing children speaking Marathi and children with mental retardation. Tsang & Stokes (2001) also reported higher scores on sentence acceptability in comparison to sentence correction in a study of Cantonese children.

The sentence correction task revealed differences between the groups which were not apparent in the sentence acceptability task. For example, although both groups did not differ in terms of accurate judgments of morpheme deletions in the sentence acceptability task, significant differences were seen in terms of morpheme corrections. Indeed there are suggestions that grammatical awareness may be better evaluated using sentence correction tasks than sentence acceptability tasks, because in the former, the children's attention is drawn to grammatical considerations relative to the latter in which children may be attending to the content of the sentence than its form (Pratt et al.,1984).

Performance on TACL-R

The raw scores obtained by children on the different subsections in TACL-R are shown in Table 5. Independent sample t-test used to compare the overall performance of children in grade II and grade V on TACL found that children in grade V (M = 106.35, SD = 4.96) performed significantly higher in comparison to children in grade II (M = 95.96, SD = 5.02). Comparisons between the two groups of children for the different categories of TACL showed that children in the two grades significantly differed in their performance on all the three categories. Performance increased with grade. Children in grade V (M = 39.09, SD = 0.60) scored significantly higher than children in grade II (M = 37.43, SD = 1.38) on word class and relations. Similar results were seen for grammatical morphemes. The performance of children in grade V (M = 34.13, SD = 2.74) was significantly higher than those of children in grade II (M = 29.74, SD = 2.18) on the grammatical morpheme section. Children in grade V (M = 33.09, SD = 2.17) also scored significantly higher in the elaborated sentence section in comparison to children in grade II (M = 28.78, SD = 2.15).

Table 5: *Raw scores obtained by children on TACL-R*

	Grade II			Grade V			t – test (df = 44)	
TACL - Sections	Mean	SD	Min - Max	Mean	SD	Min - Max	t	p
Word Class and Relations (40)	37.43	1.38	33 -39	39.09	0.60	38 - 40	-5.284	.000
Grammatical Morphemes (40)	29.74	2.18	26 - 33	34.13	2.74	30 - 39	-6.022	.000
Elaborated Sentences (40)	28.78	2.15	23 - 31	33.09	2.17	29 - 37	-6.750	.000
TACL - Total (120)	95.96	5.02	83 - 103	106.35	4.96	100 - 115	-7.060	.000

In terms of task complexity or differences among sections, comprehension of word class and relations were the easiest followed by grammatical morphemes and elaborated sentences for both groups of children. These results support the findings of higher performance of children on sentences with word order reversals in comparison to those with morpheme deletions and incorrect syntactic agreement sentences in both sentence acceptability and sentence correction tasks.

Conclusions

The current study provided preliminary developmental data on syntactic awareness tasks of grammaticality judgments in English among typically developing children within the Indian context. Such developmental data may be used for further development of assessment protocols for assessment of children with language impairments and language based learning disabilities or poor academic performance in comparison to typically developing children. Instruction material or activities based on the syntactic awareness tasks used in the current study may be developed for use in schools or homes to improve syntactic awareness skills in children with language impairments as well as those with language based learning difficulties.

Limitations and future directions: Sample size used for the study was small suggesting caution in generalizing the findings. The current study only included children as young as 7-year-old's studying in second grade in line with earlier findings of emergence of grammaticality judgment abilities coinciding with formal literacy instruction (e.g., Karanth & Suchitra, 1993). However, future studies may be directed at understanding the development of grammatically judgment by sampling participants in continuous age intervals across a wide age group. Gender contingent variations if any, may also be

explored by including a larger sample of participants. Comparisons between the different categories of morphemes and syntactic agreement used for construction of deviant sentences were not made due to limited number of sentences in each category. The study did not measure reading comprehension skills which are closely related to syntactic awareness skills. Future studies may address the relationship between syntactic awareness and reading comprehension in typically developing children as well as those with language based learning difficulties. Performance of children on other syntactic awareness such as analogy and replication tasks may also be studied in order to effectively assess children's intentional manipulation of their syntactic knowledge.

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