

HYPOTHESIS

"Developing the use and understanding of verb tenses, using visual prompts, in year 2 students with language difficulties enhances their oral language abilities and reading comprehension at the sentence level."

Abstract

Many studies acknowledge that the development of oral language plays a significant role to a child's literacy development. Some research has questioned broader language areas like comprehension, vocabulary knowledge, grammar, semantics and narrative and their link to reading development.

The hypothesis of this study investigated the effect of explicit teaching of verb tenses, using visual prompts, on (1) expressive and receptive oral language abilities at the sentence level (2) and reading comprehension. The effect of student's visual strengths (Non Verbal abilities) was also examined.

Eight, year 2 students from the same school, aged between 7 years 1 month and 7 years 8 months, were selected for this study. Students were chosen based on difficulties with Literacy and Oral Language. Four of the eight students selected also had below average visual skills (Non Verbal (NV) abilities). Students were placed into control and treatment groups randomly. Each group consisted of 2 males and 2 females. Across the 10 sessions, students were explicitly taught the 3 verb tenses (present, past and future tense) and how to use them at a sentence level. Both groups used existing Speech Pathology language programs that focused on explicit teaching of grammar. However the treatment group also used additional visual prompts (colour coded cue cards) to support their development of verb tenses.

Results indicate an improvement for the treatment group, supporting the hypothesis, suggesting that the teaching, using visual prompts, enhances the student's Expressive and Receptive Oral Language (OL) and Reading Comprehension (RC), at a sentence level. The control group showed overall no gains in OL but improvement in RC. The students within the control group also made individual gains. There was no conclusive evidence to suggest the use of visual prompts to assist in OL development, is affected by students visual abilities thus further investigation in this area is recommended. Visual prompts did however aid rather than hinder language development.

Introduction

Reading development 'is a dynamic process requiring thinking, language and decoding skills' (Fielding-Barnsley, Hay, Ashman, 2005, p.4). Many studies to date have suggested that 'reading is a language based skill (Menyuk et al., 1991; Shankweiler, Crane, Brady & Macarruso, 1992 as cited in Roth, Speece and Cooper, 2002) and that an oral language deficit in the pre school years constitutes a risk factor for successful literacy acquisition' (Aram & Nation, 1980; Catts, 1993; Wilson & Risucci, 1998 as cited in Roth, Speece and Cooper, 2002, p.259). Studies found that 'even when studies control for intelligence and socio-economic status factors, students with early language delays have more difficulties with reading fluency, spelling and reading comprehension than their age matched peers' (Beitchman et al., 2001; Snowling, 2000 cited in Fielding-Barnsley, Hay, Ashman, 2005). There has been lots of focus in the literature on the 'importance of phonological awareness as a prerequisite for reading' (Adams et al. 1998 cited in Fielding-Barnsley, Hay, Ashman, 2005) but little research that includes 'a broader focus on language issues such as receptive and expressive vocabulary, verbal memory and syntax' (Fielding-Barnsley, Hay, Ashman, 2005, p.4). The NICHD Early Child Care Research Network study supports this by stating many studies '. . . have focused on the role of vocabulary in early reading and the role that this skill plays in reading success' (NICHD, 2005, p.439). However there have been some studies that have supported broader language research, suggesting that an 'array of oral language skills is critical for reading success, be it competence in syntax, discourse ability or size of vocabulary' (Scarborough, 1990, 2001; Tummer et al., 1988; Vernon-Feagans et al., 2001; Gonswami, 2001 as cited in NICHD Early Child Care Research Network, 2005).

Due to this shift in focus regarding the reading process, 'experts in language development (like Speech Language Pathologists (SLP)) are seen as having a great deal to contribute to the understanding of literacy development and to the promotion of its growth' (Paul, 1995, p.378). The aim of this study was to extend the earlier research regarding broader language issues and to investigate the effect of explicit teaching of verb tenses, using visual prompts, on (1) expressive and receptive oral language abilities at the sentence level (2) and reading comprehension. The effect of students' visual strengths (Non Verbal abilities) was also examined. As SLP working in schools, the information obtained for this research would enable us to provide evidence based practise regarding using visual prompts together with traditional speech language therapy practise, to aide in language development. Therefore during our therapy procedure a visual coding scheme was utilised, adapted from Bryan's (1997) "Colourful Semantics". Colourful Semantics was developed in the UK by Speech and Language Therapist Alison Bryan. The Catholic Education Office Melbourne, Speech Pathology stream, has adapted this teaching strategy with an oral language focus, to support student's language development. Specifically throughout the investigation, visual prompts were used to assist students to understand sentence structure and produce sentences with correct verb tenses.

Similar studies have been found in the literature that focus on explicit therapy targeting syntax and receptive language, and consequently its effects on overall language and comprehension. A study by Ebbels and van der Lely, researched meta-syntactic therapy using visual coding for secondary age children with Severe Language Impairment (SLI). Their therapy procedures utilised a combination of "Colourful Semantics" and Lea's (1965, 1970) "Colour Pattern Scheme" which code 'thematic roles (agent, theme) syntactic dependant relations (subject-verb), grammatical categories (nouns, verbs) and morphological inflections (-ing, -ed)' (Ebbels and van der Lely, 2006, p.73). Results indicated that focusing on student's visual strengths can improve both comprehension and production of grammatical rules in children with SLI. Effects on reading

comprehension were not done however. Another study by Mokhtari and Thompson (2006) investigated 'the role of syntactic awareness (children's awareness of the syntactic structure of sentences and their ability to reflect on and manipulate that structure) as a potential source of reading fluency and comprehension difficulty for these readers' (Mokhtari and Thompson, 2006, p.73) Their results found that low levels of syntactic awareness amongst readers corresponds to poor reading fluency and comprehension. Similarly another study by Roth, Speece and Cooper (2002) investigated the relationship between oral language and early reading development by looking at broader language areas such as metalinguistics, structural language and narrative discourse. Their findings supported that 'semantic skill predicted passage comprehension (which) suggest that the importance of different oral language skills to early reading varies as a function of language domain, reading skill. .' (Roth, Speece and Cooper, 2002, p.259)

In this investigation we predicted that: developing the use and understanding of verb tenses using visual prompts in year 2 students with language difficulties, may enhance oral language abilities and reading comprehension at a sentence level.

Method

The study uses a case study OXO design. Gains in oral expressive and receptive language at the sentence level, as well as reading comprehension, following explicit teaching of verb tenses (present, past and future tense) and use of visual prompts, are monitored for year 2 students. The study compares a control group and an intervention group.

The students chosen to participate in the study attended a south eastern primary school and all participants were in year 2. The 8 students selected were aged between 7 years 1 month and 7 years 8 months. Students were chosen based on their: Record of Oral Language (ROL) results (post 2006); text levels (post 2006 and current); history of oral language impairment (mild – significant) as reported by the school and/or prior testing. Students were also selected on the basis of their Non Verbal (NV) abilities. Four students with average NV abilities and 4 students with below average NV abilities were selected. One of the students selected has a Severe Language Disorder (SLD) and is currently supported at the school by a Speech Pathologist and aide support. Two of the students selected are new arrivals (1-2 years in the country). Students were matched for age, sex, non verbal abilities and oral expressive abilities. Results are shown in Table 1. (APPENDIX 1)

The students were administered the following oral language and reading comprehension tests at pre and post testing sessions:

- Kaufman Brief Intelligence Test – 2nd edition, Kaufman & Kaufman, 2004 (K-BIT): This assessment tool was used to assess students NV abilities. It was only administered once, at pre testing, to assist with selection of students.
- Renfrew Action Picture Test (RAPT), (CE Renfrew, 1997): This assessment evaluates a student's ability to produce 'spoken language that could be evaluated in terms of information given and the grammatical structures used.' (Renfrew, 1997, p.4). The student is shown a simple picture and asked a question about the picture. For example, "What is the girl doing?" Responses are oral and recorded. A raw score is obtained for "Grammar" and "Information" and calculated to age appropriate standard scores.

- Sentence Structure subtest - Clinical Evaluation of Language Fundamentals -4th edition,2006 (CELF-4) (Semel, Wigg, Secord,2006): This subtest 'evaluates the student's ability to a) interpret spoken sentences of increasing length and complexity and b) select the pictures that illustrate referential meaning of the sentence.' (Semel, Wigg, Secord, p.72 2006). The students receive a score of 1 for each correct picture selected. A raw score is obtained and calculated to an age appropriate standard score.

- Reading comprehension sentence task: Speech Pathologist developed a Reading Comprehension tool to assess students Reading Comprehension at a sentence level. Students were shown a picture and had to read aloud the 3 sentences about the picture. Students had to choose the best sentence that matched the picture. The sentences provided, differed in either semantics (meaning) or syntax (tenses). For example: "The boy dropped the saucepan"; "The boy is dropping the saucepan"; "The boy will drop the saucepan"(syntax) OR "The mother is sleeping"; "The baby is sleeping"; "The girl is sleeping" (semantics). There were 20 items included in this assessment tool. Student's semantic and syntactic errors were observed.

Procedure:

Prior to the pre testing, detailed information about each student was collected, to assist in selection of students (refer to table 1). Information was gathered from the classroom teachers and special education coordinators reports and assessments. During the pre testing, the students were assessed individually on the 4 domains as discussed above. Students were selected and placed into control and treatment groups randomly. Each group consisted of 4 students (2 males, 2 females).

The 10 teaching sessions were conducted across 3 weeks. During the first week, 4 consecutive sessions were conducted, with one day break due to a public holiday. During the second week, 5 consecutive sessions were conducted and in week 3, 1 session was conducted. Sessions were completed in 30 minutes during the literacy block (between 9-11am), and conducted in a quiet environment. The control group session was completed first followed by the treatment group session. The teaching sessions were carried out by the Speech Pathologist. Lessons were scripted in an attempt to monitor confounding variable of quality of teaching.

During sessions 1, 2, 4, 5 and 7, the Speech Pathologist (SP) introduced the present (PR), past (PT) and future (FT) tense rules. Each new rule was reviewed at the beginning of the session. The students took turns in producing oral sentences with various tenses. At the end of each session the rule was reviewed as a group and then each student independently verbalised what they had learnt and when they would use it.

Sessions 3, 6, and 8 were used to review each tense learnt. Session 3 reviewed present tense, session 6 reviewed past tense and session 8 reviewed future tense. During each session the student's knowledge of the new rule learnt was reviewed as well as their reading comprehension at a sentence level. Each student independently read 2 sentences and chose the correct sentence that matched a picture. The students also took turns in producing oral sentences with various tenses. At the end of each session the rule was reviewed as a group and then each student independently verbalised what they had learnt and when they would use it.

During session 9 the SP reviewed all tenses with the students. Each student listened to various sentences and identified the grammatically correct sentences. They then produced oral sentences using various tenses. The students also completed a reading task whereby they read 2 sentences out loud and identified grammatically correct sentences. At the end of each session the rule was reviewed as a group and then each student independently verbalised what they had learnt and when they would use it.

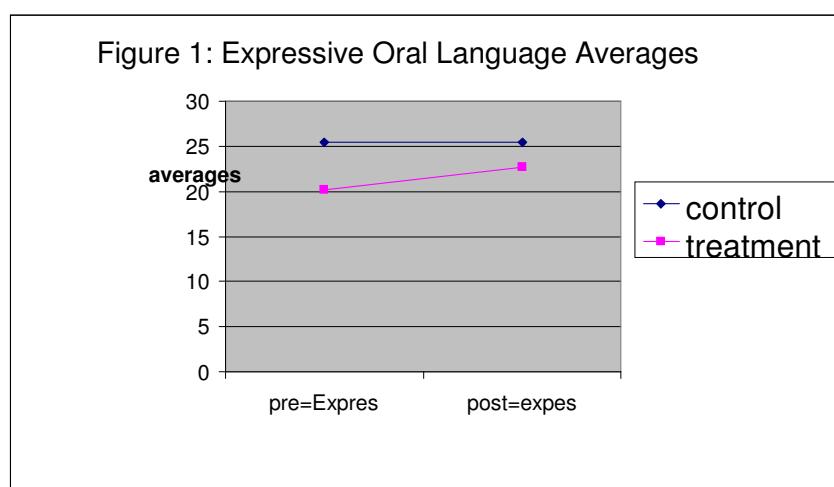
During the last session the SP reviewed all tenses with the students. The students also took turns in producing oral sentences with various tenses. The control group was provided with written sentences where students identified the tense of the sentence (PR, PT, FT). All the rules are reviewed as a group at the end of the session and then each student independently verbalised what they had learnt and when they would use it.

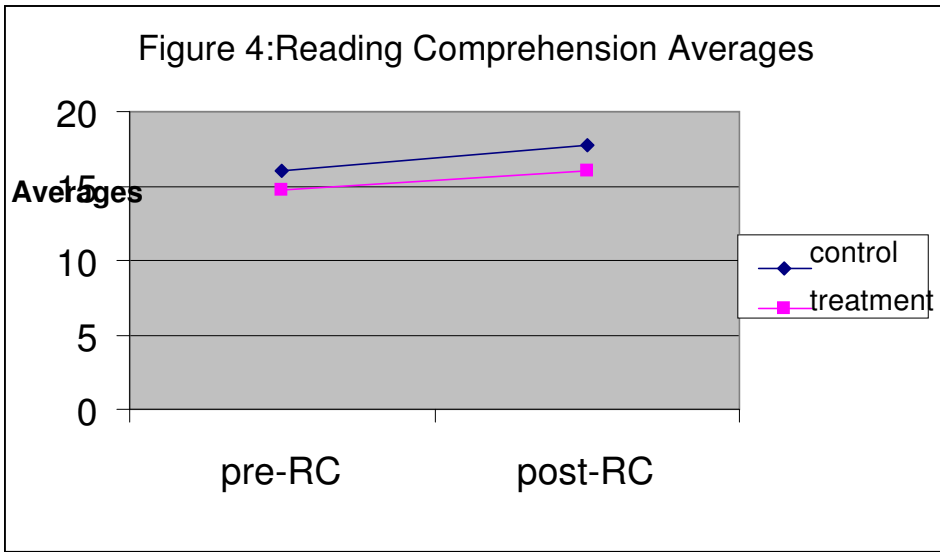
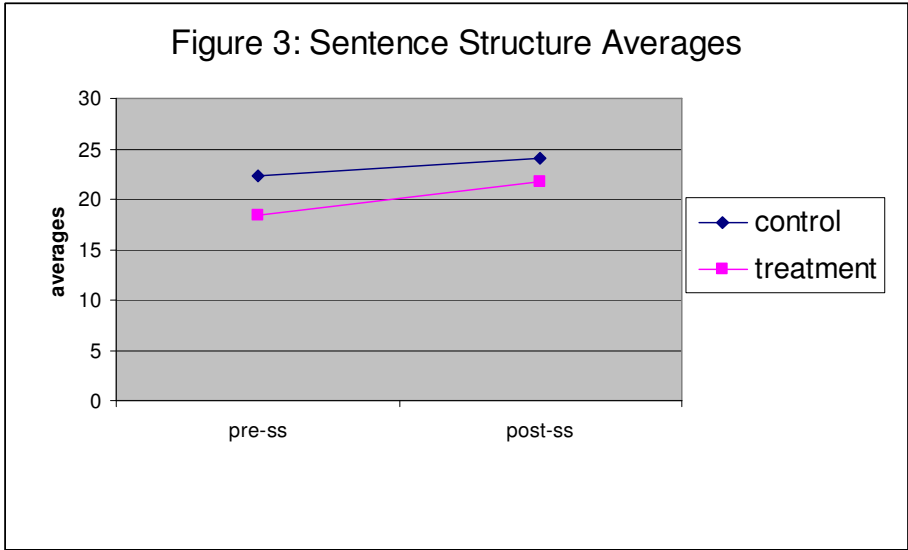
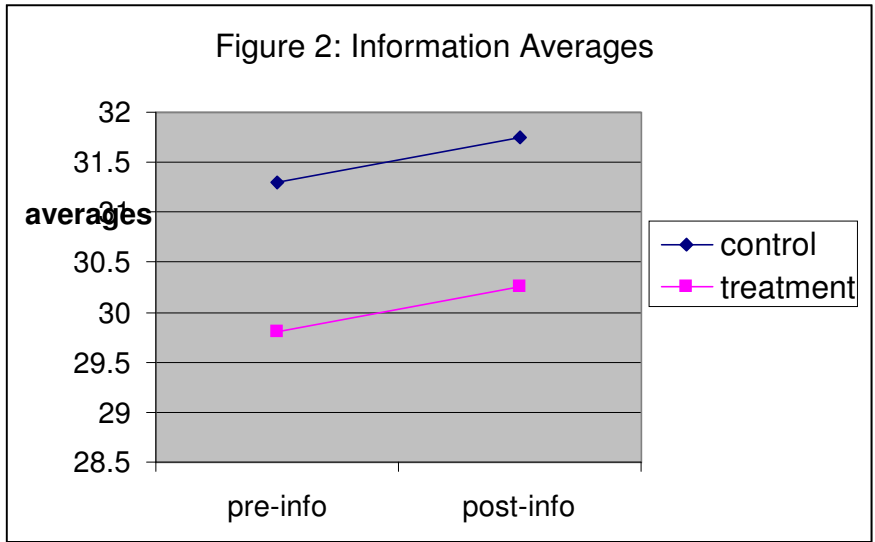
The treatment sessions were carried out similar to the control sessions mentioned above. However the SP's focused on explicit teaching of the tense rules as well as teaching key words using coloured visual prompts i.e. subject (who =orange), verb (what doing=yellow) and object (what=green) (Colourful Semantics, 1997). During session 1 the SP introduced the new rule and discussed key words (as above). The SP used coloured visual prompts to assist the students in sentence production. The key words i.e. subject (who =orange), verb (what doing=yellow) and object (what=green) are reviewed during all sessions. During session 10 the treatment group identified the tense of the sentence as well as the key words i.e. subject (who), verb (what doing) and object (what).

Refer to Appendix 2 for a description of the sessions in more depth.

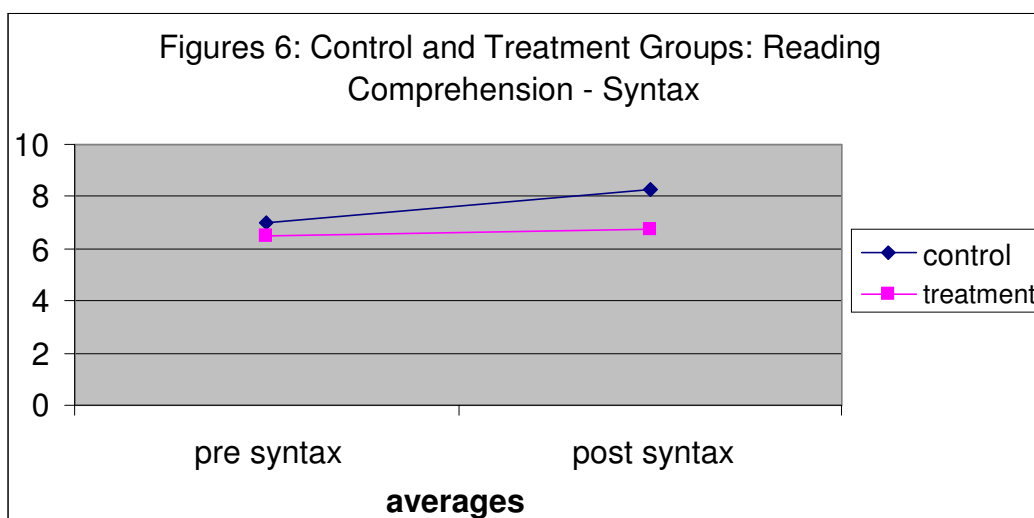
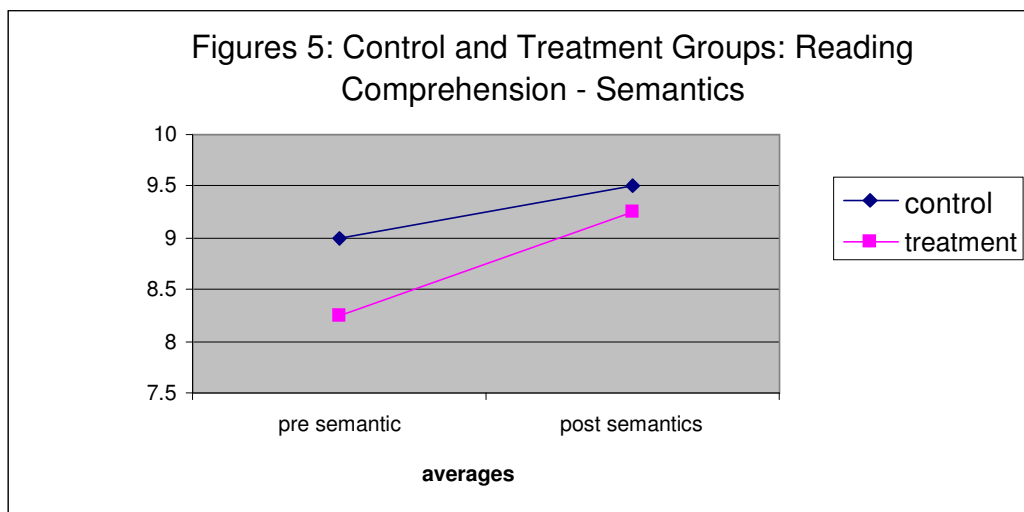
Results

Results obtained for each group can be seen in table 2 and 3 (APPENDIX 3). Figures 1,2,3 below clearly show an improvement for the treatment group, supporting the hypothesis, indicating that the teaching, using visual prompts, enhances the student's Expressive and Receptive Oral Language (OL) and Reading Comprehension (RC), at a sentence level. The figures also indicate that the teaching however had no effect on the control groups Expressive OL although there were slight gains made regarding Receptive OL (figures 2 and 3) and RC (figure 4).

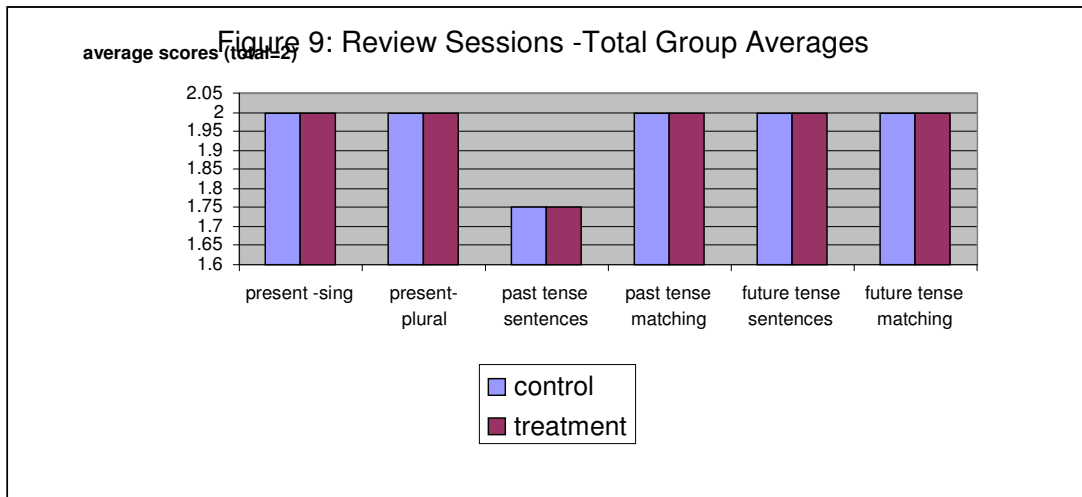




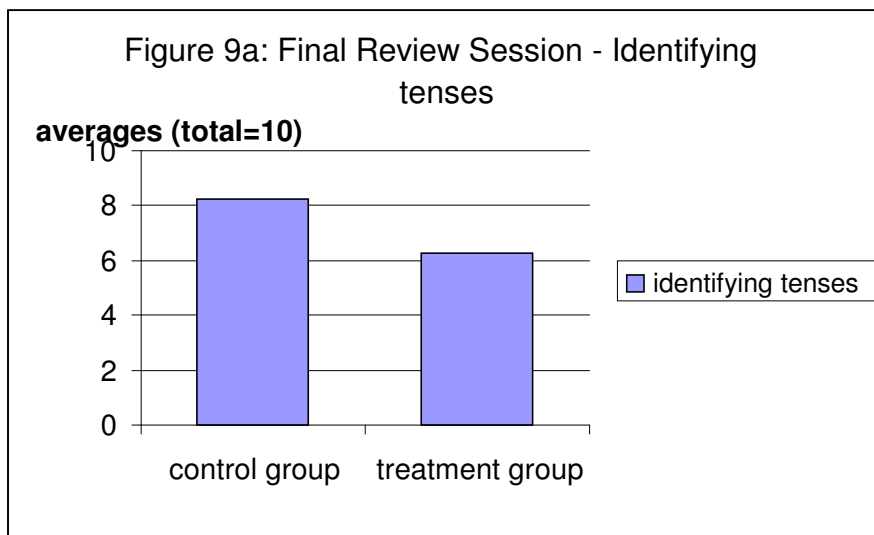
RC averages increased for both groups, as mentioned above, thus suggesting that explicit teaching of tenses enhances RC at the sentence level, despite overall gains made to OL abilities. The pre testing results show that both groups demonstrated greater difficulties with the syntactic test items compared to the semantic test items on the RC test (Figure 5 and 6). The control group although made gains in both semantic and syntax items, overall greater gains in averages were made with items targeting syntax in post testing results. The treatment group made greater gains in averages regarding items that targeted semantics, although slight improvements were shown with the syntactic items.

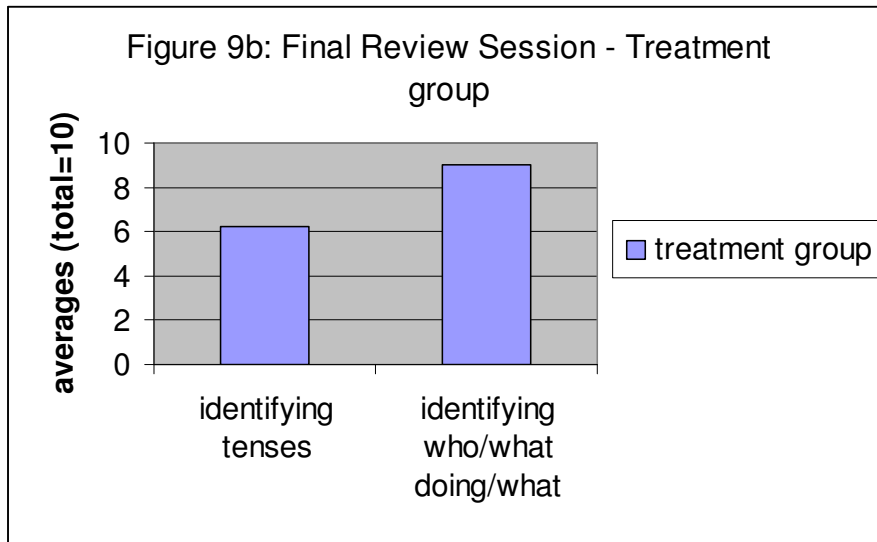


Results obtained from the review session 3, 6 and 8 are shown in Figure 9 below and reveal that both groups performed similar during the PR and FT sessions, in regards to producing correct sentence structures with appropriate tenses. However both groups demonstrated similar difficulties during the PT session.



The final review session results (Refer to Figure 9a) indicate that the control group, made the most gains during the final review testing, whereby students had to read sentences and identify the tense of the sentence (PR,PT,FT). The focus of the teaching during the treatment group was on semantics (key words) using visual prompts, as well as explicit teaching of tenses. Therefore during the final review session, the treatment group was also reviewed on their ability to identify "who"(w), "what doing"(wd) and "what"(wh). On average, the students performed better at identifying w,wd,wh compared to identifying the tenses (refer to Figure 9b). This suggests that although this group made greater improvements during post testing of expressive OL (grammar), the teaching sessions also enhanced their semantic knowledge at a sentence level, thus supporting their reading comprehension.





The students individual progress before, during and after the teaching sessions were also observed. Individual raw scores in pre and post testing were analysed as well as their overall severity ratings. Results indicate that although the control group's averages demonstrated no gains in expressive OL post results, individual gains were made. Figure 10 illustrates an increase in raw scores for 3 out of the 4 students. When looking at severity ratings (Figure 10a) particularly students V and A both improved from *severe difficulties*(3) to *within average*(0). Student L made gains from a *mild* (1) to *within average*(0) for grammar.

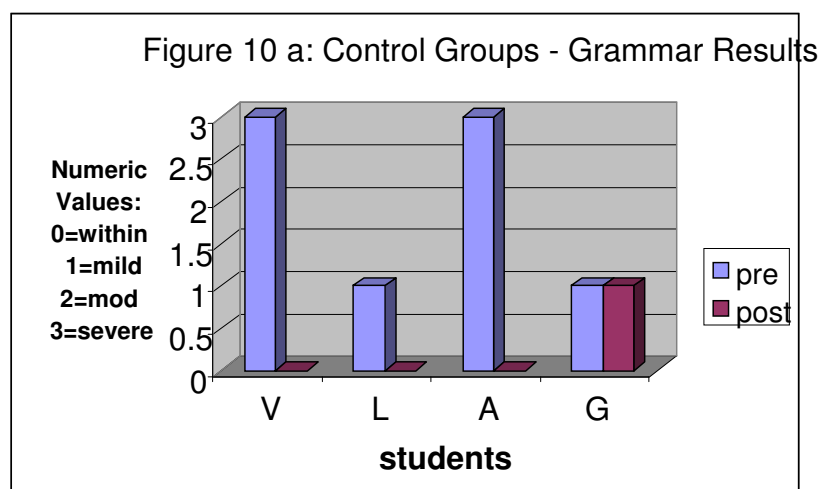
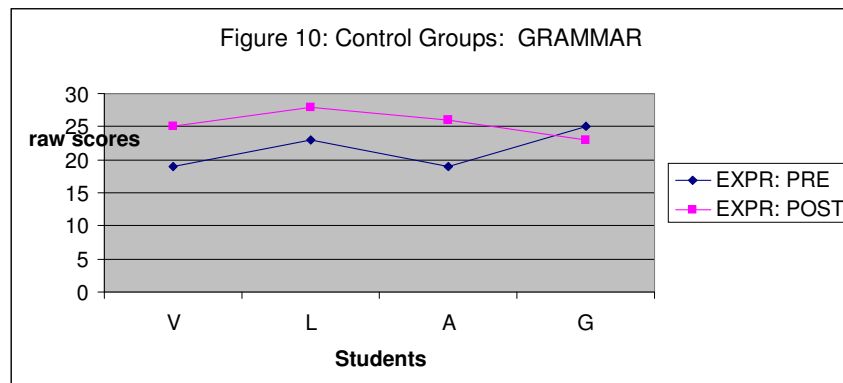
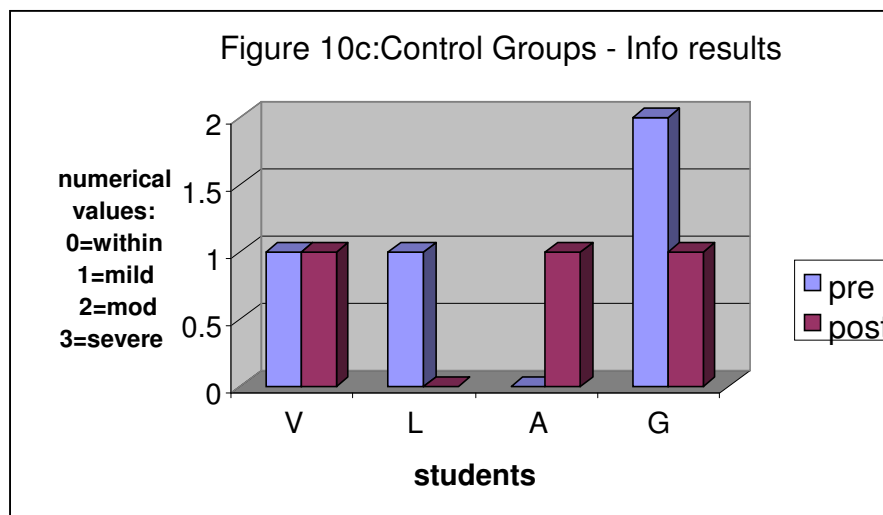
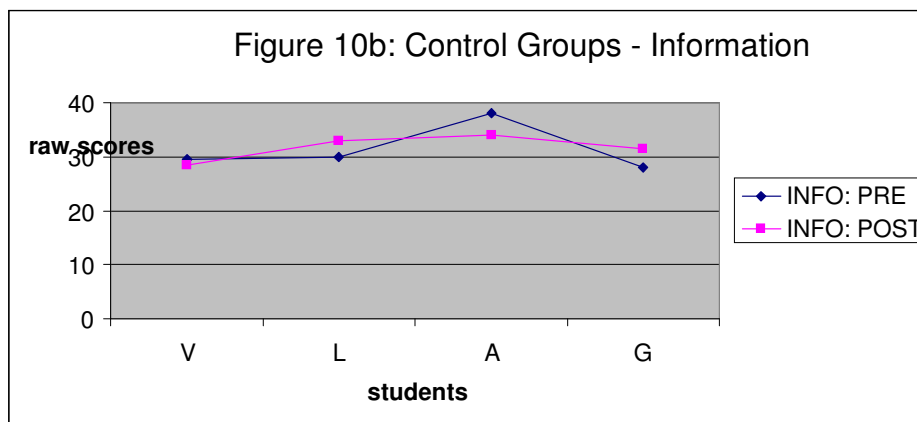
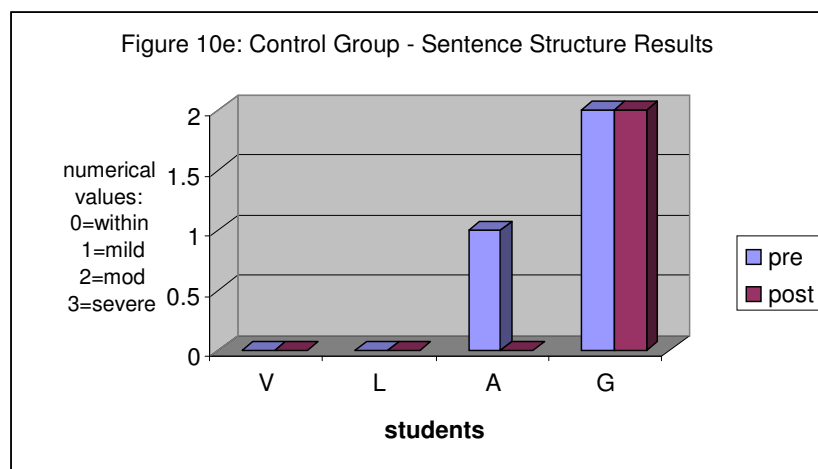
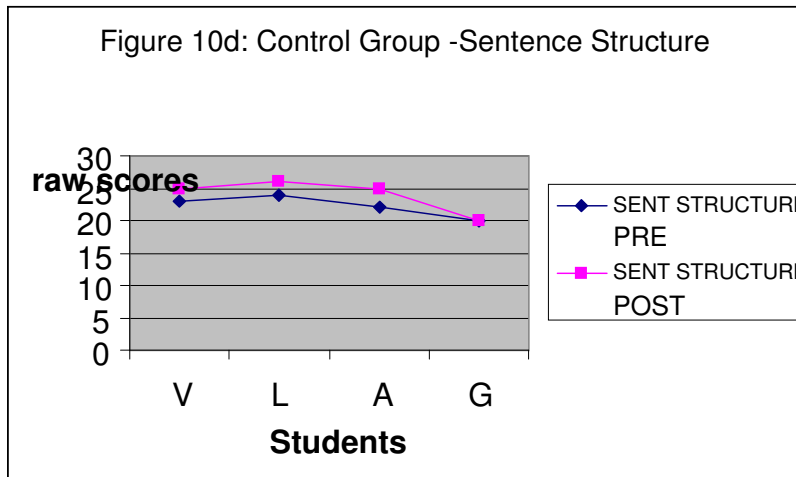


Figure 10b and c demonstrate students V and A both regressing in raw scores, with student A regressing from *within average* to a *mild* in severity ratings. Student G made no improvement in "grammar" but improved from a *moderate* to *mild* in "information".



Results in figure 10 d and e (below) indicate that 3 students made gains in raw score results regarding receptive OL. However students V and L severity ratings remained within average. The results of Student A improved from mild to within average. Student G made no gains.



RC results illustrated in Figure 10 f indicate that 3 out of 4 students in the control group improved. Particularly students V and A, who improved in expressive OL abilities also improved in their RC. Student L results remained the same and student G despite minimal gains in expressive OL, made improvements in RC post raw scores.

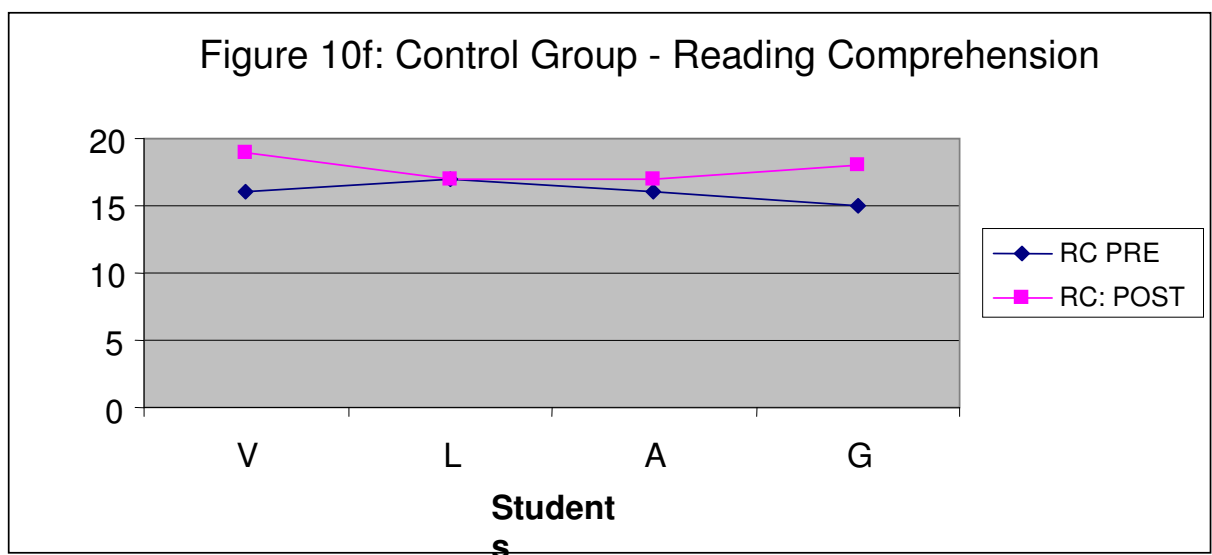
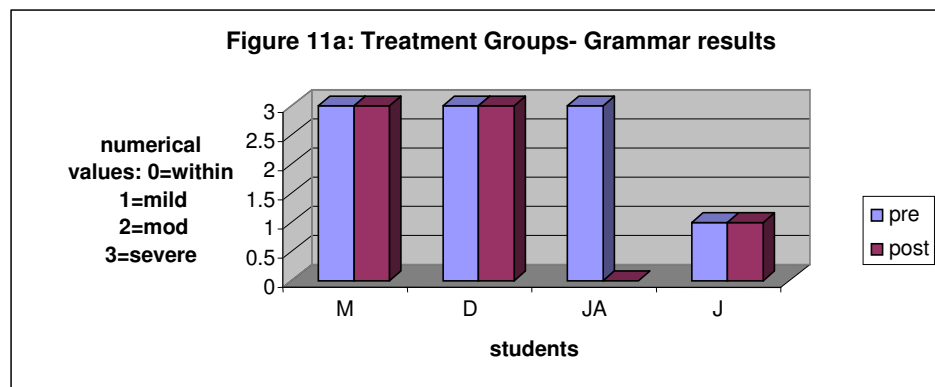
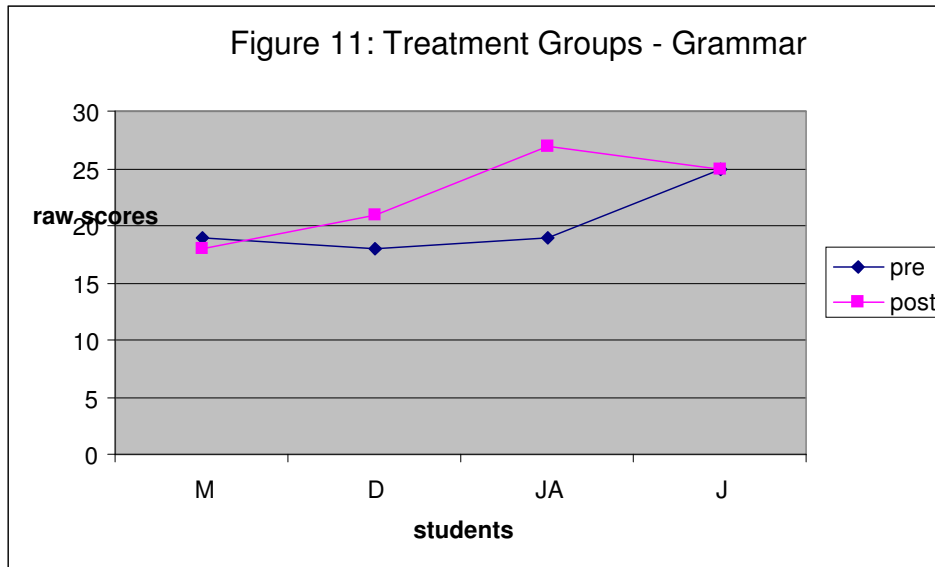
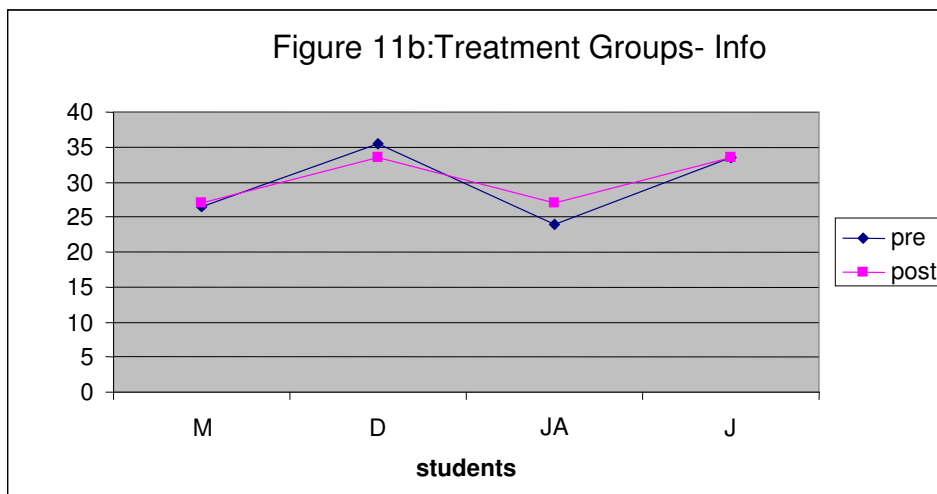


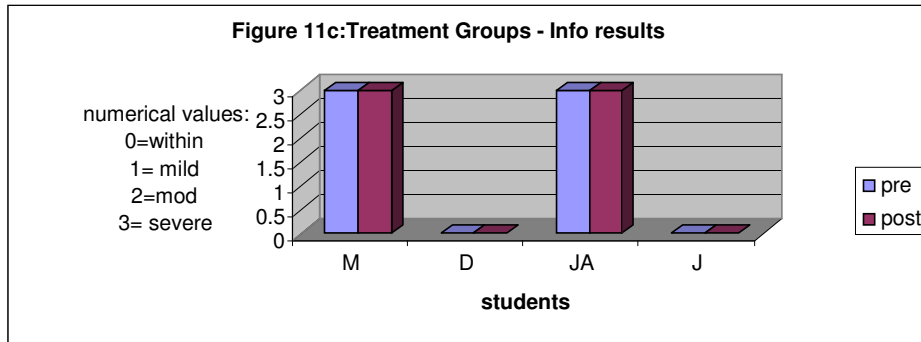
Figure 11 and 11a demonstrate Treatment group results for Grammar indicating that students D and JA made gains in raw score particularly student JA, whose severity ratings improved from significant to within average range. Student D

severity ratings remained within the severe category. Student M regressed in raw score by 1 but remained within the same severity rating.

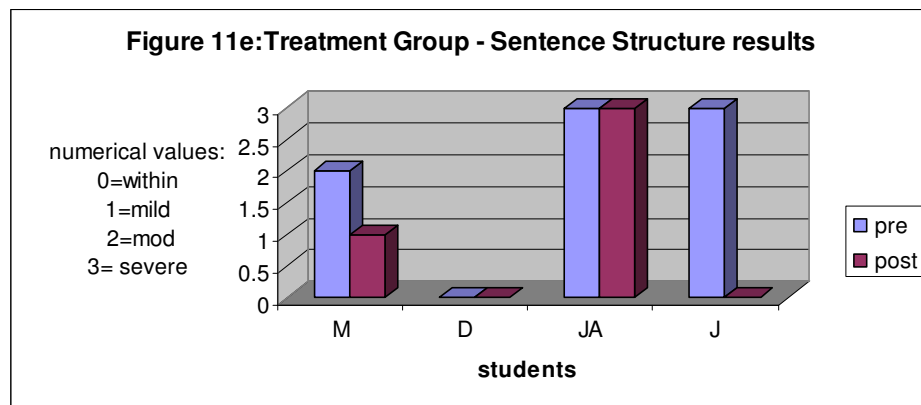
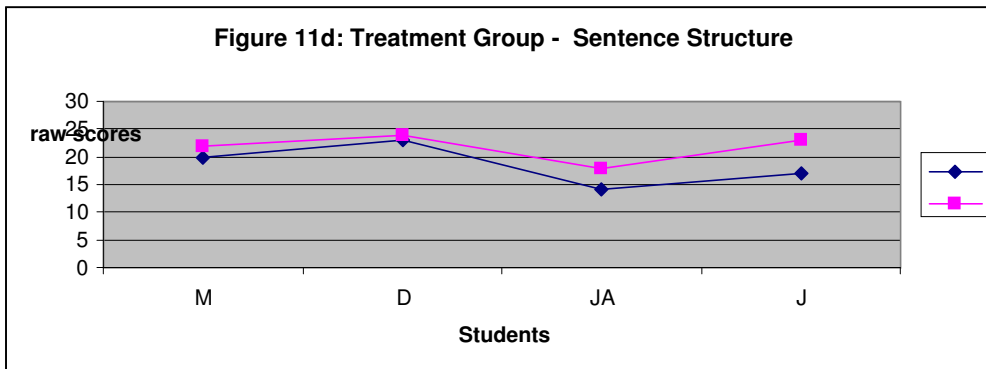


There weren't any particular trends in the Treatment groups post information scores (refer to Figure 11b and c). Student JA and M made gains in information scores however overall remained within the severe category. Both students D and J remained within average range.

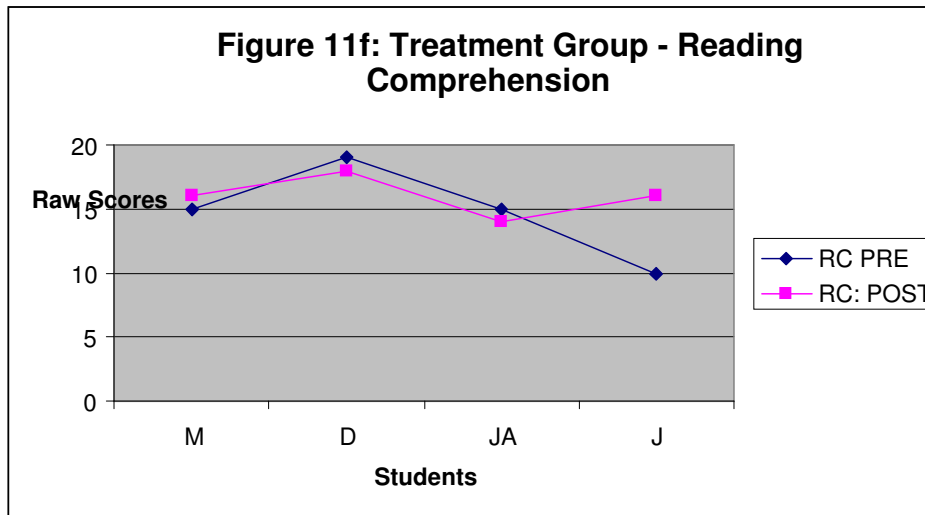




In figure 11d, all students in the treatment group improved in their raw scores particularly students J and JA. Student J post results show no gains across expressive grammar and information OL in both raw scores and severity ratings. However there is a marked improvement in receptive OL. Student JA severity rating remained the same.



Although on average both control and treatment groups made gains in RC, figure 11f indicates that some individual students did not improve. Students M and J made gains, particularly student J whose post raw score increased by 6. Both students D and JA regressed by 1 in post raw scores.



During the research, the hypothesis also looked at the effect of visual prompts in aiding tense development and thus OL and RC at a sentence level. The study therefore included 2 students in the control group and 2 students in the treatment group that were matched for below average non verbal (NV) abilities. Results indicate that students M and J who were part of the treatment group that received visual prompts, had below average NV abilities, both made no significant improvements in expressive OL Refer to Figure 11a). Student M made improvements in sentence structure (moderate to mild rating) and J also made large gains in sentences structure (severe to within average). Students M made minimal gains in RC whilst student J made significant improvements Refer to Figure 11f above). Students D and JA, also part of the treatment group, with average NV abilities had different results. Student JA was assisted by the visual prompts as significant improvements where made in expressive OL (severe to within average), however made no gain in Information, Sentence Structure and regressed by 1 in RC results. Student D made no gains across all 3 domains and also regressed by 1 in RC results. When analysing control groups (no visual prompts) results, students V and G, who have below average NV abilities, both made improvements in RC, with student V also making progress in expressive OL areas.

Discussion

In interpreting the data collected there is some evidence supporting the hypothesis and the research, suggesting that developing students use and understanding of verb tenses, through explicit teaching and visual prompts, enhances overall oral language abilities and reading comprehension. Students that were part of the treatment group, that received explicit teaching of verb tenses with the aide of visual prompts, showed improvements in their overall Expressive and Receptive Oral Language (OL) and Reading Comprehension (RC), at a sentence level.

The results also indicate that despite no overall gains made to Expressive OL by the control group, exposure to OL had some effect on the overall RC results. Also when considering the performance of each student regarding raw scores and severity ratings, there were improvements in post testing results. Improvements in individual raw scores may suggest that the teaching, for both groups, was effective thus supporting the hypothesis. However it is also important to consider the overall standard scores and severity ratings, as this will assist in both short term goal planning for sessions and long term goal planning. This is highlighted through student JA for example, who is currently receiving support for SLD. His results indicate that despite his obvious gains in post testing raw scores for

Information (figure 11b) and Sentence Structure (figure 11d) his overall severity rating remained the same (figures 11c and 11e). Due to the ongoing nature of his SLD, it was expected that student JA would not make significant gains in standardised OL assessments, but that he would achieve some success with individual sessional goals. It is important to note that student JA did make significant gains in his post Expressive OL results (Figures 11 and 11a). This could be attributed to re testing factors.

The data also suggests that even students with mild OL difficulties (receptive and expressive) that made minimal gains through explicit teaching of OL, improved in their RC abilities, as indicated by the score of students J, L and G. Thus these students still benefit from OL exposure.

As revealed in the results, students in both control and treatment groups made positive gains overall when comparing raw score averages of RC. On interpretation of these results it is also evident that in post RC testing the control group mainly improved in the syntax items provided and the treatment group mainly showed signs of improvement in the semantic items provided. This highlights once again the importance of short term session goals in terms of what is being taught. The control groups teaching sessions focused on explicit teaching of verb tenses using traditional speech therapy approach. The treatment groups teaching sessions focused on teaching the semantics of a sentence (i.e. key words) with the use of visual prompts highlighting "who" (subject), "what doing" (verb), "what" (object). The Grammar results (Figure 10) for the control group also support this, as there was an increase in raw scores for 3 out of the 4 students, thus suggesting some effect on grammar/tense knowledge between pre to post testing.

The research looked at the effect of using visual aides, to support language development, on students with varying NV abilities. The results indicate that there was no conclusive evidence to suggest the use of visual prompts to assist in OL development, is affected by student's visual abilities. This could be an area that future investigation could research. Overall the use of visual prompting with traditional therapy did not hinder student's development of OL and RC at a sentence level.

There are a number of factors that may have impacted on the students performances. An important factor to consider is child re testing, as mentioned above. Semel, Wiig & Secord state 're evaluating with the same test may raise concerns about practise effect.' (Semel, Wiig & Secord, 2003, p.13). The time between pre and post testing session was 3 weeks for this project thus variables like practise and memory may influence the subject's performance on post testing.

It is also important to consider sample size, as stated by Paul, 1995, p.37 'the sample must be big enough . . . to permit statistical conclusions to be drawn'.

Concurrent student's experiences also poses as a variable which may have impacted on results. All but one of the students in both of the groups has English as a second language. As the sample was taken from a high ESL school, students may have participated in specific oral language group support that the school offers. Also one of the students is currently receiving support at school for SLD. This support is through: 1:1 aide support targeting OL; participation in OL group run by a Speech Pathologist; and individualised learning plan targeting explicit OL and Literacy goals. Therefore gains in results cannot be fully attributed to the effect of the teaching provided in the project.

The validity of the Reading Comprehension assessment may have also posed as a variable impacting on results, although certain areas were controlled (i.e. syntax, semantics) when formulating the assessment. The assessment therefore may have affected the true gains made in RC. This may also explain the regression of some student's results in the treatment group.

Quality of teacher/teaching was also a factor however was controlled by providing scripts for all sessions.

The data obtained also reflects the teaching having a positive effect on students with ESL. Differential diagnosis of SLD poses as a significant issue amongst the Speech Pathology stream dealing with a population of students that have English as a Second Language (ESL). Thus future research could investigate the effectiveness of the teaching sessions conducted in this project as a measure of progress in OL after explicit and intense therapy, providing extra evidence and thus supporting differential diagnosis of SLD.

Overall, the results of this research indicate some support for the hypothesis regarding the effects of explicit teaching of syntax on oral language abilities and reading comprehension. In retrospect a standardised tool for measuring reading comprehension at the sentence level, would have been useful in terms of validity of results. Also a deeper analysis into the effects of using visual prompts with traditional language therapy should be investigated.

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