Title: Expository discourse skills of students with reading comprehension difficulties

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Abstract

Purpose: The ability to produce expository discourse (the use of language to convey information) is important for classroom participation and access to the curriculum, particularly during the middle school years. This study investigated the spoken expository discourse skills of students with reading comprehension difficulties compared to their peers with average reading skills.

Method: In this study we administered a modified favourite game or sport (M-FGS) task developed by Heilmann and Malone (2014) to 48 students who were in their fifth year of schooling (9.33 – 11.11 years of age). Expository language samples were transcribed and analysed on measures of a) microstructure: syntax (MLU in words) and vocabulary (number of different words); and b) macrostructure (Expository Scoring Scheme).

Result: Compared to their peers with average reading comprehension skills, students with reading comprehension difficulties demonstrated significant difficulties at the micro- and macrostructure levels. Subgroup analysis revealed the importance of spoken language comprehension proficiency (at text level) for expository discourse skills.

Conclusion: The results from this small-scale investigation demonstrated the usefulness of the M-FGS task in describing challenges in expository discourse of students with reading comprehension difficulties, with clear implications for intervention.

Key words: Reading comprehension, expository discourse, language sample analysis, students

Expository discourse skills of students with reading comprehension difficulties

The ultimate aim of all reading is to read for meaning (i.e. reading comprehension). The oral language basis of reading acquisition and development is well established (Catts & Hogan, 2003). There is a 'positive spiralling cycle from early strengths in oral language to successful written language, to advanced development in spoken language' (Gillon, 2018, p. 96). Important precursor oral language skills to reading acquisition include vocabulary, phonological awareness, grammar, and narration (Catts & Hogan, 2003; National Early Literacy Panel, 2008). Once children have learnt to read (also referred to as decoding or word recognition), they advance their oral language skills through exposure to more advanced vocabulary and more complex syntactic structures in written materials, including increasingly advanced text types (e.g. expository) (Diakidoy et al., 2005; Perfetti et al., 2005). At all stages of reading development, both word recognition and oral language comprehension are required for successful reading comprehension (see Tunmer & Hoover, 2019). Considering the important bidirectional relationship between oral language competence and reading proficiency, speech pathologists play a crucial role in the management of children with reading disorders (Snow, 2016), including thorough assessment of the spoken and written language skills needed for detailed goal setting and intervention planning (Westerveld et al., 2020). This study investigated if students with identified reading comprehension difficulties differed from their peers with typical reading skills in expository discourse, an advanced type of oral language skill that is highly relevant for school-age students (Nippold, 2007; Westerveld & Moran, 2011). The results from this study may influence speech pathologists' assessment and intervention practices for students with reading comprehension difficulties.

Oral language assessment

Language sampling and analysis is a critical aspect of the speech pathologist's comprehensive assessment battery for students at risk of language disorder (Westerveld,

2011). Analysis of a child's spontaneous language in a context relevant to their everyday functioning enables evaluation of a child's ability to communicate in a real-world setting, informs goal-setting, and allows for an ecologically valid way to monitor progress following intervention. Language sample analysis of discourse genres such as (fictional and personal) narrative, expository and persuasion in particular provides an opportunity to appraise a child's use of advanced linguistic skills that are required at school. In an effort to standardise language sample analysis, several researchers have developed elicitation protocols with the aim of creating databases of oral language samples in order to provide benchmark data for typically developing children and adolescents in conversation, narration, exposition, and persuasion (Heilmann & Malone, 2014; Heilmann et al., 2020; Heilmann et al., 2010; Hill et al., 2020; Westerveld et al., 2004; Westerveld & Vidler, 2016). Although clinicians and researchers now have access to a range of language sampling protocols to choose from, the choice of protocol (and discourse context) should align with the child's age and/or stage of schooling to ensure ecological validity.

Expository discourse

The ability to produce expository discourse, 'the use of language to convey information' (Nippold & Scott, 2010, p. 1) during the school-age years is critical for classroom participation and academic achievement. To illustrate, in Year 4 (9 – 10 years), the standards outlined in the Australian Curriculum Assessment and Reporting Authority (ACARA) stipulate that students are expected to read texts designed to inform, that include content of increasing complexity and technicality about topics of interest and topics being studied in other areas of the curriculum (ACARA, 2012). Some of the ACARA content descriptions include 'identify characteristic features used in imaginative, informative and persuasive texts to meet the purpose of the text' (ACELY1690) and 'plan, draft and publish imaginative, informative and persuasive texts …' (ACELY, 1694). Expository discourse can

comprise several genres, including compare-contrast, descriptive, problem and solution, cause and effect, and procedural (Nippold & Scott, 2010). Students' abilities to produce oral and written procedures is an important part of the curriculum including English, Science and Languages (ACARA, 2012). Given the importance of this expository discourse genre for classroom participation and performance, the focus of the current study is on procedural discourse (i.e. explaining the rules of a game or sport).

To produce expository discourse requires competence and integration of language skills at micro- and macrostructure level, while relying on domain-specific topic knowledge. At microstructure level, expository discourse is characterised by use of abstract nouns and technical terms (vocabulary) and complex syntax (Nippold et al., 2005); at macrostructure level, one is required to access a mental representation of the typical structure of the expository discourse genre, with domain-specific knowledge significantly influencing coherence (connections between sentences) and use of vocabulary (Nippold, 2010). Existing research into expository discourse of typically developing school-age students (ages 7 – 17) has clearly shown age related improvements in vocabulary (number of different words), syntactic complexity (mean length of utterance and clausal density), verbal productivity (number of utterances) (Heilmann & Malone, 2014; Nippold et al., 2005; Westerveld & Moran, 2011) as well as the ability to 'clearly and comprehensively convey the key points of their explanation', using an Expository Scoring Rubric (Heilmann & Malone, 2014, p. 282). Although a study investigating group performance on the Favourite Game or Sport (FGS) task, revealed significant group differences in students (mean age 13 years, 11 months) with language impairment compared to their typically developing peers on measures of syntax (Nippold et al., 2008), to the authors' knowledge no study has investigated the performance of students with reading comprehension difficulties on the FGS task.

Students with reading comprehension difficulties.

Students may struggle with reading comprehension for several reasons. In line with the Simple View of Reading (Hoover & Gough, 1990), students' reading comprehension difficulties can be explained by challenges in word recognition, challenges in language comprehension, or challenges in both. Considering children's reading comprehension difficulties (in the absence of word recognition problems) often reflect oral language weaknesses, particularly at text level (Cain, 2003; Clarke et al., 2010; Cragg & Nation, 2006), but also at word- (vocabulary; e.g., Catts et al., 2006) and sentence-level (morphosyntax; Adlof & Catts, 2015), it stands to reason that strengths and challenges in *oral* expository discourse may affect students' understanding of written expository texts that are common in the later grades of schooling (see Snyder & Caccamise, 2010). Conversely, students with reading comprehension difficulties, regardless of the underlying challenges with word recognition and/or language comprehension, may miss out on important learning opportunities through lack of exposure to these types of written texts, and as a result may fail to develop oral expository discourse proficiency.

The current study

In this study we administered an expository discourse task, using the modified FGS (M-FGS) protocol developed by Heilmann and Malone (2014) to a group of students, identified with and without reading comprehension difficulties on a standardised test of reading, in year 5 (10 – 11 years of age) of schooling. Our main aim was to evaluate the expository discourse skills of students with reading comprehension difficulties compared to their peers with typical reading skills. The primary research question was:

- Are there group differences in expository discourse between students with reading comprehension difficulties and their peers without reading comprehension difficulties on the following measures: a) microstructure: length (total utterances), syntax (MLU/words), and vocabulary (number of different words); and b) macrostructure

(Expository Scoring Scheme). We hypothesised that the students with reading comprehension difficulties would show significant challenges at both microstructure and macrostructure levels, compared to their peers without reading comprehension difficulties.

Based on this hypothesis, our second research question was:

- Are there subgroup differences in expository discourse performance in the group of students with reading comprehension difficulties, depending on their performance on a standardised test of listening comprehension (the Understanding Spoken Paragraphs subtest of the CELF-4; Semel et al., 2006). We hypothesised that children with listening comprehension difficulties might demonstrate more significant difficulties in expository discourse than those who demonstrate age-appropriate listening comprehension scores, regardless of their performance in reading accuracy.

Method

Participants

Ethics approval for this project was obtained from the respective Universities' Human Research Ethics Committees (2016/612; 2018002332). The school principal of the participating school and all parents/caregivers also provided informed written consent to participate, whereas the students assented verbally. Participants included in the current study were part of a larger project which focused on evaluating primary school-age students' reading performance (Westerveld et al., 2020). Participants were recruited from one school in Metropolitan Queensland, Australia. At commencement of the larger project, consent forms were sent home to all students attending year 4 (i.e. their fifth year of schooling). Of the 94 students enrolled in year 4 at the time, 78 parents (83%) provided written informed consent

for their child to participate. Full details of the larger cohort are reported in Westerveld et al. (2020).

To be included in the current study, participants were required to have both the York Assessment of Reading for Comprehension (YARC; Snowling et al., 2012) and expository discourse data available. Thus, there were 48 participants (19 males, 40%) included in the current study (61% of the wider cohort). Based on parent report data, 30% of participants spoke a language other than English in the home environment. At the time of completing the expository task, participants' mean age was 10.04 years (SD 0.35, Range 9.33 – 11.11). The 48 participants were categorised into two groups based on their reading comprehension (RC) performance on the YARC. Thirty participants demonstrated RC skills that were below expectations (< SS85), and were classified as the "RC low" group, and 18 participants demonstrated age appropriate RC skills ($\geq$ SS85) forming the "RC average" group.

Procedure

All students were assessed individually by qualified practising speech pathologists. Children were seen in a quiet room in the school for one or two assessment sessions. During the first assessment session, the YARC was administered. Due to time constraints, students' expository skills were assessed either following the completion of the YARC (n = 33) at the end of year 4 (fifth year of schooling), or in the first four weeks of the following school year (n = 15).

Measures

Reading ability

All students in the current study completed the York Assessment of Reading for Comprehension (YARC; Snowling et al., 2012). The YARC is an assessment of reading ability, normed on Australian students (n = 1049), and provides an indication of students' performance in reading comprehension, reading accuracy, and reading rate. As per the

administration guidelines, each student was required to read aloud two passages (at a level suitable to the student's reading ability), and the time taken to read each passage was recorded. If the student produced a reading error, the correct production was immediately provided to the student by the examiner. At the conclusion of each passage, the student was asked a series of comprehension questions, and the student was able to refer to the text to answer the questions if they needed. At the completion of two passages, the following were calculated: (i) Reading Accuracy (RA) – total number of reading errors across the two passages, (ii) Reading Rate (RR) – total reading time over the two passages divided by the number of words that were read, (iii) Reading Comprehension (RC) – number of reading comprehension questions answered correctly. The raw scores across each subtest were converted to standard scores (SS). A SS cut-off of 85 was applied in the current study, with scores < SS85 indicating reading skills that were "below expectations [RC low]", and ≥ SS85 performing "within expectations [RC average]".

Expository discourse

Students were asked to explain the rules of their favourite game or sport using the M-FGS elicitation protocol developed by Heilmann and Malone (2014). This task was used successfully with 235 students attending grades 5 to 9 (ages 10;7 to 15;9). For a copy of the protocol please see Heilmann and Malone (2014). In this task, the examiner read a script with explicit instructions on how to complete the task. Students were then given a planning sheet listing the eight expected components (object, preparations, start, course of play, rules, scoring, duration, strategies), including a brief description of each component. They were asked to take a few minutes to plan their explanation, before being asked to explain their favourite game or sport to the examiner. Students were able to refer to their planning sheet during the assessment.

Data transcription and analysis

All expository samples were recorded and transcribed by a research assistant, experienced in transcription and coding using Systematic Analysis of Language Transcripts (SALT NZAU; Miller et al., 2017) conventions. Utterances were segmented into communication units (CU; Loban, 1976), which may be defined as an independent clause plus all associated subordinate clauses. Only complete and intelligible CUs were used for analysis. All transcripts were checked by a second research assistant, who listened to the samples and noted any disagreements. The first author made the final decision on any disagreements in transcription and/or utterance segmentation.

The following measures were generated automatically using SALT. They were selected for analysis, based on previous research demonstrating the sensitivity of these measures to age and/or language ability (Heilmann & Malone, 2014): 1) *Verbal productivity* was calculated by summing the total number of communication units (total utterances); 2) *Semantic diversity* was calculated based on the number of different words (NDW) the students used to explain their favourite game or sport; 3) *Syntactic complexity* was calculated as the mean length of communication units in words (MLU-W).

At macrostructure level, each sample was scored by hand on the Expository Scoring Scheme (ESS), using a rubric (Heilmann & Malone, 2014). Using this rubric, each sample is scored on 10 components (object, preparations, start, course of play, rules, scoring, duration, strategy, terminology, and cohesion), using a 0-5 rating scale, where 1=immature/minimal use, 3 = emerging/inconsistent, 5 = proficient. A score of 0 was awarded if the student did not address that particular component, and scores of 2 or 4 were awarded based on clinical judgement as per Heilmann and Malone (2014).

Coding agreement

A second research assistant independently coded all transcripts on the ESS. There was a high level of agreement, with Krippendorff's alpha (Krippendorff, 1980), accounting for the degree of difference in ordinal data between two raters at .921.

Listening comprehension

For all students who scored below expectations in RC on the YARC, their listening comprehension skills were measured using the Understanding Spoken Paragraphs (USP) subtest of the *Clinical Evaluation of Language Fundamentals – 4th Edition* (Semel et al., 2006). In accordance with the test manual, students were asked to listen to spoken passages, and then verbally answer questions about the content of each passage. The subtest was administered according to test guidelines. A total raw score was calculated based on student responses, and this was converted to a scaled score (mean 10, SD 7 – 13). Scaled scores below 7 (one standard deviation below the mean) indicated oral language comprehension below expectations (LC low), with SS $\geqq$ 7 classified as average (LC average).

Result

Data screening

Data were screened for outliers and assumptions on a one-way multivariate analysis of variance (MANOVA). Four participants were identified as outliers; however close inspection of individual data revealed they were genuine data points. For completeness, the one-way MANOVA was run separately without these participants included and results remained unchanged. Therefore, the main analysis was conducted with all participants. There were no multivariate outliers in the data, as assessed by Mahalanobis distance ($p > .001$). Data were normally distributed for ESS, NDW and MLU-W (Shapiro-Wilk test $p > .05$). Violations of normality were shown for total utterances (Shapiro-Wilk test < .05). There was homogeneity of variance-covariance matrices, as assessed by Box's M test ($p = .624$). Spearman's Rho was reported for correlation analysis due to monotonic (non-linear) relationship between

dependent variables. There was a high correlation between NDW and total utterances (r_s= .921, p = <.001). Given its high correlation with NDW and the violation of normality, total utterances was excluded from further analysis.

Descriptive information

For descriptive purposes, we compared the two groups of participants (RC low and RC average) on demographic information (sex, English as Additional Language or Dialect [EAL/D] status and age) as well as YARC performance. There were 14 girls (77%) and 15 girls (50%) in the RC average and RC low group, respectively, however, there was no statistically significant difference between the groups for sex, $\chi^2(1) = 3.630$, $p = .057$, $\phi_C = -.275$. There was also no statistically significant difference between groups for EAL/D status, $\chi^2(1) = 0.027$, $p = .870$, $\phi_C = .024$. Table I describes the results comparing the two groups of students (RC low and RC average), on age and YARC results. As shown, groups did not differ based on age ($p > 0.05$). However, there were statistically significant differences between groups for YARC performance on all subtests of RC, RA, and RR ($p < .001$). Table I also presents the descriptive data for the listening comprehension (based on CELF-4 USP) results for the RC low group.

Participants in both groups described a range of team sports (e.g. soccer, basketball), and board games or card games (e.g. Uno, Monopoly). Only two students in the RC low group spoke about an individual sport (tennis). There was no statistically significant difference between groups for the type of game or sport (team, individual, board/card game) chosen ($p > 0.05$).

[Insert Table I here]

Group performance on the expository task

To answer our primary research question, a one-way MANOVA was performed to compare groups based on the combined dependent variable (MLU-W, NDW, ESS). Effect sizes are reported as partial eta-squared and interpreted as 0.01- < 0.06 (small effect), 0.06 - < 0.14 (moderate effect) and ≥ 0.14 (large effect). Table II reports the results. Results of the MANOVA indicated a significant difference between the RC low and RC average groups (all dependent variables combined), $F(4, 43) = 4.792$, $p = .003$; Wilks' $\Lambda = .692$; partial $\eta 2 = .308$. Using a Bonferroni adjusted α level of .016, follow-up univariate ANOVAs showed significant group differences for MLU-W, NDW and ESS, with the RC average group showing better performance (with moderate to large effect sizes).

[Insert Table II here]

Subgroup performance on the expository discourse task

To explore if these difficulties in expository discourse for students with low RC were associated with underlying listening comprehension (LC) difficulties, we subdivided the RC low group based on their performance on the Understanding Spoken Paragraphs subtest of the CELF-4 (using SS7 as the cut-off). Of the 30 students with low RC, 12 demonstrated low LC (SS < 7), while 17 demonstrated average LC skills (SS ≥ 7). One student in the RC low group did not complete the LC assessment. Table III presents the results of the one-way ANOVA. As shown, using a Bonferroni adjusted α level of .016, MLU-W, NDW, and ESS continued to be a point of difference across the three groups.

[Insert Table III here]

Given the exploratory nature of the next part of our investigation, Bonferroni corrections for multiple comparisons were not made with statistical significance accepted at the $p < .05$ level (Perneger, 1998). Tukey post hoc analysis revealed students in the RC low/LC low subgroup showed a statistically lower NDW score (-42.29, 95% CI [-82.92 - -

1.67], p = .04, Hedge's g = .98) compared to students in the RC Low/LC average group. There were no significant subgroup differences between LC low and LC average for MLU-W (p = .737) or ESS (p = .067, Hedge's g = .87). However, compared to the RC average group, the RC Low/LC low group demonstrated significantly lower scores in MLU-W (-2.06, 95% CI [-3.80 - -.33], p = .016; Hedge's g = 1.04), NDW (-60.94, 95% CI [-101.10 - -20.79], p = .002; Hedge's g = 1.53), and ESS (-11.28, 95% CI [-17.63 - -4.92], p = <.001; Hedge's g = 1.53). Despite showing lower scores on MLU-W, NDW, and ESS, there were no significant subgroup differences between the RC Low/LC average and the RC average groups for MLU-W (p = .06), NDW (p = .436) or ESS (p = .085, Hedge's g = .76).

Discussion

This study compared the expository discourse skills of two groups of students who were in their fifth year of schooling. Based on reading performance on the YARC (Snowling et al., 2012), one group of students demonstrated reading comprehension difficulties (RC low group), whereas the second group performed within expected limits (RC average). All students completed the modified FGS task (Heilmann & Malone, 2014), in which they were asked to explain the rules of their game or sport of choice, following a brief planning period. All spoken discourse samples were analysed for semantic diversity (NDW), syntactic complexity (MLU-W), and overall expository quality (ESS). As hypothesised, the RC average group significantly outperformed their peers in the RC low group on all measures, with large effect sizes, indicating these differences would have been noticeable in daily activities. This means, at group-level, the students with reading comprehension difficulties produced explanations that were lower in quality (ESS), contained shorter sentences, and showed less diverse vocabulary, compared to their peers with age-appropriate reading comprehension scores. Considering the importance of expository discourse proficiency for meeting the curriculum standards (Australian Curriculum Assessment and Reporting Authority [ACARA],

2012), this is of concern and highlights the importance of discourse-level oral language assessment in students with reading comprehension difficulties.

Our design (cross-sectional group comparison) does not allow for causal interpretations, i.e. whether students' challenges in expository discourse are caused by reduced exposure to expository texts due to reading difficulties, or whether students' reading comprehension difficulties stem from discourse-level spoken language difficulties. We therefore conducted a follow-up analysis to provide some further exploratory insights. To explore the influence of listening comprehension (LC), we divided the RC low students into two groups based on their performance on the CELF-4 USP subtest, resulting in 3 subgroups: RC low/LC low (USP SS < 7), RC low/LC average (USP SS $\geq$ 7), and RC average. As expected, our results revealed significant differences between students in the RC low/LC low subgroup compared to their peers in the RC average group, with the RC average group outperforming the RC low/LC low group on all measures.

The RC low/LC low group produced explanations that contained shorter sentences (MLU-W) with lower semantic diversity (NDW) and reduced quality (ESS) compared to the RC low/LC average subgroup. However, the only statistically significant group difference was on NDW, with the RC low/LC low group obtaining a much lower score with a large effect size. These results indicate that students whose reading comprehension challenges are associated with listening comprehension difficulties (regardless of their reading accuracy performance), show significantly lower semantic diversity as measured by the number of different words used. Given that vocabulary is one key contributor to listening comprehension success (e.g. Hogan et al., 2014), it is hypothesised that the RC low/LC low children may have also had poorer vocabularies which subsequently impacted the semantic diversity when explaining their favourite game or sport. As we used entire expository language samples, not

controlled for length, these findings indicate vulnerability in semantic diversity which may also constrain students' use of complex syntax (Heilmann & Malone, 2014).

Comparing the RC low/LC average group to the RC average group revealed no significant group differences despite the RC average group demonstrating higher performance scores. Overall, these results demonstrate the importance of LC proficiency for expository discourse skills. However, closer inspection of the reading accuracy skills of the RC low/LC average group on the YARC shows a range of skills (M = 83.35, range 70 – 103), with 9 out of the 17 students performing below expectations (with SS less than 85). Similar results were found for reading rate, with 12 of the 17 students performing below expectations (SS < 85). These results may help explain the generally poorer performance of the students with low RC compared to their peers with average RC (despite their good LC). That is, for this group of students their underlying difficulties in reading accuracy and/or reading fluency may have subsequently influenced their RC performance. These difficulties in turn may have impacted how well these students with low RC (yet typical LC) engaged with expository texts that are common from grade 3 of schooling (Snyder & Caccamise, 2010). Missing out on exposure to expository texts, with their own text structure and more complex syntactic structures, may have resulted in difficulties developing oral expository discourse skills. Monitoring these students' expository discourse skills over time is needed to test this hypothesis. However, other potential explanations for the generally lower performance in expository discourse for the children in the RC low/ LC average group may include word- level oral language difficulties (particularly vocabulary; Clarke et al., 2010), or higher level processing difficulties including comprehension monitoring (Oakhill et al., 2005).

Limitations and Future Directions

Although the results from this study provide some clear directions for both clinicians and researchers pertaining to expository discourse, some limitations should be noted. Our

sample size was relatively small, which means that some of the analyses were likely underpowered. One example is the non-significant group difference on ESS between the LC average and LC low groups, with a large effect size. We only investigated one expository discourse genre, using a generation task, i.e. procedural discourse generation. It is not clear if similar results would be found on other expository discourse genres, such as summarisation (Westby et al., 2010), compare-contrast, or cause-and-effect (see Pyle et al., 2017) or if a retell task had been used (Westerveld & Moran, 2013). We acknowledge that this study analysed data from a previous study aimed at identifying reading profiles in primary school students to better support students who struggled with reading (Westerveld et al., 2020). As a result we did not assess the listening comprehension skills of students in the RC average group, nor did we administer comprehensive standardised oral language tests (at word- and sentence-level) to all participants. Due to time-constraints and scheduling difficulties, we assessed the expository discourse skills of most of the students who were identified with reading comprehension difficulties at the end of year 4, whereas most of the students in the RC average group completed the expository task at the start of year 5. Future longitudinal research, recruiting a larger sample of students to distinguish between reading groups is now needed to better understand the causal connections between expository discourse skills and reading comprehension performance. Alternatively, a comprehension age-match control design could be used to better understand the direction of this relationship (Cain et al., 2000; Westerveld et al., 2008). Such studies should include measures that are known to be related to expository discourse skills such as background knowledge, structural language skills including syntax and vocabulary (Nippold et al., 2009), executive functioning skills including working memory (Hay & Moran, 2005), as well as higher-level reading-related skills such as inferencing and comprehension monitoring (Spear-Swerling, 2015).

Clinical implications

The results from this study have clear implications for clinical practice by demonstrating the usefulness of the M-FGS task in describing the strengths and challenges in expository discourse performance of school-age students with reading comprehension difficulties. Considering the importance of expository discourse proficiency for participating in classroom activities, analysis of a student's expository discourse performance allows the clinician to conduct a functional and curriculum-based assessment, and to use this information for intervention planning that is functional for meeting classroom demands. To illustrate the clinical application, we have provided two transcripts in the Appendix. Although we do not have Australian benchmark data to compare these transcripts against, the results can be used to evaluate the level of proficiency based on the Expository Scoring Scheme elements. For example, participant 09 (Low RC/Low LC group) produced a sample of adequate length (compared to participant 78) but scored very low (minimal/immature) on all elements of the ESS. This student may benefit from expository intervention as described in Clarke et al. (2010), drawing on a range of evidence-based techniques including explicit targeting of expository text structure elements and using graphic organisers (see also, [withheld for peer-review]). Following intervention, the M-FGS task could be re-administered to monitor progress.

Summary

Although evidence suggests that expository discourse interventions may be effective for school-age students with language-related learning disabilities (Peterson et al., 2020; Pyle et al., 2017), the results from this small-scale study provide some much needed information on how to elicit and analyse expository discourse samples from school-age students who are struggling in reading comprehension. More work is needed to create local benchmarks for student performance across the school years. In the meantime, creating a profile of expository discourse skills will greatly assist the clinician in detailed goal setting, intervention planning,

and progress monitoring to support school-age students with reading comprehension difficulties to participate in the classroom and meet curriculum demands.

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Appendix – expository samples

Full elicitation guidelines and scoring system available from:

https://www.saltsoftware.com/resources/databases

Example 1: 09 (Low RC, Low LC group)

$ Child, Examiner
+ Language: English
+ ParticipantId: 09
+ Sex: M
+ CA: 9;4
+ Context: Expository
+ game: rugby

C (uhm rugby well like) when you get the rugby ball you have to run hard.
C but then if they quickly tackle you, you trip over.
C and you can't get back up.
E right.
C that's the bull_run.
E ah.
C if they tackle you, you get on the ground.
C (then you have to) then you have to wait for your other turn.
E okay.
C that's how I play.
E okay.
C else we run up, (run) run up.
C you warm up.
E mhm.
C (and the) in the start I warm up.
E tell me some more about rugby.
C (I) I didn't (score a goal in the game) score a try in the game.
E yeah?
C my players are lazy because they talk in rugby.
E oh dear.
C T and A scores and wins a lot of times.
E mhm.
C and (um) coach says no talking, no pinching, and no fighting.
C (no um) and no punching.
E okay.
C and no kicking on the butt!
E ah.
C he doesn't say x just a little xx (like) >
C (like he says) coach says no talking!
E yeah.
E ah, like that.
C (that) that loud.
E ah, okay, yeah.
C T and A scores (lot of lot a lot of) and a lot of >

C and at half time it's 45 clock.
E okay.
C we finish 80 o'clock.
C no, we finish 90 o’clock.
E yeah.
C or 80 o'clock.
E okay, all done!

= Expository Scoring Scheme: 11
+ ObjectOfContest: 1
+ Preparations: 1
+ StartOfPlay: 1
+ CourseOfPlay: 1
+ Rules: 2
+ Scoring: 1
+ Duration: 2
+ Strategy: 0
+ Terminology: 1
+ Cohesion: 1

Total utterances: 21
MLU-W: 6.29
Number of Different Words: 76

Example 2: 78 (RC average)

$ Child, Examiner
+ Language: English
+ ParticipantId: 78
+ Sex: F
+ CA: 10;7
+ Context: Expository
+ Game: chess

C (so) the objective of the game is to take out the king.
C you have to set up with (uhm) pawns in third row, king and queen, middle, horses by the side and rooks on the far ends.
C (and) I don't remember the other piece.
C (and yeah)>
C (so) the (white) whites always go first.
C or you can just flip a coin.
C and the pawn goes two spaces if wanted at first.
C (so) pawn goes one space, or two, if it was started.
C horses go in Lshape any way.
C can be sideways, front or side the other way.
C king only goes one space.
C the rook (I think it's called) goes forwards four.
C and the queen can do any of those move besides the horse.
C (and) the other one I don't remember the name of goes diagonally four.

C (uhm) major rules are you can only do one move.
C and you can't do two moves.
C and you can't pick a chess piece and decide to do another.
C you have to stick with the piece you have.
C the scoring.
C there really is no scoring.
C but, (if you kill your) if your king gets killed, you'll lose.
C but if you kill the other king on your opponent's side, you win.
C the duration of the chess games usually never have any time limits.
C (it's you can play for however you lon want) you can take as long as you want.
C (and) the strategies of the game are normally always to protect the king and just stay there and defend the king and also protect your queen too.
=E mhm, is there anything else you can tell me to keep talking?

= Expository Scoring Scheme: 33
+ ObjectOfContest: 3
+ Preparations: 4
+ StartOfPlay: 5
+ CourseOfPlay: 3
+ Rules: 3
+ Scoring: 4
+ Duration: 4
+ Strategy: 3
+ Terminology: 3
+ Cohesion: 3

Total utterances: 24
MLU-W: 9.71
Number of Different Words: 103

Table I

Comparing RC average and RC low groups for age and YARC performance

	RC low *n* = 30		RC average *n* = 18				
	Mean (SD)	Range	Mean (SD)	Range	F (1, 46)	*p*-value	η2
Age	9.98 (.29)	9.33-10.37	10.13 (.43)	9.38-11.11	1.90	.175	.040
RC SS	77.87 (4.56)	70 - 84	99.06 (9.46)	85 - 122	109.37	<.001	.704
RA SS	83.43 (10.40)	70 - 103	98.06 (12.31)	74 - 117	19.36	<.001	.296
RR SS	81.93 (9.36)	70 - 99	94.78 (12.53)	71 - 113	15.83[a]	<.001	.260
USP SS[b]	7.28 (2.95)	2 - 12	NA				

Note. RC = Reading Comprehension; YARC = York Assessment of Reading Comprehension; SS = Standard Score; RA = Reading Accuracy; RR = Reading Rate; USP = Understanding Spoken Paragraphs subtest of the Clinical Evaluation of Language Fundamentals – 4th edition
[a] degrees freedom 1, 45; [b] *n* = 29

Table II

Expository descriptive data and one-way ANOVA results comparing RC low and RC average groups (N = 48)

	RC low *n* = 30			RC average *n* = 18					
	M	SD	Range	M	SD	Range	F (1, 46)	*p*-value	Partial η2
MLU-W	8.83	1.80	4.67 – 13.14	10.51	2.09	7.48 – 13.97	8.622	.005	.158
NDW	96.77	46.42	13 – 197	132.94	46.61	72 – 230	6.812	.012	.129
ESS	18.47	7.70	4 - 30	25.78	7.08	13 - 41	10.752	.002	.189

Note. RC = reading comprehension; MLU-W = mean length of utterance in words; NDW = number different words; ESS = expository scoring scheme

Table III

One-way ANOVA results for subgroup performance on the expository discourse task based on listening comprehension.

	RC low/LC low *n* = 12			RC low/LC average *n* = 17			RC average *n* = 18			One-way ANOVA	
	M	SD	Range	M	SD	Range	M	SD	Range	*p*	η^2
MLU-W	8.45[a]	1.76	6.38–13.14	8.99	1.83	4.67-11.19	10.51[a]	2.09	7.48-13.97	.012*	.182
NDW	72[bc]	25.81	39-115	114.29[b]	51.59	13-197	132.94[c]	46.61	72-230	.003*	.238
ESS	14.5[d]	7.79	7-29	20.59	6.39	4-30	25.78[d]	7.08	13-41	<.001*	.297

Note. RC = Reading Comprehension; LC = Listening Comprehension; MLU-W = mean length of utterance in words; NDW = number different words; ESS = expository scoring scheme. *significant at the $p < .016$ with Bonferroni correction applied. RC low: N = 29 as one child did not complete LC assessment. Measures with the same superscript are significantly different following Tukey post-hoc analysis ($p < .05$).