SWEDISH (L1) AND ENGLISH (L2) ARGUMENTATIVE WRITING OF UPPER SECONDARY STUDENTS WITH READING DIFFICULTIES

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Abstract

Writing has been identified as a challenge for students with reading difficulties. This study contributes to previous research by exploring argumentative writing in L1 (Swedish) and L2 (English) in a group of students with reading difficulties in upper secondary school. Participants were 19 students with typical reading, 19 students with poor decoding, and 9 students with poor comprehension. A majority of students attended vocational programmes. Written text quality was assessed by using an adapted version of Jacobs et al.'s (1981) analytic scoring scheme including content, organisation, cohesion, vocabulary, language use, spelling, and punctuation. Students with reading difficulties (regardless of reader subgroup) were found to perform poorly in all categories in both L1 and L2, with spelling being particularly challenging in L1, and cohesion, language use, spelling, and punctuation in L2. Significant differences were found between students with poor comprehension and students with typical reading in cohesion, language use and spelling in L2. Few other significant differences were identified possibly due to an overall poor writing outcome also for students with typical reading. This general poor outcome in writing is discussed in relation to previous studies on writing among students with reading difficulties and writing in vocational programmes.

Keywords: poor decoding, poor comprehension, vocational, simple view of reading, written text quality, analytic scoring

1.   INTRODUCTION

Reading and writing are fundamental tools for learning in school. This article focuses on both these skills by exploring L1 (Swedish) and L2 (English) writing of upper secondary students with reading difficulties. Existing studies have shown that students with decoding difficulties or reading comprehension difficulties have challenges with L1 and L2 writing (Cragg & Nation, 2006; Herbert et al., 2020; Kormos, 2020; Torrance et al., 2016). Very few of these studies have investigated the argumentative text type, which is the focal genre of this study. According to the Swedish national curriculum and the syllabi of Swedish and English (Swedish National Agency for Education, 2011), students are expected to be able to adjust their writing to different genre conventions, e.g., argumentative texts. Good argumentative skills are conducive to academic success, making a career (Ferretti & Graham, 2019), and making one's voice heard in different cultural and societal contexts (Palmér & Östlund-Stjärnegårdh, 2015). Argumentative writing involves a greater intellectual challenge than other genres—strict rhetorical demands, critical attitude (Ferretti & Fan, 2016)—and its discourse mode involves a more complex type of language (Weigle, 2002), which may constitute an extra challenge for students with learning difficulties (Larson et al., 2004; Nippold et al., 2005). In Sweden, not only L1 (Swedish) but also L2 (English) competencies facilitate participation in society, as a good knowledge of English is required in many workplaces and in tertiary education.

Although writing difficulties may be as frequent as reading difficulties (Katusic et al., 2009), they have been under-treated by teachers and under-researched by scholars (Berninger et al., 2008; Wengelin, 2017). Especially students who can decode words accurately but have comprehension difficulties have flown under the radar of both teachers and researchers, when it comes to writing in L1 and L2 (Carretti et al., 2013; Herbert et al., 2020).

Consequently, there is a need to find out more about these students' writing. This study investigates L1 and L2 argumentative writing of Swedish upper secondary students with reading difficulties, with specific focus on students with poor word decoding (PD) and students with poor comprehension (PC). To the best of our knowledge, no study has explored this subject previously.

1.1 Reading difficulties

Our study employed the framework of The Simple View of Reading (SVR) (Tunmer & Greaney, 2010) to define reading ability. The SVR views successful reading comprehension as the product of word decoding (accuracy and fluency) and linguistic comprehension (listening comprehension: semantics, syntax, discourse). Individual variations in these two components predict the following groups: (1) typically developing readers, (2) students with poor word decoding, (3) students with poor reading comprehension, and (4) students with mixed reading disability. With

respect to the first group, typically developing readers show age-adequate abilities in word recognition and linguistic comprehension, and consequently, a typical development in reading comprehension (TR).

Students with poor word decoding (PD) show typical listening comprehension but poor word recognition, which is explained by weaknesses in phonological processing (Melby-Lervåg et al., 2012). There is consensus that major challenges for this group are clear and quick connections between phonemes and graphemes, and consequently accurate word reading (Lyon et al., 2003). Secondary effects of these problems may be effortful reading experiences and less exposure to written text (Nauclér & Magnusson, 2000; Sumner & Connelly, 2020). Furthermore, it takes more time to learn to decode in an opaque orthography, such as English, than in more transparent orthographies, such as Finnish or Swedish (Seymour et al., 2003).

Students with poor comprehension (PC) show typical decoding skills, but have difficulties with reading comprehension related to poor listening comprehension at different language levels: words (e.g., receptive vocabulary) (Landi & Ryherd, 2017; Lervåg et al., 2018; Spencer & Wagner, 2018), phrases and sentences (e.g., grammatical processing) (Catts et al., 2006; Landi & Ryherd, 2017), and discourse (e.g., connected language, content) (Elwér et al., 2013; Lervåg et al., 2018; Spencer & Wagner, 2018). The fact that this group is "less skilled at dealing with anaphor or other cohesive devices" (Castles et al., 2018, p. 30) may obstruct their reading comprehension on a discourse level. The research picture regarding this group's grammar comprehension is patchy (Lervåg et al., 2018; Nation et al., 2004), but Landi and Ryherd (2017) believe that this is due to different research designs, and that grammar difficulties are associated with this group in later grades.

Students with mixed reading disability have difficulties with both decoding and linguistic comprehension, but this group is not included in this study, and will not be expanded on any further. As research has indicated that there is a close relationship between reading and writing performance (Shanahan, 2016), it is of interest to investigate the writing of students with reading difficulties.

1.2 Reading difficulties and writing in L1

Many researchers believe that reading and writing draw on similar sources (Shanahan, 2016)—the shared knowledge theory—which assumes that a student's reading difficulty will probably spill over on their writing. Thus, the two skills can be likened to "two buckets drawing water from a common well" (Shanahan, 2016, p. 195). Likewise, Connelly and Dockrell (2016) state that "reading is a key resource that supports the production of written text" (p. 352). Below, students' writing is looked into in relation to our two target groups (students with poor decoding and students with poor reading comprehension).

There is general agreement that the writing problems of students with decoding difficulties are related to their reading difficulties (Hebert et al., 2018). In addition, persistent spelling problems, originating in underlying phonological processing

difficulties, are a characteristic of their writing (Nauclér & Magnusson, 2000; Torrance et al., 2016; Wengelin, 2007). Other obstacles to developing writing skills for this group are less exposure to texts and less writing practice (Sumner & Connelly, 2020), which may result in lower text quality in adulthood (Torrance et al., 2016). However, especially when it comes to older students with PD, the picture is patchy—depth of orthography being a complicating factor moderating this group's profiles in different languages—and little is known how weak decoding may impact on students' written performance, especially as regards higher level text features (Torrance et al., 2016). In some studies, older students with PD have performed on par with controls in areas such as content (Connelly et al., 2006), coherence (Connelly et al., 2006), syntax (Connelly et al., 2006; Wengelin et al., 2014), and vocabulary (Sumner & Connelly, 2020; Tops et al., 2013).

Contradicting the above results, several investigations show the opposite, i.e., that this group experiences difficulties with content (Sumner & Connelly, 2020; Torrance et al., 2016), organisation and coherence (Tops et al., 2013; Wengelin et al., 2014), vocabulary (Connelly et al., 2006; Torrance et al., 2016; Wengelin, 2007), and grammar (Tops et al., 2013; Sumner & Connelly, 2020). These difficulties are seen as a result of mechanics not being automatised (Tops et al., 2013; Sumner & Connelly, 2020; Wengelin, 2007). In addition, different inclusion criteria regarding decoding and linguistic comprehension may contribute to explaining these sketchy results. Furthermore, many of this group's older students make use of their good linguistic ability to develop compensatory writing strategies (Sumner & Connelly, 2020).

There is consensus that students with poor reading comprehension have major problems with coherence and organisation (Carretti et al., 2013; Cragg & Nation, 2006), cohesion (Cox et al., 1990; Re & Carretti, 2016; Cragg & Nation, 2006), and vocabulary (Carretti et al., 2013; Carretti et al., 2016). It is likely that syntactic complexity constitutes an additional challenge too (Carretti et al., 2013; Re & Carretti, 2016). Concerning content, results are sketchy (Carretti et al., 2016), and this group's spelling scores were similar to those of the TR group (Cragg & Nation, 2006; Re & Carretti, 2016). Table 1 below sums up previous research findings.

Table 1. Summary of previous research on L1 writing of the SVR-reader subgroups regarding challenging areas in writing

	PD	PC
Mechanics (spelling/punctuation)	CC	CS
Text organisation (coherence/cohesion)	C(?)	CC
Linguistic complexity (syntactic diversity, grammar, vocabulary)	C(?)	CC
Content/idea development	C(?)	C(?)

Abbreviations: PD = poor decoding, PC = poor comprehension, CC = consensus major challenges, CS = consensus strength, C(?) = no complete consensus

Concerning genres, narrative and expository text types have been in focus in studies on the writing of students with PD (Graham, 2020), whereas little is known about their argumentative writing (Torrance et al., 2016). The little research that has been undertaken on students with PC has been based on descriptive, narrative, and expository texts. No study was found on this group's argumentative writing.

1.3 Reading difficulties and writing in L2

It is believed that L2 writing involves a greater cognitive load on working memory than L1 writing (Kormos, 2012). Retrieval of vocabulary and other aspects of the L2 language may not have been automated, which, in turn, has the effect of the writer focusing on lower-level processing of the language (e.g., formal aspects). Research on L2 writing of students with PD is limited (Arfé & Danzak, 2020; Helland & Kaasa, 2005). Herbert and colleagues' (2020) longitudinal study (grades 4–6) revealed that reading profile added significantly to the variation of students' narrative text quality. The written texts in L2 (English) of students with PD were characterised by poor coherence and cohesion, less complex language, and poor spelling. The authors link this group's poor performance partly to their greater difficulty with spelling which impacted negatively on the overall quality.

There is an even greater paucity of research data on L2 writing of students with PC (Herbert et al., 2020). In the aforementioned investigation, the authors also included this group, whose linguistic features were very similar to those of students with PD, i.e., poor coherence and cohesion, and less complex language. However, the spelling scores of students with PC were on par with controls.

1.4 The current study

This study sheds light on L1 (Swedish) and L2 (English) argumentative writing of Swedish upper secondary students with poor decoding and students with poor reading comprehension. Our study extends previous writing research on the two target groups when it comes to (1) argumentation, (2) writing in L1 and L2, and (3) upper secondary school. Little is known how poor decoding impacts on adolescents' L1 writing (Torrance et al., 2016), and even less when it comes to the writing of adolescents with poor reading comprehension. Likewise, the knowledge of the impact of poor decoding and poor reading comprehension on adolescents' L2 writing is very limited (Herbert et al., 2020; Kormos, 2020). In the few studies that exist, the descriptive, narrative and expository genres have been examined, whereas the argumentative genre has been overlooked. It is reasonable to believe that the latter text type is extra challenging for students with reading difficulties, especially if written in L2, as L2 writing in itself puts an extra cognitive strain on students with reading difficulties (Wood & Schatschneider, 2021). The current study addresses the following research questions:

1) What similarities and differences are there in Swedish (L1) argumentative written text quality of Swedish upper secondary students with and without reading difficulties?

2) What similarities and differences are there in English (L2) argumentative written text quality of Swedish upper secondary students with and without reading difficulties?

2.   METHOD

2.1 Participants

This study is part of a larger project examining reading and writing in relation to educational attainment, self-efficacy, and students' literacy practices in upper secondary school including a sample of 159 students. A screening of reading comprehension (Järpsten & Taube, 2017) and word recognition (Olofsson, 1998) was conducted in the spring term of the second year of upper secondary school. The selection of participants for the three SVR-reader subgroups of interest in this study was based on the screening outcome. The following criteria for the classification of reader subgroups were used: 1) typical reading (TR), word recognition and reading comprehension at $z \geq -.0,5$, 2) poor decoding (PD), word recognition at $z \leq -0.6$ and reading comprehension at $z \geq -0.5$, and 3) poor comprehension (PC), reading comprehension at $z \leq -0.6$ and word recognition at $z \geq -0.5$. The participants were 17–18 years old. The groups were matched as far as possible for gender and educational programme (vocational programme or higher education preparatory programme). An overview of the participants in each reader subgroup is presented in Table 2 and Table 3.

All participants attended the same upper secondary school located in a rural area in the northern part of Sweden. There is only one upper secondary school in the municipality, ensuring that a variety of socio-economic backgrounds are represented. All students had Swedish as their first language.

Table 2. Demographic data by SVR-reader subgroup

	TR n = 19	PD n = 19	PC n = 9
Female (n)	6	6	4
Vocational programme (n)	17	17	7
Higher education preparatory programme (n)	2	2	2

Note. TR = typical reading, PD = poor decoding, PC = poor comprehension

Table 3. Means and standard deviations for reading measures in year 2

	TR	PD	PC
	n = 19	n = 19	n = 9
	M (SD)	M (SD)	M (SD)
Word recognition (z)	.26 (.60)	-1.22 (.56)	-.03 (.38)
Reading comprehension (z)	.47 (.52)	.32 (.38)	-1.32 (.76)

Note. TR = typical reading, PD = poor decoding, PC = poor comprehension

2.2 Materials

2.2.1 Word recognition (Olofsson, 1998)

A composite measure of phonological decoding and orthographic word recognition was used. In the phonological decoding task, students silently read triplets of pseudo-words and were asked to mark the pseudo-word sounding like a real word, e.g., *vasp - jus - sorf* where *jus* is a homophone to *ljus* 'light'. The score was the total number of correctly marked homophones identified within two minutes. In the orthographic task, students silently read pairs of words. In each pair, one word was correctly spelled, and one was a pseudo-homophone of the target word, e.g., *taksi-taxi*. Students were asked to mark the correctly spelled word in as many word pairs as possible within two minutes. The score was the total number of correctly marked words. The internal validity for the composite measure was .79 in Year 2 (Cronbach's alpha).

2.2.2 Reading comprehension (Järpsten & Taube, 2017)

Students silently read three factual texts. Each text was followed by a multiple-choice task capturing both literal and inferential content of the text. The time limit for the task was 35 minutes. The total score was the number of correct answers (maximum 21 points).

2.2.3 Writing assignments

Both in terms of content and form, the design was inspired by the Swedish (L1) and English (L2) language national writing exams, which are set as timed tasks. The national writing exams follow the form of summative writing assignments and are performed individually without collaboration or support. Our study followed these procedures but some adaptions were made. For example, we set a stricter time limit so as to avoid writing assessment fatigue. No student ran out of time as all students were able to finish writing within the allocated time. Students wrote one

argumentative text in Swedish (L1) and English (L2) respectively on two occasions. Two different argumentative assignments were used and counterbalanced between L1 and L2. Students were instructed to take a stand on a suggestion from the principal at their school: school days should start at 10 am and end at 5.30 pm, or mobile phones should be banned during the whole school day. The following instructions were given to students:

> Write a letter to your principal taking a stand on the issue. Argue for or against the principal's suggestion. Try to convince the principal that your position is the right one. Write until you are satisfied with your text (no minimum or maximum number of words). You have 45 minutes to write your text.

2.2.4   *Written text measures*

Written text quality was examined using a slightly adapted version of Jacobs et al.'s (1981) analytic scoring scheme. The original version of the scheme identifies five aspects that contribute to different degrees to the quality of a text: content (30%), organisation (20%), vocabulary (20%), language use (25%) and mechanics (5%). However, the original scheme evoked questions about the scoring of organisation and mechanics, and about the theoretical and empirical basis for justifying different scales for scoring the five aspects of text quality. To address these questions, the scoring scheme used in this study underwent an adaption process.

First, organisation was split into two different categories that was scored independently, viz., organisation of content (organisation) and linguistic organisation by cohesive devices (cohesion). This allowed us to score thematic organisation independently from linguistic organisation. Mechanics was also split into two different aspects, viz., spelling and punctuation, allowing us to score orthographic knowledge separately from knowledge of punctuation. Thus, the scoring scheme used in this study involved the following seven aspects of text quality: content, organisation, cohesion, vocabulary, language use, spelling, and punctuation.

Second, the same scale was used for all categories, which means that each category contributed equally to the overall text quality. The scale used in this study involved, as in the original version, four bands from very poor to excellent: 1 (very poor), 2 (poor to fair), 3 (average to good) and 4 (very good to excellent). Detailed criteria were used to separate each band (see Table 4). If all criteria for a band 1 were met and some criteria for a band 2, a score of 1.5 was given. If all criteria for a band 2 were met, and some criteria for a band 3, a score of 2.5 was given, and so on. Texts shorter than 120 words generally received a band 1–1.5 as they did not include enough text to evaluate (see criteria for band 1 in Table 4). This was the case for eight texts in Swedish and eleven texts in English.

The scale's internal consistency was very good for both the Swedish and English argumentative texts as the Cronbach alpha coefficient was .98 for the former and .97 for the latter. The criteria separating each band were clarified and detailed through a recursive process involving trial ratings by two raters followed by

discussions in the research team. Clarifications and changes to the scoring schema and the criteria were made, and a detailed written instruction was created. A blinded assessment procedure was used with raters unaware of students' reader subgroup.

The texts were scored by two raters, the first author who is a doctoral student and a licensed teacher of English, and a trained research assistant who is an upper secondary school teacher student and a native speaker of English and Swedish. The interrater reliability was established through independent double-scoring of 20% of the texts. The intraclass correlation coefficients (ICC) were good for all seven aspects ranging from .76 to .92.

Table 4. Criteria for each measure in the adapted version of Jaco et al.'s (1981) analytic scoring scheme

Measure	Band	Criteria
Content	4	Knowledgeable, substantive, thorough development of thesis, relevant to assigned topic.
	3	Some knowledge of subject, limited development of thesis, mostly relevant to topic.
	2	Limited knowledge of subject, inadequate development of topic
	1	Does not show knowledge of subject, non-substantive. Or not enough to evaluate.
Organisation	4	Ideas clearly stated. Succinct, well-organised, logical sequencing of ideas.
	3	Somewhat loosely organised, but main ideas stand out. Logical but occasionally incomplete sequencing of ideas.
	2	Ideas confused or disconnected. A lack of logical sequencing of ideas.
	1	No organisation. Or not enough to evaluate.
Cohesion	4	Very good use of cohesive devices with a wide range of cohesive devices. Arguments are linguistically connected in a smooth way.
	3	A satisfactory use of cohesive devices, simple at times but no strain on the reader. Some attempts at complex cohesive devises, albeit not always successful.
	2	Unsatisfactory use of cohesive devices resulting in occasional strain on reader.
	1	Cohesion is almost absent causing a frequent strain on reader. Or not enough to evaluate.
Vocabulary	4	Sophisticated range with effective word/idiom choice and usage. Consistently appropriate register.
	3	Adequate range with occasional errors of word/idiom choice, but meaning is not obscured. Mostly appropriate register.
	2	Limited range with frequent errors of word/idiom choice. Meaning is confused or obscured. Frequently inappropriate register.
	1	Very limited range of vocabulary and idioms. Consistently inappropriate register. Or not enough to evaluate.
Language use	4	Sentence construction is varied and elaborate. No errors of agreement, tense, number, word order, articles, pronouns or prepositions.
	3	Simple sentence structure, some attempts at complex constructions albeit not always successful. Occasional errors but meaning is not obscured.

Measure	Band	Criteria
	2	Major problems also in simple sentence constructions with little attempt at complex constructions and frequent errors. Meaning is confused or obscured.
	1	Virtually no mastery of sentence construction rules and a text dominated by errors. Or not enough to evaluate.
Spelling	4	Mastery of conventions, no errors.
	3	Occasional errors, but meaning is not obscured and no strain on reader.
	2	Frequent errors of spelling. Meaning is confused or obscured and strain on reader.
	1	No mastery of conventions. Text is dominated by errors. Or not enough to evaluate.
Punctuation	4	Mastery of conventions with no errors in punctuation and capitalisation. Occasional errors in the use of commas are allowed.
	3	Occasional errors of punctuation and capitalisation, but meaning is not obscured. No strain on reader
	2	Frequent errors of punctuation and capitalisation, meaning is confused or obscured. Strain on reader
	1	No mastery of conventions. Text dominated by errors of punctuation and capitalisation. Or not enough to evaluate

2.3 Procedure

The study was conducted in accordance with the Swedish Act relating to research involving humans (SFS 2003:460) and the ethics guidelines of the Swedish Research Council (Stafström, 2017). Prior to data collection, the school's principal and students gave their consent to participate in the study. Word recognition and reading comprehension were assessed in groups of 30–50 students during three separate sessions by a member of the research team or by a teacher at the school. Students were informed that they were allowed to end their participation in the assessments at any time, but all students completed the assessments. Tasks measuring word recognition and reading comprehension were administered and scored in accordance with the standard procedures in the manuals (Järpsten & Taube, 2017; Olofsson, 1998). Raw scores were converted to standardised scores (z-scores) based on the means and standard deviations in the manuals.

The writing assignments were carried out during two separate sessions at the students' school in groups of 30–50 students in each classroom. Students wrote one of the argumentative assignments in Swedish and the other in English. The order of language and assignment was counterbalanced in a Latin square design. Upon entering the classroom, all students received an envelope containing a USB-memory and the assignment that they were going to write during that session. At the beginning of each session, students were informed, orally and in writing, about the content and organisation of the session by members of the research team. They had 45 minutes to write their texts using the Scriptlog keystroke-logging software (Frid et al., 2014) on their laptops. Resources such as spelling aids and dictionaries were not allowed during the writing assignments. After 35 minutes, the research team

announced that 10 minutes remained. Students were encouraged to read through their texts before saving them to the USB.

2.4 Data analysis

Due to the small sample size and the unequal number of participants in the groups, non-parametric statistics were utilised. We employed the Kruskal-Wallis *H* Test (ANOVA), with reading profile as independent variable, and the different categories constituting text quality as dependent variables, for comparisons across groups. The Mann-Whitney *U* Test was employed for the post-hoc pairwise group comparisons. The significance level was set at .05. Effect sizes using eta squared were calculated (Tomczak & Tomczak, 2014) applying Cohen's (1988) guidelines: .01 = small; .06 = medium; .14 = large.

3.   RESULTS

Results are presented in two sections. The first section examines students' results in Swedish argumentative texts (RQ 1), and the second presents students' results in English argumentative texts (RQ 2).

3.1 Swedish (L1) argumentative written text quality

Based on the raw scores, the means of the group with poor decoding (PD) and the group with poor comprehension (PC), shown in Table 5 below, were lower across all categories, including total score, in comparison with the means of the group with typical reading development (TR). The lowest means of both target groups (PD, PC) were found in cohesion, language use and spelling. The differences between the three groups are visualised in Figure 1. Table 6 shows the result of the Kruskal-Wallis *H* test, which is based on mean ranks, revealing that spelling was the only aspect of text quality that differed significantly across the three groups with a medium effect size, $H = 6.02$, $df = 2$, $p = .049$, $\eta^2 = .091$. The Mann-Whitney *U* post-hoc test revealed a statistically significant difference in spelling between the TR group and the PD group, $U = 111$, $z = -2.06$, $p = .043$, and between the TR group and the PC group, $U = 44.5$, $z = -2.06$, $p = .042$. No other significant group differences were found.

Table 5. Means and standard deviations for L1 Swedish written text quality

	TR n = 19 M (SD)	PD n = 19 M (SD)	PC n = 9 M (SD)
Text quality			
Content	2.55 (.72)	2.29 (.87)	2.33 (.83)
Organisation	2.63 (.76)	2.28 (.95)	2.28 (.94)
Cohesion	2.47 (.72)	2.00 (.76)	2.06 (.81)
Vocabulary	2.47 (.70)	2.13 (.83)	2.22 (.75)
Language use	2.34 (.71)	1.97 (.79)	1.89 (.82)
Spelling	2.58 (.75)	2.05 (.83)	1.94 (.68)
Punctuation	2.71 (.90)	2.34 (.87)	2.17 (1.00)
TOTAL	17.76 (4.84)	15.08 (5.58)	14.89 (5.41)

Abbreviations: TR = typical reading, PD = poor decoding, PC = poor comprehension
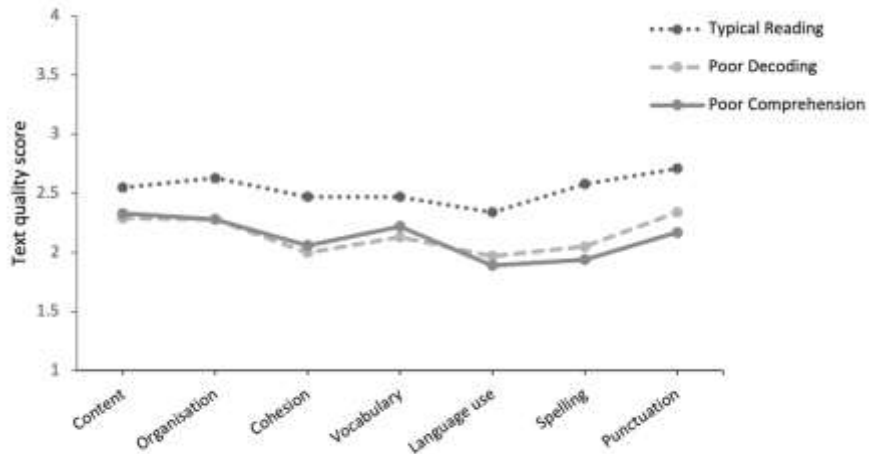
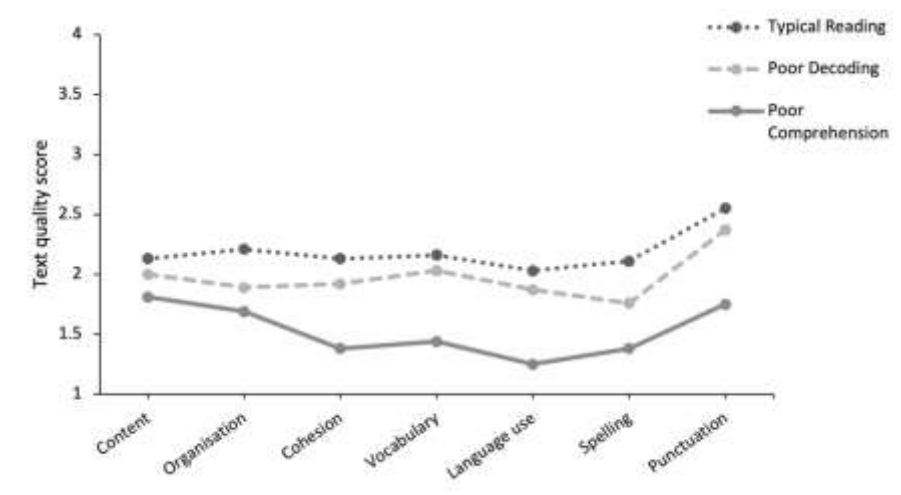*Figure 1. L1 written text quality of the three reader groups*

Table 6. Kruskal-Wallis H test in L1 argumentative written text quality

	TR (n = 19)	PD (n = 19)	PC (n = 9)	Kruskal-Wallis *H* test			
	Mean rank	Mean rank	Mean rank	*H*	*df*	*p*	*η²*
Text quality							
Content	25.89	22.53	23.11	.649	2	.723	.031
Organisation	27.03	22.29	21.22	1.652	2	.438	.008
Cohesion	28.82	20.58	21.06	4.114	2	.128	.048
Vocabulary	26.76	21.92	22.56	1.361	2	.506	.015
Language use	28.11	21.61	20.39	3.028	2	.220	.023
Spelling	29.82	20.53	19.06	6.016	2	.049	.091
Punctuation	27.97	21.79	20.28	2.861	2	.239	.020
TOTAL	27.71	21.89	20.61	2.394	2	.302	.009

Abbreviations: TR = typical reading, PD = poor decoding, PC = poor comprehension

3.2 English (L2) argumentative written text quality

Table 7 presents the descriptive statistics for the assessment of L2 English text quality. Based on the raw scores, the general trend was that the means of the group with PC were below those of the other two groups in all categories with the lowest means in cohesion, vocabulary, language use, and spelling. The PD group's lowest means were in organisation, cohesion, language use, and spelling. The differences between the three groups are visualised in Figure 2.

A Kruskal-Wallis *H* test based on mean ranks was performed to explore differences in L2 English argumentative text quality across the three groups (see Table 8). The test revealed statistically significant differences in cohesion and language use with medium effect sizes: cohesion, $H = 6.57$, *df* = 2, $p = .038$, $η^2 = .104$; language use, $H = 7.24$, *df* = 2, $p = .027$, $η^2 = .119$. Spelling was close to statistical significance, with a medium effect size: $H = 5.98$, *df* = 2, $p = .05$, $η^2 = .090$. Moreover, medium effect sizes were also found for punctuation, $η^2 = .078$ and total score, $η^2 = .063$. A Mann-Whitney *U* post-hoc test revealed a statistically significant difference between the TR group and the PC group in cohesion, $U = 29$, $z = -2.59$, $p = .011$; language use, $U = 28.5$, $z = -2.88$, $p = .004$; and in spelling, $U = 23,5$, $z = -2.60$, $p = .009$. No other significant group differences were found.

Table 7. Means and standard deviations for L2 written text quality

	TR n = 19 M (SD)	PD n = 19 M (SD)	PC n = 8 M (SD)
Text quality			
Content	2.13 (.77)	2.00 (.88)	1.81 (.75)
Organisation	2.21 (.69)	1.89 (.83)	1.69 (.71)
Cohesion	2.13 (.74)	1.92 (.79)	1.38 (.44)
Vocabulary	2.16 (.83)	2.03 (.83)	1.44 (.56)
Language use	2.03 (.59)	1.87 (.78)	1.25 (.38)
Spelling	2.11 (.77)	1.76 (.77)	1.38 (.44)
Punctuation	2.55 (.85)	2.37 (.96)	1.75 (.60)
TOTAL	15.32 (4.73)	13.84 (5.46)	10.69 (3.46)

Abbreviations: TR = typical reading, PD = poor decoding, PC = poor comprehension

Figure 2. L2 written text quality of the three reader subgroups

Table 8. Kruskal-Wallis H test in L2 argumentative written text quality

	TR (n = 19)	PD (n =19)	PC (n = 8)	Kruskal-Wallis *H* test			
	Mean rank	Mean rank	Mean rank	*H*	df	*p*	*η2*
Text quality							
Content	25.55	23.21	19.31	1.298	2	.523	.016
Organisation	27.89	21.34	18.19	3.967	2	.138	.045
Cohesion	27.47	23.74	13.50	6.566	2	.038	.104
Vocabulary	26.42	24.08	15.19	4.182	2	.124	.050
Language use	27.29	24.29	12.63	7.242	2	.027	.119
Spelling	28.37	22.05	15.38	5.976	2	.050	.090
Punctuation	26.66	24.34	14.00	5.447	2	.066	.078
TOTAL	27.71	22.63	15.56	4.780	2	.092	.063

Abbreviations: TR = typical reading, PD = poor decoding, PC = poor comprehension

4.   DISCUSSION

This study examined L1 (Swedish) and L2 (English) argumentative text quality of 19 students with typical reading development (TR), 19 students with poor word decoding (PD), and 9 students with poor comprehension (PC).

With regard to writing L1 argumentative texts, the two groups with reading difficulties achieved lower scores compared to the group with TR in all categories. However, there were no significant differences between the groups, apart from spelling, where both groups with reading difficulties performed significantly below the TR group. Only small effect sizes for group were observed in all measures, except for medium effect size in spelling. A closer examination of the given scores for each category revealed that both groups with reading difficulties had scores between 1.5 and 2.5, which indicates major challenges in writing argumentative texts in L1. The written texts at this level are characterised by poor content, (very) weak coherence and cohesion, (very) limited range of vocabulary and grammar with frequent errors, and (very) frequent errors of spelling and punctuation (for criteria, see Table 4). These poor results confirm previous studies, which have indicated that poor decoding (Torrance et al., 2016), and, in particular, poor comprehension (Carretti et al., 2013) may impact negatively on students' writing in L1.

The TR group also indicated low text quality as their means were about 2.5. Thus, the outcome implied low text quality for all groups, regardless of reading profile. The lack of significant differences between the TR group and the groups with reading difficulties may be interpreted as if reading difficulties do not impact on L1 writing. However, this is not likely, considering previous research. Another possible explanation may be the character of the control group (TR). The vast majority (87%)

of students attended vocational study programmes, and previous research indicates that writing is a challenge for this group (Sturm, 2016; Westman, 2009). Likewise, the results of the 2017 National Exams in Swedish revealed that 27.7% of vocational students did not meet the knowledge requirements for writing. In contrast, the corresponding failure rate for students attending higher education preparatory programmes was 10.5% (Swedish National Agency for Education, 2017a).

As past studies evidence that students with PD have spelling difficulties (Torrance et al., 2016; Wengelin, 2007), the low result in spelling was expected. Poor spelling may also limit vocabulary choice (e.g., avoidance of words that are difficult to spell) and affect higher level aspects of written text quality. We do not know to what extent the overall poor writing results for students with PD in this study are a consequence of spelling difficulties, but earlier studies have linked similar results to poor spelling (Torrance et al., 2016; Wengelin, 2007).

However, a surprising finding was the significantly lower spelling scores of students with PC. This result contradicts previous findings for younger students in both opaque (Cragg & Nation, 2006) and transparent orthographies (Caretti et al., 2013). One possible explanation could be the dissociation between word reading and spelling that seems to be more common in transparent orthographies compared to opaque orthographies (Torppa et al., 2017), i.e., students may experience difficulties in spelling despite good word reading (and vice versa). This has been explained by Torppa et al. (2017) as a result of the dissociation between rapid automatic naming (RAN) and phonemic awareness (PA) with RAN contributing to reading fluency and PA to spelling. The result may also be due to the vocabulary component being more influential in older students' spelling. Swedish is a morphologically complex language which may add an extra challenge for students with PC as they often struggle with both semantic and syntactic (morphological) aspects of language (McCutchen et al., 2013). As students come across more complex language in their later grades, these difficulties may be accentuated in upper secondary school and might thus take their toll in the form of poor spelling.

Except for spelling, the lowest means in L1 of both groups with reading difficulties were in cohesion and language use, which confirms previous studies identifying these areas as challenging for students with PD and students with PC (Carretti et al., 2013; Cox et al., 1990; Cragg & Nation, 2006; Re & Carretti, 2016; Tops et al., 2013). However, the underlying reasons may be different. Past research indicates that difficulties in cohesion and language may be secondary to poor spelling taxing working memory for students with PD (Sumner & Connelly, 2020). In contrast, these areas constitute primary challenges for students with PC related to underlying poor linguistic comprehension affecting both reading comprehension and writing (Carretti et al., 2013; Castles et al., 2018; Cox et al., 1990; Cragg & Nation, 2006; Landi & Ryherd, 2017; Re & Carretti, 2016).

In L2 (English) argumentative writing, the group with PD received slightly lower scores in all categories in comparison to the group with TR, whereas there was a greater gap between the performance of students with PC and students with TR.

Examining the scores for each category more closely, participants with TR and participants with PD were in between bands 1.5 and 2.5, indicating (very) low text quality. Students with PC scored between bands 1.0 and 2.0, indicating even lower text quality (for criteria, see Table 4). Thus, it is evident that L2 argumentative writing is a major challenge for all three groups. The little research that has been undertaken on L2 writing of vocational students confirms that L2 writing is challenging (Nygaard, 2010), which is further supported by educational statistics. The 2017 National Exam in English revealed that 15.2% of vocational students failed in writing, whereas the corresponding figure for students following higher education preparatory programmes was 3.3% (Swedish National Agency for Education, 2017b).

The poor L2 text quality results of the group with PD tie in with previous research and are partly explained by their poor spelling, which may have a negative impact on their overall text quality (Herbert et al., 2020). Moreover, as L1 writing proficiency predicts L2 writing to a certain extent (Rijlaarsdam et al., 2012), this could be another explanatory factor. The outcome may also be a reflection of compensatory writing strategies (Sumner & Connelly, 2020), e.g., avoiding words that are difficult to spell (Wengelin, 2007).

For students with PC, the argumentative genre in L2 constituted an even greater challenge. There was a statistically significant difference between participants with TR and participants with PC in cohesion, language use, and spelling. Medium effect sizes were found in cohesion, language use, spelling, punctuation, and in the total score.

The lower writing scores of students with PC on cohesion confirm the research on this group's L2 writing (Herbert et al., 2020). As cohesion was among the lowest means in L1—albeit not statistically significant—the result may be an L1 spillover effect on L2. Several studies have indicated that poor reading comprehension with underlying deficiencies in linguistic comprehension may lead to a more inappropriate use of cohesive devices, and an overuse of simple cohesive devices in L1 (Carretti et al., 2016; Carretti et al., 2013; Cox et al., 1990; Re & Carretti, 2016). According to Re and Caretti (2016), this group's lower text quality was explained by their poor use of cohesive devices, and the authors reason that difficulties with understanding cohesive devices (e.g., connectives) could impact on writing. In turn, difficulties with cohesion and linking of sentences and paragraphs may impede higher-level writing processing. In terms of means, the smallest difference between this group and the TR group was in content, which may indicate that the writing problems are connected to organising and connecting content, and not so much to the content itself.

Consistent with the findings of Herbert et al. (2020) as regards L2, and of several L1 studies (Carretti et al., 2013; Carretti et al., 2016; Re & Carretti, 2016), language use fell out as statistically significant for students with PC. It is likely that this group of students (possibly in connection with underlying language difficulties) may find it challenging to achieve the required levels of L2 English grammar.

With respect to this group's weaker spelling, the result may be related to the English orthography, which is more opaque than Swedish. In addition, it may be due to the fact that semantic and morphological components are at work when it comes to spelling (Bahr et al., 2020).

4.1 Limitations and future research

This study gives valuable information on participants' written text quality under timed task writing conditions, similar to those in the National Exams (summative large-scale assessment). Writing is the key method of assessing knowledge and progress in school as teachers often use writing assignments to check students' degree of goal attainment. Finding out more about upper secondary students' writing challenges and profiles will then facilitate the elaboration of pedagogical support for these students. However, in future study designs, it would be of interest to explore more natural writing settings where students with reading difficulties are allowed to use aids and collaboration to support planning, reviewing and revising in order to further promote our knowledge of best writing practices for this group of students.

There are limitations in this study which provide grounds for future research. Firstly, given the small sample sizes, the non-significant results might be owing to insufficient power. Consequently, future research would benefit from larger samples. Secondly, other fruitful areas for future exploration could be to investigate the writing of the same reader subgroups attending higher education preparatory programmes. Thirdly, it would be of interest to find out in detail the specific qualitative aspects of cohesion, language use, and spelling that students with reading difficulties find challenging in their L1 and L2 argumentative writing.

5.   CONCLUSION AND IMPLICATIONS

In conclusion, students with poor decoding and students with poor reading comprehension generally performed poor attainment scores in L1 and L2 argumentative writing. Spelling was particularly challenging in L1, and cohesion, language use and mechanics in L2. Students with poor reading comprehension performed significantly below students with typical reading development in L2. The combination of the cognitively demanding argumentative genre involving a more complex language, and the extra cognitive load that L2 writing involves, may accentuate the linguistic difficulties of students with poor comprehension, making L2 writing extra challenging. Few other significant differences were identified, possibly due to an overall poor writing outcome also for the students with typical reading development. A majority of the participants in this study attended vocational programmes indicating that writing may be a challenging task for many students in these programmes regardless of reading proficiency. This study highlights the need

of continuous development of extensive writing instruction in both L1 and L2 in upper secondary school with a special focus on cohesion, language use, and spelling.

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