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## Outliers: Upper secondary school students who read better in the L2 than in L1

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### ABSTRACT

This study analyses reading proficiency, reading comprehension strategy use, and interest in English as the second language (L2) of 463 upper secondary students (16-year-olds). They were identified among a national sample of 10,331 students and labelled 'Outliers' due to their unusual combination of being poor readers in the first language (L1), but good readers in L2. Analysis showed that the Outliers use relevant strategies and report high interest in L2. The largest group was boys in vocational programmes, a group with a high dropout rate internationally. The findings challenge key assumptions about poor L1 readers also being poor readers in L2, while at the same time adding to studies on the importance of gender and interest for L2 reading comprehension.

### 1. Introduction

Readers develop English as a second language (L2) comprehension across stages of acquisition, depending on a variation of characteristics among these readers. This article explores such variation among a group of students (16-year-olds) with the highly unusual combination of reading markedly better in English L2 than in their first language (L1). In this article, we present data on their reading proficiency, use of reading comprehension strategies, motivation for and interest in L2 reading.

These students were identified among a national sample of 10,331 Norwegian upper secondary school students who participated in two national reading tests, one in Norwegian L1 and another in English L2 (Brevik, Olsen, & Hellekjær, 2016). Since the majority of the national sample scored within the same quintile in L1 and L2, or higher in L1, while the students in the present study scored in the 20th percentile in L1 and in or above the 60th percentile in L2, we labelled them 'Outliers'. This highly unusual combination merited further investigation, as these Outliers challenge the dichotomous notion of readers being either good or poor regardless of language (e.g., Alderson, 2000; Bråten, Amundsen, & Samuelstuen, 2010; Duke, Pearson, Strachan, & Billman, 2011; Grabe, 2009). They also challenge assumptions that a reader is more proficient in L1 than in L2 (Cummins, 2000), and that a poor reader in L1 is most likely a poor reader in L2 (Bernhardt, 2011).

Koda (2007) has explained that L2 reading involves two languages, and argued that L1 literacy influences the L2 reading process. She suggested that a primary focus within L2 reading research should be to develop a clearer understanding of how the two languages interact, which is the goal of this study. Our aim is to identify variables that can account for the Outliers being markedly better readers in L2 than in L1, such as whether they struggle with specific reading aspects in L1 that they master in L2, their use of reading comprehension strategies, and their interest or motivation to read in English L2. This aim relates to studies on reading in L2 and reading in English as an additional language (EAL), as well as reading by emergent bilinguals (EB) (e.g. Escamilla, 1999; Hopewell & Escamilla, 2014; Sparrow, Butvilofsky, Escamilla, Hopewell, & Tolento, 2014). Thus, this study should be relevant for countries

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where English is an additional language, as well as where English is the majority language (e.g., US, UK).

### 1.1. Which variables can explain reading proficiency in English L2?

In the present article, we draw on [Bernhardt's \(2011, p. 35\)](#) compensatory model of second-language reading, in which she suggests that up to 20% of how we read in an L2 relates to how we read in our L1. Furthermore, she argues that approximately 30% can be explained by how well we know L2 language. Bernhardt referred to the remaining 50% of L2 reading comprehension as 'unexplained variance' (e.g., comprehension strategies, content and domain knowledge, interest, motivation). This model implies that deficiencies in L2 reading comprehension can be compensated by drawing upon L1 reading comprehension. However, as argued by [Grabe \(2009\)](#), social factors 'are multiplied for L2 readers who must sort through competing cultural and social influences emerging from both L1 and L2 contexts, as well as many competing influences in the dual-language mind of each individual L2 reader' (p. 152). In this respect, combining L1 and L2 reading assessments, as we have done in the present study, provides valuable information about students who are poor and good readers in L1 and L2 respectively. It also challenges traditional assumptions about the relationship between L1 and L2 reading (e.g. [Bernhardt, 2011; Cummins, 2000](#)).

The relevance of combining reading assessments in L1 and L2 is highlighted by [Hopewell and Escamilla \(2014\)](#), in which they argue that 'the use of monolingual assessments in either English [L2] or Spanish [L1] provide inadequate information about the literacy development of EB students in U.S. schools' (p. 82). While the combination of the two reading comprehension tests enables us to analyse the *explained variance* in [Bernhardt's \(2011\)](#) model, we have used information from an additional survey, in which we asked the Outliers about their use of comprehension strategies during L2 reading and their interest for reading in English L2, to investigate aspects of the *unexplained variance* in this model. In the following, these two variables are discussed; first reading comprehension strategies in L1 and L2, and then interest in L2 reading.

### 1.2. Reading comprehension strategies (L1–L2)

Reading comprehension involves the use of skills and strategies ([Afflerbach, Pearson, & Paris, 2008; OECD, 2010; RAND, 2002](#)); while *skills* relate to the reader's automatic responses to text; *strategies* comprise the reader's conscious awareness of comprehension problems and selection of the tool most appropriate to solve the problems he or she is confronting. Thus, reading strategies comprise 'the comprehension processes that readers use in order to make sense of what they read' ([Brantmeier, 2002, p. 1](#)). This notion is in line with [Brevik's \(2014, p. 55\)](#) statement that 'when students monitor their reading process and recognize a gap between what they understand and what they are expected to understand, they ideally apply strategies as tools to bridge the gap in comprehension'. It is crucial that strategies are not seen as ends in themselves, but a means to an end – as a set of tools to support disciplinary reading ([Brevik, 2017; Moje, 2008; Pearson & Cervetti, 2013](#)).

In 2000, the US National Reading Panel (National Institute of Child Health and Human Development [NICHD], 2000) conducted a comprehensive review of 481 studies on reading strategies published between 1980 and 1998. The panel defined reading comprehension strategies as procedures and routines that readers apply across different texts, and found that seven individual strategies 'appear to have a firm scientific basis for concluding that they improve comprehension in normal readers' (NICHD, 2000, pp. 4–42). These are comprehension monitoring, cooperative learning, graphic organizers, story structure, question answering, question generation, and summarization, in addition to multiple strategy instruction (see also [Pearson & Cervetti, 2013, p. 530; Willingham, 2006, p. 43](#)). NICHD's (2000) findings were inconclusive concerning the effectiveness of strategies such as listening actively, mental imagery, prior knowledge, and mnemonics (key words).

The reading comprehension strategies identified by [NICHD \(2000\)](#), and more, have been recommended as 'worth teaching – that is, if taught, they improve reading comprehension' ([Duke et al., 2011, p. 64](#)), including setting purposes, previewing and predicting, activating prior knowledge, and drawing inferences. Strategies recommended in other empirical studies include adjusting reading to suit the reading purpose (e.g., skimming for main points, scanning for details), careful (close) reading, using the context to understand unknown words, underlining/highlighting, re-reading, and using a glossary (e.g., [Afflerbach et al., 2008; Block & Duffy, 2008; Brevik, 2014, 2017; Catterson & Pearson, 2017; Grabe, 2009; Hopfenbeck & Roe, 2010](#)).

The studies reviewed in [NICHD \(2000\)](#) mainly concerned students in 3rd to 6th grade, with more positive results from the 4th grade, a finding that is supported in later studies ([Willingham, 2006](#)). In fact, the majority of strategy studies concern elementary or primary school, with a research gap at secondary school level, a gap which the present study addresses by investigating the use of reading comprehension strategies in 11th grade. In addition, while a majority of empirical studies focuses on strategy interventions, there is also need to identify students' independent use of reading comprehension strategies and their reasons for doing so (e.g., [Brevik, 2017; Willingham, 2006](#)). We do this by asking upper secondary students about their strategy use.

Since training of certain comprehension strategies has proven effective for student reading comprehension (e.g., [Bernhardt, 2011; Block & Duffy, 2008; Grabe, 2009; Kamil, Afflerbach, Pearson, & Moje, 2011; NICHD, 2000; Willingham, 2006](#)), it is worrying that research has suggested that reading comprehension strategy instruction is neglected in the majority of reading classrooms (e.g., [Moje, 2008; Pressley, 2008](#)). It is therefore interesting to find that research from the 2009 Programme for International Student Assessment (PISA) among 15-year-old students showed that high scores on self-reported strategy use were mirrored in high L1 reading performance when the students had sufficient metacognitive knowledge ([Artelt & Schneider, 2015](#)). One contextualized item asked students to grade the usefulness of six specific reading comprehension strategies (a–f) to remember and comprehend text; (a) I concentrate on the text parts that are easy to understand; (b) I read quickly through the text twice; (c) After reading the text, I discuss the content with others; (d) I underline important parts of the text; (e) I summarize the text in my own words; and (f) I read the text aloud to

another person (Artelt & Schneider, 2015). Of these elements, experts considered *c*, *d*, and *e* to be more effective in this context, than *a*, *b*, and *f*, a finding which echoes NICHHD (2000) concerning the effectiveness of cooperative learning and summarization.

As the PISA test assesses reading in L1 only, we have included a set of L2 strategy questions in the present study, building on the PISA items. This is of relevance, as Grabe's (2009) summary of research on reading strategies over the past two decades revealed that the same strategies to a large extent are used across L1 and L2. This relates to another research gap we intend to fill, namely that of moving from a focus on generic comprehension strategy use to comprehension strategy use in the English L2 subject in secondary school (e.g. Moje, 2008; Shanahan & Shanahan, 2008). Researchers have further argued that using strategies in L2 requires readers to engage with texts (Garcia, Pearson, Taylor, Bauer, & Stahl, 2011), indicating that while the use of skills is automatic, strategy use is under the reader's conscious control (Afflerbach et al., 2008; Pearson & Cervetti, 2013).

Some empirical studies have found that poor readers may fail to use comprehension monitoring strategies in L1 (Otero & Kintsch, 1992; Willingham, 2006), or use fewer and other strategies in L2 than good readers do (Brantmeier, 2002; McNeil, 2012). However, Grabe (2009) found in his summary of L1 and L2 research that all readers seem to use many strategies, while good readers use these more effectively than do poor readers (see also Bernhardt, 2011; Koda, 2005). Investigating this phenomenon, Alderson, Haapakangas, Huhta, Nieminen, and Ullakonoja (2015) have commented that while all readers experience comprehension problems at some point, they need to use effective strategies to monitor and repair their developing L2 comprehension. This points to the importance of seeing comprehension strategies as tools to close the gap between what is understood and what is expected to be understood (Brevik, 2014). Thus, the Outliers' use of reading comprehension strategies may be key to their characteristics as good readers in L2, but poor readers in L1.

### 1.3. Interest in L2 reading

While a positive relationship between L2 reading comprehension and the use of comprehension strategies is likely (e.g., Brevik, 2017; Grabe, 2009; McNeil, 2012; Pearson & Cervetti, 2013), a potential relationship with interest and motivation for L2 reading is more uncertain (Brantmeier, 2006; Brantmeier, van Bishop, Yu, & Anderson, 2012). However, the role of interest in L2 reading should not be ignored, particularly as studies support the value of interest in the L2 reading process (e.g., Bilikozen & Akyel, 2014; Brantmeier, 2002, 2006; Kalantari & Hashemian, 2016), since students are more likely to read material which they are interested in, or material they have chosen themselves (Day & Bamford, 2002; Jeon & Day, 2016), and since studies show that students mention interest and relevance as their main reasons for their L2 reading and resulting proficiency (Brevik, 2015, 2016, 2017). Reading texts of interest or reading for authentic purposes, may contribute to developing strategic L2 readers (Brantmeier et al., 2012; Brantmeier, 2002; Duke et al., 2011). These studies indicate that we should consider to what extent the Outliers are interested in reading in English L2.

### 1.4. The study context

Since English as a Foreign Language instruction became compulsory in Norway in 1959 (Simensen, 2010), it has been considered an educational success story. International comparisons show that Norwegians have become quite proficient in English (Bonnet, 2004; Education First, 2015). English learning is also supported by extensive extramural (i.e., learner initiated, out of school) exposure to the language (Sundqvist & Sylvén, 2016), with activities such as reading the news on the Internet and via Facebook, watching TV-series and films, listening to music and reading the lyrics, and online gaming being major sources of English language input (Brevik, 2016; Rindal, 2013, 2014; Sundqvist & Wikström, 2015). Exposure to extramural English has recently led to improved language proficiency, especially in reading (Brevik, 2016; Hellekjær, 2012). In Norway, English is present to such a degree that it is now considered a second language rather than a foreign language (Brevik, 2015; Graddol, 2007; Rindal, 2013, 2014).

Norwegian students start learning English L2 alongside Norwegian L1 in primary school (6 years old). It is a compulsory subject through their first year of upper secondary school (16 years old). The English subject curriculum (Norwegian Ministry of Education and Research [NMER] 2013) states the teaching hours (in 60-min units), requiring a total of 138 in Years 1–4, 228 in Years 5–7, 222 in Years 8–10, and 140 in Years 11–12. In comparison, the Norwegian L1 subject curriculum (NMER, 2013) requires a total of 931 teaching hours in Years 1–4, 441 in Years 5–7, 398 in Years 8–10, and 393 in Years 11–13.

Students participate in national L1 and L2 reading tests in Years 5, 8, 9, and 11. The Year 11 tests (upper secondary school, 16 years old) started in 2010, with the L1 test being mandatory and the L2 test voluntary. In 2015, both became voluntary; each school decides whether to participate. The tests are based on the competence aims in the national curriculum (NMER, 2013) which draws heavily on the Common European Framework (Council of Europe, 2001). Like national tests in other countries, these are 'used for early detection of reading difficulties. They help to identify the specific learning needs of individual students and to define appropriate personalized follow-up and teaching' (Motiejunaite, Noorani, & Monseur, 2014, p. 972).

In the Year 11 tests, it has been a clear trend that girls have achieved better results than boys in L1, while in L2 there has been no difference between the genders since 2012 (Norwegian Directorate for Education and Training [hereafter Directorate] 2012). The reduced gender gap is a positive development, not least compared to the *English in Europe* test for Year 10 students, which showed a large difference in favour of girls (Bonnet, 2004).

Previously, we used data from the Year 11 test to carry out a nationwide large-scale study of 10,331 students (Brevik et al., 2016). While a few studies have examined English reading comprehension in Norwegian upper secondary school (Brevik, 2014, 2015, 2017; Hellekjær, 2008; Hellekjær & Hopfenbeck, 2012), our study was the first to systematically compare reading proficiency in Norwegian L1 and English L2. First, standardised scores (z-scores) revealed a gender effect size (Cohen's *d*) in L1 of approximately 0.37 in favour

of the girls, while the gender effect in L2 test was only 0.15, with girls still being the more proficient readers (Brevik et al., 2016, p. 172). Then, we identified poor readers as those who scored in the 20th percentile, which was at or beneath the pre-set intervention benchmark in the L1 test (Directorate, 2010b), and the good readers as those who scored in or above the 60th percentile in the L2 test. In fact, 4.5% of these ( $n = 463$ ) read markedly better in L2 than in L1. These are the identified Outliers, who were simultaneously among the poorest readers in L1 and the most proficient readers in L2. Surprisingly, and in contrast to the findings for the nationwide sample, the Outlier boys (66%) outnumbered girls (34%). This gender difference is particularly interesting to follow up, since as mentioned the gender gap seems to be reduced in L2 (Brevik et al., 2016), and since other studies have shown boys to perform better than girls for certain reading tasks (e.g., Brantmeier, Callender, & McDaniel, 2013).

Based on these unexpected findings, Brevik (2016) conducted a follow-up study to investigate whether the reading proficiency of students with comparable Outlier profiles could be related to extramural English use. Five boys with Norwegian L1, were identified at a large upper secondary school in eastern Norway that had carried out the same Year 11, L1 and L2 tests. Interviews revealed that these boys considered English their preferred out-of-school language. They read the news, listened to music, watched TV-series and films, and played online games – all in English. Interestingly, these Outliers distinguished between their in- and out-of-school uses of English, and stated they did not see any connections between the two contexts (Brevik, 2016).

In a new study, Brevik (forthcoming) used the same tests to identify students with the Outlier profile at a large upper secondary school in western Norway. Out of 280 students, there were 22 Outliers (7.8%). A preliminary analysis of the survey and interviews confirmed the findings in Brevik (2016) and elaborated on these Outliers' extramural English uses, which again emerged as the main reason they were markedly better L2 readers. They also stated that they were more interested in L2 reading and found it easier to read school texts in L2 than in L1 (Brevik, forthcoming). These findings initiated the present study; investigating the characteristics of the Outliers' L2 reading at school.

### 1.5. Research questions

This study investigates reading proficiency, reading comprehension strategy use, interest and motivation for English reading among the Outliers ( $n = 463$ ). Our aim has been to identify what characterizes the Outliers as good readers of English as the L2 but poor readers of Norwegian as the L1. More specifically, this study addresses three research questions (RQs):

1. What characterizes these Outliers, and to what extent is there a statistical relationship between their reading proficiency in L1 and L2?
2. To what extent do the Outliers use reading comprehension strategies?
3. How do the Outliers explain their interest in and motivation for reading in English L2?

We contend that the findings for this atypical group of readers have implications for reading research on the relation between reading in L1 and L2, in countries where English is an additional language (L2), and in countries where English is the majority language (L1).

## 2. Method

As mentioned, this study used secondary data from two nationwide, quantitative tests of L1 and L2 reading proficiency in upper secondary school to identify and analyse students with the Outlier profile ( $n = 463$ ). We also distributed a student survey to schools that participated in the tests (primary data).

### 2.1. The national reading tests

The national reading tests referred to in this article are based on the competence aims in the criterion-based national curriculum (NMER, 2013) that are to be achieved at the end of lower secondary school (Year 10). These tests are designed to provide teachers with indicators on individual students' reading performance early in the school year by identifying the 20% poorest readers and areas of strengths and weaknesses (Brevik et al., 2016). Both tests are based on overlapping construct descriptions from the Directorate (2010a, 2010b), which describe two main constructs; they are designed to test a language construct (vocabulary and grammar), and a reading comprehension construct (find explicitly stated information, understand main points, reflect and make inferences based on information in the text). The reading comprehension construct draws upon the PISA (OECD, 2010) and RAND (2002) frameworks for reading, and aligns with Alderson et al.'s (2015) elaboration on aspects of reading comprehension which specifies that 'understanding text involves drawing inferences, making subjective interpretations, as well as recognizing explicit statements'. If compared with Day and Park's (2005) proposed taxonomy of comprehension tasks, with literal comprehension being the easiest, followed by re-organization tasks which require holistic reading, and making inferences, these align well with the three reading aspects in the L1 and L2 tests. In the tests, finding explicitly stated information is considered the easiest (0.76), followed by understanding main points (0.75), and inferences as more difficult (0.65). The decimals indicate the number of students who answered the items for each reading aspect correctly:  $0.76 = 76\%$  of students who took the L2 test (Directorate, 2012). Both tests have multiple-choice items with four possible responses, one correct item, and three plausible distracters, the most common method to test comprehension (Alderson, 2000; Brantmeier et al., 2013), with additional formats in the L2 test (click name and move paragraph). Since the outset of the tests, the developers found reliability estimates (Cronbach's  $\alpha$ ) to be high for L1 ( $\alpha = 0.88$ ) and L2 reading proficiency ( $\alpha = 0.93$ ), the

latter being a consistent finding every year since 2010 (Directorate, 2012; Heber, Mossige, & Kittel, 2010). By design, the tests have ceiling effects to maximize information about poor readers, with fewer details about good readers. Nevertheless, the tests are not notably skewed (Brevik et al., 2016) and allow for reasonable separation of students with higher L2 scores, such as the Outliers.

## 2.2. The student survey

To relate L2 reading proficiency to comprehension strategy use, interest in and motivation for reading in English, Brevik developed a survey linked to the L2 test. The survey, estimated to take 10 min, comprised eight questions: reading interest and motivation (questions 1 and 7), reading behaviour (questions 2 and 3), and reading comprehension strategies (questions 4, 5, 6, and 8). These items drew upon strategies identified as successful, as well as strategies where the effect was found to be inconclusive (e.g. Artelt & Schneider, 2015; Block & Duffy, 2008; Brevik, 2014, 2017; Catterson & Pearson, 2017; Duke et al., 2011; Grabe, 2009; Hopfenbeck & Roe, 2010; NICHD, 2000). Questions 1, 7, and 8 used four-point Likert scales, while Questions 2–6 offered specific distractors for each question.

## 2.3. Data collection

For our prior study (Brevik et al., 2016), the Directorate granted Brevik permission to collect L1 data from upper secondary schools nationally. Brevik received the L1 data from the individual schools as Excel files including background information (county, school, student ID, study programme), and separate sum scores for the language and reading comprehension constructs. The Directorate delivered the L2 data as a single digital file; including gender and scores for each item. Both data sets were merged using student ID as the key variable across the datasets. The final nationwide sample included 10,331 students from 87 public schools, with 463 students (4.5%) identified as Outliers (Brevik et al., 2016). The present study analyses the Outliers' data in further detail. The L2 survey was e-mailed to participating schools and administered to the students immediately after they conducted the L2 test. Brevik received the survey data from the schools, with student ID as key variable. Research assistants punched and transferred the survey data to SPSS. We received 164 survey answers from the Outliers, which gave a 35% response rate for the present study.

## 2.4. Sample

Table 1 presents an overview of the participating Outliers. As mentioned, the Outlier profile is characterised by the students' performance on the two national reading tests; scoring in the 20th percentile in L1 and at the same time in or above the 60th percentile in L2. Based on the overlap concerning gender distribution and percentiles for reading proficiency, we contend that the survey sub-sample ( $n = 164$ ) provides a reasonably representative sample from the 463 Outliers.

## 2.5. Data analysis

The data analysis took place in two stages, see Table 2. In Stage 1, we characterised the Outliers and their overall reading proficiency in both languages. We registered their home language, calculated sub-scores for language (i.e., vocabulary, grammar) and reading comprehension (i.e., find information, understand main points, making inferences) in L1 and L2 for the Outliers ( $n = 463$ ) and the nationwide sample ( $n = 9868$ ) for comparison. We also calculated correlations between L1 and L2. In Stage 2, we calculated the mean values for the survey questions (i.e., reading comprehension strategy use, interest and motivation) for the Outliers who had taken the survey ( $n = 164$ ), and correlations between the L2 test and survey results, language background, gender, and study programme.

## 2.6. Research credibility

As the test data are secondary data, we checked for reliability and validity estimates. Validity is calculated as internal and external correlations within and across the two tests. For the nationwide sample, we found high internal correlations between the overall L1 test scores and the lower-order constructs (L1 language  $r = 0.90$ , L1 reading comprehension  $r = 0.71$ ), and a moderate correlation between L1 language and L1 reading comprehension ( $r = 0.44$ ). For L2, we found high internal correlations between the overall L2 test scores and the lower order constructs (L2 language  $r = 0.89$ , L2 reading comprehension  $r = 0.97$ ), as well as between L2

**Table 1**

Participants: Gender distribution and percentiles.

| Gender        | Outliers with survey data ( $n = 164$ ) |       | The Outliers ( $n = 463$ ) |       | Remaining nationwide sample ( $n = 9868$ ) |       |
|---------------|---|-------|----------------------------|-------|--|-------|
|               | Boys                                    | Girls | Boys                       | Girls | Boys                                       | Girls |
|               | 65%                                     | 35%   | 66%                        | 34%   | 52%  | 48%   |
| Percentile L1 | 20th                                    | 20th  | 20th                       | 20th  | 40th                                       | 60th  |
| Percentile L2 | 60th                                    | 60th  | 60th                       | 60th  | 40th                                       | 40th  |

Note. L1 = First language (Norwegian). L2 = Second language (English).

**Table 2**  
Data analysis in two stages.

|                                  | Aim   | Tools of analysis  | Research question   |
|----------------------------------|---|--|---|
| Stage 1 (L1 and L2 test results) | To identify characteristics of the Outliers' reading proficiency across L1 and L2, and compare to the nationwide sample.  | Frequency analysis and cross tabulation.   | RQ1. What characterizes these Outliers, and to what extent is there a statistical relationship between their reading proficiency in L1 and L2?                            |
| Stage 2 (L2 student survey)      | To identify the Outliers' metacognitive awareness of reading comprehension strategy use, reading interest and motivation. | Self-reported use of reading comprehension strategies acknowledged as effective in the literature, and self-reported interest and motivation for reading in English. | RQ2. To what extent do the Outliers use reading comprehension strategies?<br>RQ3. How do the Outliers explain their interest in and motivation for reading in English L2? |

language and L2 reading comprehension ( $r = 0.70$ ). For details, see [Brevik et al. \(2016\)](#). Although the focus was on world knowledge, and background knowledge was not measured in the tests, we cannot ignore the influence that it may have had on the outcomes in the study. As prior studies indicate effects of background knowledge on reading comprehension (e.g., [Brantmeier, Sullivan, & Strube, 2014](#); [Jeon & Day, 2016](#)), it is a limitation of the study that the effects of background knowledge were not examined. Finally, we contend that combining test results with survey data enhances the internal validity of the study ([Johnson & Christensen, 2013](#)). The study was approved by the Norwegian Center for Research Data, and followed their ethical guidelines ([NESH, 2006](#)). As student ID was used for the test data and the survey data, all participants are anonymous.

### 3. Results

In this section, we present results for each research question separately before discussing them. Four patterns emerged when trying to understand why these Outliers were markedly better readers in English L2 than in Norwegian L1. The first is the lack of correlation between L1 and L2 reading proficiency for the Outliers. The second is that gender and study programme seem to distinguish the Outliers, while language background does not. Third, the test results reveal higher proficiency for the reading comprehension tasks than for the language tasks, and that the Outliers seem to adjust their strategy use to the reading situations in English. Finally, the Outliers report high interest for being good readers in English, and motivation for doing well on the L2 test.

#### 3.1. What characterizes these Outliers, and to what extent is there a statistical relationship between their reading proficiency in L1 and L2?

Since the Outliers form an atypical group of respondents, being poor readers in L1 and good readers in L2, we first considered whether reading proficiency across the two languages or background variables (language, gender, study programme) could account for their L2 reading comprehension.

##### 3.1.1. Reading proficiency across L1 and L2

Based on [Bernhardt's \(2011\)](#) compensatory model of second-language reading, it is reasonable to expect a strong positive relationship between L1 and L2 reading proficiency (including language, and reading comprehension). Although we found a strong external correlation ( $r = 0.68$ ) for the nationwide sample, we identified no relationship between the Outliers' reading in the two languages. This finding shows that a key characteristic for the Outliers is the lack of explained variance between L1 and L2 reading comprehension.

##### 3.1.2. Language background

We treated the Outliers with English L1 as one group (1%), Asian and African L1 languages as another (8%), and Norwegian L1 a third (91%). The L1-L2 relation showed no correlation regardless of language background; suggesting home language did not account for the Outliers' reading profile.

##### 3.1.3. Gender and study programme

There was an almost equal distribution of girls (48%) and boys (52%) in the nationwide sample ( $n = 9868$ ), while among the Outliers ( $n = 463$ ), boys (66%) outnumbered girls (34%), and vocational (VS) students (58%) outnumbered general studies (GS) students (42%). Interestingly, the largest group was boys in vocational studies (40%), traditionally considered weaker students at risk of dropout ([Brevik et al., 2016](#); [OECD, 2016](#)). While we found no correlation for the boys' reading proficiency in L1 and L2 regardless of study programme, or for the GS girls, we found a moderate negative correlation ( $r = -0.32$ ) for the VS girls. This was certainly an unexpected finding that merits further investigation, and strengthens the Outlier characteristic of no explained variance between L1 and L2 reading comprehension.

##### 3.1.4. Reading constructs

Given the lack of explained variance between L1 and L2 reading, it was somewhat unexpected that the Outliers struggled as much

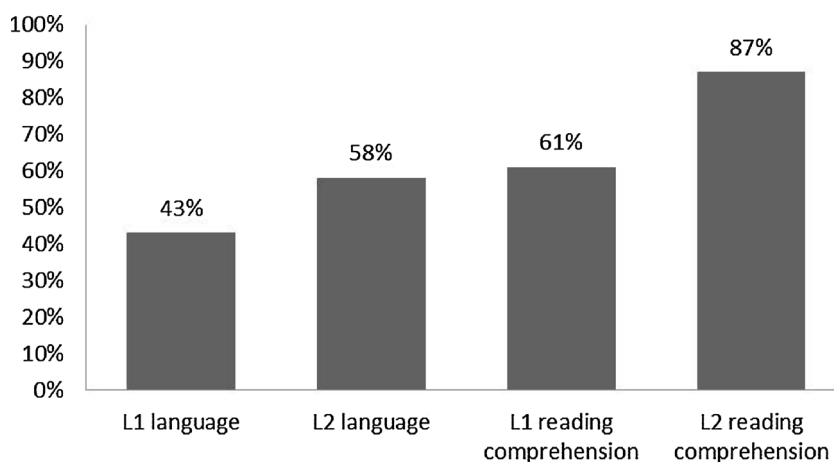


Fig. 1. Bar chart indicating the percentages of the tasks mastered by the Outliers ( $n = 463$ ).

with the L2 language tasks (58% score) as with L1 language and L1 reading comprehension tasks (43% and 61%). Fig. 1 presents the score distribution; showing that the Outliers' strength was L2 reading comprehension tasks (87%).

In this analyses we identified further gender differences. First, for VS girls we found a moderate negative correlation ( $r = -0.27$ ) between L1 and L2 language, and a moderate positive correlation ( $r = 0.37$ ) between L1 and L2 reading comprehension, suggesting that for these girls, the lack of explained variance between L1 and L2 relates to the language aspects only, while comprehension in one language indeed seems to explain comprehension in the other. There were no correlations between these constructs for the other Outlier groups. This gender difference resembles the one in Brantmeier et al. (2013), where boys and girls performed better depending on text adjuncts.

### 3.1.5. Reading proficiency (L2)

A closer look at task difficulty in the L2 test (Table 3) reveals that although language tasks were the most challenging ones (task difficulty 0.51), the Outliers (58% score) mastered these better than did the nationwide sample (53%); excelling by 5 percentage points. Moreover, the Outliers scored 11–12 percentage points higher on L2 tasks measuring finding information and understanding main points, while for the most challenging reading aspect; reflecting on and making inferences from text (task difficulty 0.65), they excelled by 17 percentage points.

This analysis further confirmed VS girls as the only Outlier group that differed from the other three; consistently scoring lower (81–85%) than the others (83–92%) on the reading comprehension tasks. However, the VS girls also outperformed the nationwide sample. This finding raises the question of whether the Outliers used efficient reading comprehension strategies while reading in L2, which we investigated in the follow-up survey.

## 3.2. To what extent do the Outliers use reading comprehension strategies?

The follow-up survey had a number of questions about how the Outliers read during the L2 test and in general.

### 3.2.1. Reading comprehension strategy use in the L2 test

The Outliers explained how they had read three specific L2 items; two measuring how to find explicitly stated information, and one measuring how to make inferences. Fig. 2 shows the percentage of students who reported to have used the following reading comprehension strategies; close reading, scanning, reflection, re-reading, or other strategies. When searching for information, the Outliers reported having used close reading (36–38%), scanning (30%), reflection (23–29%), re-reading (16–17%), or other (4–5%) reading comprehension strategies. As close reading is considered ineffective with regard to finding explicitly stated information, for

Table 3

Comparison of the L2 tasks answered correctly by the Outliers and the remaining nationwide sample.

|  | Task difficulty | The Outliers<br>( $n = 463$ ) | Remaining nationwide sample<br>( $n = 9868$ ) | Percentage points advantage for the<br>Outliers |
|--|-----------------|-------------------------------|---|---|
| Finding information in L2              | 0.76            | 90%                           | 78%   | 12  |
| Understanding main points in L2        | 0.73            | 86%                           | 75%   | 11  |
| Reflecting and making inferences in L2 | 0.65            | 85%                           | 68%   | 17  |
| Language in L2                         | 0.51            | 58%                           | 53%   | 5   |

Note. L2 = s language (English); percentages indicate how many students answered.

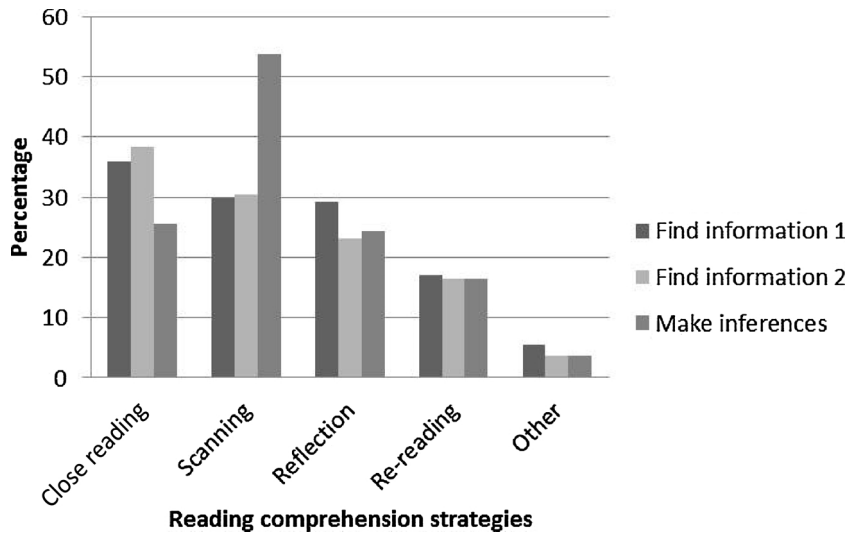


Fig. 2. Bar chart indicating the percentages for the Outliers who answered the survey ( $n = 164$ ), and their reported use of reading comprehension strategies for three specific tasks in the L2 test.

instance when answering the question: ‘How many times has Keizo Yamada run the Boston Marathon?’, the Outliers could more effectively find the information by scanning the text (i.e., for numbers), which a third of the Outliers (30%) reported to have done.

In contrast, a clear majority reported to having used scanning (54%) when making inferences, the task in question asking students to consider, ‘Who could say: “We couldn’t wear whatever we wanted to school?”’, in which scanning the text for relevant information (i.e., names), would seem a relevant choice in this situation. The significant increase in the use of scanning as a reading comprehension strategy to make inferences is a positive finding, which might indicate a metacognitive awareness of how to address this challenging aspect of reading.

### 3.2.2. Reading comprehension strategy use in general

While Fig. 2 displays the Outliers’ reported strategy use during the L2 test, Fig. 3 presents their strategy use in general, asking in line with the 2009 PISA test item (Artelt & Schneider, 2015): ‘How often do you use these strategies to remember and understand factual texts in English?’ Although the Outliers demonstrated metacognitive awareness of using reading comprehension strategies in English L2 even when not sitting for a test, they did not necessarily use the most acknowledged strategies.

Students rated their use of 15 specific reading comprehension strategies on a four-point Likert scale, from 1 (almost never) to 4 (almost always). Among the top ten strategies the Outliers reported using, nine have been recommended in a number of studies (e.g. Afflerbach et al., 2008; Artelt & Schneider 2015; Block & Duffy, 2008; Brantmeier, 2002; Brevik, 2014, 2017; Catterson & Pearson, 2017; Duke et al., 2011; Grabe, 2009): close reading (3.2), focusing on important parts (3.0), scanning (2.8), setting purposes (2.5),

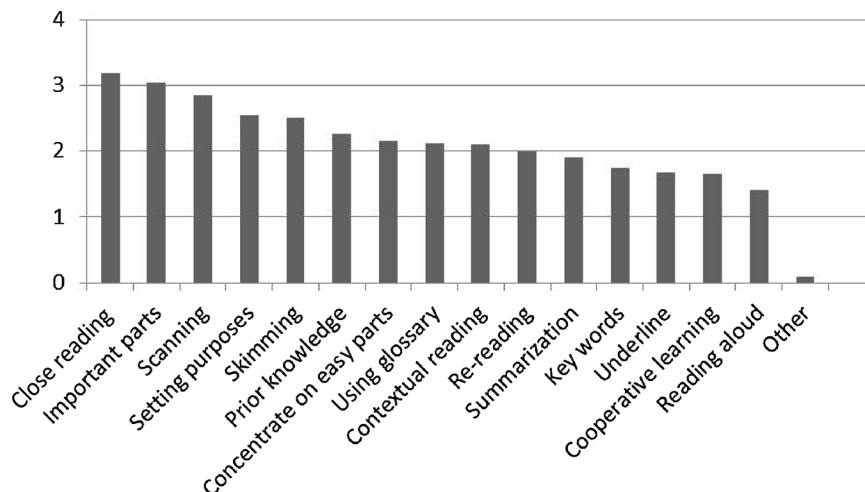


Fig. 3. Bar chart indicating the use of reading comprehension strategies when reading in English L2 for the Outliers who answered the survey ( $n = 164$ ). Likert scale: from 1 (sometimes) to 4 (almost always).



**Table 4**

Student motivation when answering the national L2 test (n = 164). Note. The remaining 4%–8% of the respondents did not answer the question.

| To what extent do you agree or disagree with the following statements about the English test you recently completed? | 1 strongly disagree | 2 disagree | 3 agree | 4 strongly agree |
|--|---------------------|------------|---------|------------------|
| 7.1 I was motivated to do my best on the English test.   | 3%                  | 8%         | 59%     | 26%              |
| 7.2 I made an effort on the English test.  | 1%                  | 10%        | 57%     | 24%              |
| 7.3 It was important to me to perform well on the English test.  | 2%                  | 12%        | 59%     | 22%              |
| 7.4 I worked hard on the tasks although some were difficult.   | 3%                  | 9%         | 59%     | 24%              |

skimming (2.5), activating prior knowledge (2.3), using a glossary (2.1), contextual reading (2.1), and re-reading (2.0). For the remaining strategies, three are considered effective by NICHHD (2000) and/or in the PISA 2009 test (Artelt & Schneider, 2015): summarization (1.9), cooperative learning (1.7), and underlining (1.7), while the effect of one is inconclusive: key words (1.8); and two are considered ineffective for reading comprehension: concentrating on the easy parts (2.2), and reading aloud (1.4).

Using gender and study programme as variables, we found fairly strong correlations between the Outliers' L2 proficiency and specific reading comprehension strategies. For the girls, we found moderate negative correlations ( $r = -0.45$ ) between the VS girls' L2 proficiency and activation of prior knowledge, and between the GS girls' L2 proficiency and their use of glossaries; indicating that as the girls' L2 reading comprehension increased, their use of these strategies was reduced; both of which are recommended strategies. For the boys, we found positive correlations between their L2 proficiency and strategy use; GS boys increased their focus on the easy text parts ( $r = 0.33$ ) as their L2 proficiency improved, while VS boys increased their use of close reading ( $r = 0.51$ ), and making sure they understood important text parts ( $r = 0.41$ ). As stated above, the effect of concentrating on the easy parts is considered ineffective, while the two latter strategies have been found successful in empirical studies (see Fig. 3). More important, however, is the relationship between L2 comprehension and specific strategy use, depending on gender and study programme.

### 3.3. How do the Outliers explain their interest in and motivation for reading in English?

For the two final questions in the student survey, we identified the Outliers' interest in and motivation for reading English. Table 4 shows that most Outliers agreed or strongly agreed to being motivated (85%), and to have made an effort on the English test (81%), they considered it important to do well on the test (81%), and work hard although some tasks were difficult (83%).

The final survey question asked, 'How important is it to be a good reader in English?'. The majority (86%) reported it was important, or very important, to be good readers of English, while only a few reported it to be somewhat important (13%) or not important at all (1%). This pattern was similar across genders and study programmes, with girls (3.5) being slightly more interested than boys (3.2), on a scale from 1 (not important) to 4 (very important).

## 4. Discussion

This study's main finding is that the Outlier group exists. Indeed, the finding that they are simultaneously good L2 readers and poor L1 readers challenges the dichotomous notion of adolescents as either good or poor readers (e.g., Grabe, 2009), the notion that poor readers in L1 are poor readers in L2 (Bernhardt, 2011), and the notion that a reader is more proficient in L1 than in L2 (Cummins, 2000). Furthermore, the correlation analysis found either no or a negative relationship between the Outliers' reading proficiency in the two languages, suggesting that they do not, or cannot, compensate for lack of comprehension by drawing upon the stronger language.

First, it is important to ask whether the difference in reading proficiency between the two languages relates to the texts and test formats. While there were two long texts in the paper-based L1 test, the digital L2 test comprised several shorter texts covering various topics. The PISA test (e.g., Artelt & Schneider, 2015; Hopfenbeck & Roe, 2010; OECD, 2010) has revealed that the long L1 texts typically represent the kind of texts boys (but not girls) tend to find boring. As can be seen in Table 1, however, all Outliers score in the 20th percentile in the L1 test, so there is good reason to discount this as an explanation for their poor L1 scores. With regard to the English scores, the digital L2 test format might benefit the Outliers, considering the digital tool use among students with similar Outlier profiles in two recent studies (Brevik, 2016, forthcoming). Conversely, the majority of the tasks in both tests were short multiple-choice tasks with overlapping test constructs (i.e., find information, understanding main points, making inferences, language). We do not consider these test aspects adequate to account for the difference between the Outliers and the remaining students with regard to L1 and L2 reading, as the analysis showed no correlation between the Outliers' ( $n = 463$ ) L1 and L2 reading proficiency, while identifying a strong correlation ( $r = 0.68$ ) for the remaining students ( $n = 9868$ ).

Second, not only do boys (66%) outnumber girls (34%), but the majority among the Outliers are boys in vocational programmes (40%), a group not usually considered good readers (Brevik et al., 2016; OECD, 2016). Equally unexpected is the finding that girls in vocational studies (VS) are the only Outlier group with a negative correlation between L1 and L2 reading. Although the most straightforward interpretation is that as L2 reading proficiency increases for VS girls, L1 proficiency is reduced, a just as likely interpretation is that while these girls are poor L1 readers, they have found a way to increase their L2 proficiency. In line with prior studies (e.g., Bonnet, 2004; Brantmeier et al., 2013; Brevik, 2016), the gender gap identified in the present study merits further investigation. Plausible explanations relate to strategy use and interest.

The survey data also indicate that the Outliers were motivated for doing well on the L2 test, and interested in being good readers of English. This reflects prior studies on the role of interest in L2 reading (Brantmeier, 2002, 2006; Brantmeier et al., 2012; Day and Bamford, 2002; Duke et al., 2011), and the impact of extramural English use (Brevik, 2015, 2016, 2017; Jeon & Day, 2016). These variables should be investigated in further detail in future studies of readers with the Outlier profile. Although this is at the core of Brevik's forthcoming study, there also merits further investigation in other contexts and countries, not the least to further investigate possible relationships in the *unexplained variance* in Bernhardt's (2011) model.

Third, the survey data suggest that the Outliers are proficient L2 readers who engage in strategic reading by drawing on cognitive and metacognitive resources to adjust their reading behaviours to accommodate text and task demands, as well as contextual variables (Artelt & Schneider, 2015; Brevik, 2017; Hopfenbeck & Roe, 2010; Koda, 2007). It was unexpected indeed that the Outliers outperformed the nationwide sample by 17 percentage points when reflecting on and making inferences from text, which is the most difficult reading aspect. Their reported use of reading comprehension strategies seems appropriate for such a reading task. Two recent studies involving readers with the Outlier profile might offer an explanation for the Outliers' strategic reading when making inferences (Brevik, 2016, forthcoming). In these, the Outlier informants acknowledged playing online games more than three hours each day; an activity which requires them to reflect and make inferences based on information in the game, act strategically, and respond immediately – or lose. This finding is in line with Artelt and Schneider's (2015) study of significant relationships between 15-year-old students' reading competence, strategy use, and metacognitive knowledge in the 2009 PISA test.

In other words, the Outliers' combination of interest in English reading, and extramural English activities requiring the use of reading comprehension strategies might well have contributed to their development into better readers in L2 than in L1. Brevik's (2016, forthcoming) qualitative studies, involving interviews with Outlier students at two new schools, revealed that these students considered English their preferred out-of-school language. Indeed, such a trajectory might be encouraged by a context in which English as L2 'no longer feels foreign to Norwegians' (Rindal, 2013, pp. 1–2), in which L2 is taught at school from Year 1 (6–7 years old), and in which there is extensive media exposure to English, not least due to the Internet. Indeed, as indicated by the present study and Brevik (2016, forthcoming), the Outliers are very interested in English. They read and listen to English extensively outside school, and many are avid gamers, which Sundqvist and Wikström (2015) have shown to have a positive effect on English proficiency.

We therefore contend that the Outliers provide an example of how important interest and effective use of reading comprehension strategies may be for L2 reading comprehension, to the point that students may develop better L2 than L1 reading proficiency. In turn, these findings highlight the importance of considering such factors in L1 and L2 instruction in general, and reading instruction in particular.

We also contend that researchers should re-examine the truism that L2 learners are better in their L1 (Cummins, 2000). In fact, with moderate negative correlation between L1 and L2 reading proficiency for VS girls, and no correlation for the remaining Outliers (GS and VS boys, and GS girls), our study challenges Bernhardt's (2011, p. 38) compensatory model of second language reading, in which she argues that 'readers who struggle in their first language will probably also struggle in their second.'

## 5. Conclusion

The Outliers in the present study pose a challenge to current assumptions about crosslinguistic reading which calls for further investigation. To our knowledge, no prior studies except ours (Brevik, 2016; Brevik et al., 2016) have reported poor readers in L1 to be good readers in L2, or identified boys in vocational studies as proficient readers in L2. Thus, there is a need to go back where Bernhardt (2011) left off and try to make some progress concerning likely sources of the unexplained variance.

It would therefore be highly interesting to conduct interviews with additional readers who share the Outlier characteristics, not only in Norway but in other countries where English is an additional language, as well as in countries where English is the majority language (e.g. UK, US) and with emerging bilinguals (e.g. Escamilla, 1999; Hopewell & Escamilla, 2014; Sparrow, Butvilofsky, Escamilla, Hopewell, & Tolento, 2014). The aim would be to understand how they construct meaning in L2, as opposed to the L1, and to examine whether the findings could be explained simply as the results of more practice reading in L2 than L1. This explanation need not be incompatible with interest and use of strategies, and are probably interrelated. Additionally, it would be useful to conduct a new, quantitative study that, alongside L1 and L2 test scores, could provide more detailed information on language backgrounds, exposure to English, reading interest, and online and offline reading habits.

Among the implications of this study is the utility of large-scale, comparative studies of L1 and L2 reading proficiency, for research purposes, as part of formative assessment practices, and above all, as an inspiration for reading instruction and reading programmes. First, it demonstrates the potential of making language and reading instruction as interesting and relevant as possible, for boys in vocational studies in particular. Second, it demonstrates that metacognitive awareness (in terms of using effective reading comprehension strategies), interest in and motivation for reading in English might outweigh other variables, to the extent that these can be called pedagogical, compensatory principles. Above all, the Outliers show that we need to rethink L1 and L2 reading instruction, not only to understand why these students read markedly better in English as L2 than in their L1, but also to understand how to develop these students as readers. The perhaps most important implication, and for schools and teachers a quite challenging step, will be taking students' interests into account when choosing reading tasks and materials, providing 'a variety of texts on a wide range of topics', and making sure that 'reading is related to pleasure, information and general understanding' (Day & Bamford, 2002, pp. 137–141). In doing so one can draw upon Richard Day's work in this area, his documentation of the effects of extensive reading programmes (Jeon & Day, 2016), including his top ten principles for extensive reading (Day & Bamford, 2002), and Bamford and Day's (2004) work on extensive reading activities.

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