Exploring relationships between oral reading fluency and reading comprehension amongst English second language readers in South Africa

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Abstract

The aim of the present study is to model the relationship between English reading fluency and comprehension among rural English-Second-Language Learners (ESL) in South Africa. We use data collected in 2013 by the National Education and Evaluation Development Unit (NEEDU) of the Department of Basic Education in South Africa. This survey tested 4697 grade 5 students from 214 schools across rural areas in South Africa. A sub-sample of these students – 1772 students – were selected for an Oral Reading Fluency (ORF) test. For these students there exist data on both reading comprehension and reading fluency. Although a number of studies have analyzed the relationship between fluency and comprehension (Fuchs et al. 2001 and Spear-Swerling 2006), none of these studies have been conducted on a large-scale for ESL learners in a developing country context such as South Africa. The present research contributes to the literature by analysing the size, significance and uniforminty of this relationship for ESL learners in South Africa. Preliminary findings indicate a threshold at 70 words-read-correct-per-minute which is lower than the typically used threshold of 90 words-read-correct-per-minute of first-language English students.

Key words: Oral reading fluency, Reading comprehension, English second language reading, English first additional language

I20 - Education and Research Institutions: General
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1. Introduction

In South Africa approximately 15% of total government expenditure is spent on education, making it the largest single line-item in the budget. Yet despite the country's generous investment in education, it is by now well documented that South Africa is producing learners with very low literacy and numeracy levels. Literacy and numeracy performance are typically used as an index of how well an education system is performing. Reading, an important aspect of literacy, is regarded as the most important academic skill that students need to succeed in the formal learning environment (Saville-Troike 1984; Grabe 2009; Pretorius 2002). Yet regardless of whether reading literacy is assessed in African home languages (which are languages of learning and teaching (LoLT) during Grades 1-3 for many Black learners), or in English or Afrikaans (which become the official LoLTs in Grade 4 for all learners), South African learners perform abysmally poorly.

The national systemic literacy assessments administered in the first decade of this century first alerted the public to the literacy crisis in South African schools (Department of Education 2003, 2005) with undeniable empirical evidence. Thereafter the large scale annual national assessments (ANAs) implemented since 2011 further confirmed the low performance in literacy and numeracy in the Foundation Phase (Grades 1-3) and the Intermediate Phase (Grades 4-6). Further international large scale evidence of poor literacy performance comes from South Africa's participation in the Progress in International Reading Literacy Study (PIRLS) which assesses reading comprehension at Grade 4 level. Each time South African performed at the bottom of the scale. In 2006 South African Grade 4 learners did the assessments in all 11 official languages, in the language in which they had received instruction during Grades 1-3. Only 13% of the Grade 4s could achieve the lowest reading benchmarks, viz. being able to answer literal questions, compared to 94% of their international peers (Venter et al. 2008). Reading levels were especially low in the African languages. The Grade 4 learners participated again in 2011 (n=15,744) across all the provinces. This time the prePIRLS assessment was used in all 11 languages, where shorter, easier texts are used than PIRLS. The South African mean score of 461 was well below the international centre point of 500. Grade 4s who did prePIRLS in English and Afrikaans scored the highest, at 530 and 525 respectively, while those tested in African languages performed very poorly, ranging from the highest mean of 451 in Swazi to the lowest in Northern Sotho at 388 (Howie et al. 2012: 27-29).

While local research has identified numerous contributory variables to our poorly functioning educational system at the macro level (e.g. the deleterious historical legacy of apartheid education, socioeconomic factors, poorly qualified

teachers) and at school level (e.g. poorly resourced and poorly managed schools, absenteeism, inadequate time on task, inadequate lesson planning and ineffective instructional practices, etc), there has not been a great deal of detailed research on what goes wrong in reading, when, where and how.

In all writing systems language is represented at a sublexical level by a series of symbols or codes. In alphabetic writing systems, such as in English, Afrikaans and the African languages, these symbols represent the sounds of the language, forming a phonological basis to the code. A distinction is commonly made in reading research between *decoding* and *comprehension*. The former refers to the skills required in learning and manipulating the code and 'translating' the symbols into words and sentences (also referred to as low level processes). Comprehension refers to the ongoing outcome of decoding, namely understanding what is being read and assigning meaning to the text. Decoding is seen as necessary but not sufficient for comprehension (e.g. Adams 1990; Stanovich 2000).

The large scale converging evidence of poor literacy performance in South Africa from PIRLS naturally evoked no small measures of national self reflection, and an acknowledgement of the glaring fact that comprehension was a much neglected area in primary school classrooms. There is plenty of anecdotal evidence of teachers focussing primarily on code-based reading activities in the classroom and neglecting meaningful literacy practices. A few small qualitative studies of teachers in Grade 1-3 classrooms (e.g. Gains 2010; Verbeek 2010) showed links between the early literacy experiences of teachers, their conceptualisations of literacy and their consequent practices of literacy as a narrowly constrained code-based activity with little attention to meaning. The tendency of teachers to rely on whole class oral chorusing of reading, the lack of reading homework and minimal reading of extended texts in the early grades have also been identified as instructional practices that contribute to poor reading development (Pretorius & Machet 2004; Pretorius & Mokhwesana 2009; Pretorius 2014; Zimmerman & Smit 2014).

While many education stakeholders in South Africa might argue that "too much time" is spent on decoding and "too little time" is spent on meaning and comprehension, time spent on an activity in the classroom does not necessarily equate with effective instruction. The relationship between the development of decoding and comprehension abilities of children in a bilingual education system needs to be more closely investigated, especially when most of the children do their schooling after Grade 4 through a language which is not their first or home

language[3] (L1). The large scale PIRLS results certainly point explicitly to poor comprehension abilities in both L1 and L2 readers, but at the same time, poor comprehension inevitably also raises questions about basic reading abilities. If children struggle even with literal comprehension in the L1 or L2, then maybe it is because they can barely decode the texts that they are expected to read.

Most of the reading research in the past 40-5 years has focussed on reading in a first language. Given similarities in human cognitive functioning and in alphabetic writing systems, it is not surprising that theories of L1 reading inform theories of L2 reading. However, there is a need to better understand reading in a L2 in developing multilingual education contexts, especially when the larger socioeconomic, community and school milieus differ substantially from those of more affluent and highly literate educational contexts of the North. This paper examines the relationship between oral reading fluency and comprehension abilities of English L2 Grade 5 learners in South Africa. Fluency is regarded as the bridge between decoding and comprehension and can thus potentially throw light on the what, where and how aspects of L2 reading development within our education system. Before moving on to the methodological details of the study, an overview of research on fluency is first given.

2. Literature Overview

It is by now generally recognised that reading is a complex human activity involving cognitive, linguistic and socio-affective factors, as well as reading attitudes and practices embedded within a normative sociocultural and socioeconomic context. The reading process itself involves several cognitive-linguistic subcomponents which contribute to reading in different ways and at different developmental stages. Fluency is one such component.

Attention to the role of fluency in reading has come into the reading research limelight fairly recently. In their historical overview of the role of reading fluency in instruction and research in the USA, Rasinski and Mraz (2008) point out that because comprehension is the raison d'être of reading and because independent silent reading is the means of attaining high levels of reading, "the historical trend of administering reading tests that lacked a specific fluency component ... continued from the 1920s through the 1990s" (2008:109). Allington's article on the importance of fluency in reading was published in 1983, and since then there has been a steady stream of research showing an association between oral

[3] Henceforth home language will be abbreviated as L1 while English used as a second (or third or more) language will be referred to as English L2. The numbers in the abbreviation are not literally necessarily 'first' or 'second' language but are simply used to categorise these different acquisition groupings.

reading fluency and reading accomplishment, especially in the early stages of reading development. By 2000 the importance of fluency was recognised by the National Reading Panel. They identified five components contributing to reading accomplishment, giving fluency due recognition: viz, phonemic awareness, phonics, fluency, vocabulary and comprehension (National Reading Panel 2000).

The complexity of the reading process naturally calls for explanations of the integration and orchestration of its diverse components and their differential developmental trajectories into a process of independent silent reading that is fast, efficient and meaning generating. Reading fluency is regarded as the bridge between decoding and comprehension. Although recognition has been given to its importance, details concerning its underlying processes, mechanisms and development are still debated.

2.1 Fluency

Fluency in general refers to the ability to read texts "with freedom from word identification problems that might hinder comprehension" (Harris & Hodges 1985, in Chard, Pikulski & McDonough, 2006:40). It applies to both oral and silent reading and is a marker of skilled reading, where comprehension is achieved. Fluency is typically measured by asking a reader to read a selected passage for comprehension and noting how many words are read within a specified time. In silent reading, mature, skilled readers can read comfortably and with meaning at a rate of 250-300 or more words per minute (Grabe 2009). Although fluency is a fairly stable trait in skilled readers, reading rate can be affected by factors such as topic familiarity, text coherence and the density or abstract nature of the information in the text. A fluent reader is likely to read a detective novel faster than a text on geothermal activity and plate techtonics.

Although independent silent fluent reading is a desired outcome for all learners, much of the focus of fluency research has been on oral reading fluency, specifically during the primary school years. Oral reading fluency (ORF) refers to the ability to read aloud with accuracy and speed, and with meaningful oral expression. In other words, the reader recognises words quickly and correctly, with the continuous stream of written words being chunked into appropriate syntactic phrases, and the reader's voice reflecting the prosody and intonation of spoken language. In contrast, nonfluent readers read slowly and laboriously, in a stilted and monotonous tone, often stopping to stare at words or sound them out (Fuchs et al. 2001; Spear-Swerling 2006; Rasinski & Mraz 2008). They have difficulty chunking the stream of written text into appropriate syntactic phrases, hence their stilted mode of reading. Some nonfluent readers may read words correctly, but their reading is nonetheless slow; other nonfluent readers may read words slowly and also make many mistakes identifying words correctly or

have problems identifying them in the first place; in all cases, nonfluent readers tend to read slowly and without much expression.

ORF is measured in different ways, for example, getting readers to read, within a specified time – usually a minute – (i) a list of words of increasing length and complexity, (ii) a list of nonwords (to assess decoding ability without lexical access[4]), and/or (iii) a text (where words are read in context). In each case, words that were erroneously read are noted and subtracted from the total number of words read in a minute. This gives a score of words correct per minute (WCPM), thereby reflecting both accuracy and speed. Although prosody is an integral part of ORF when reading a text, it is more difficult and subjective to assess, so ORF measures tend to reflect speed and accuracy only.

Fluency is developmental; even though it develops gradually during the primary school years, the developmental trajectory can accelerate and decelerate with a grade year. Factors such as age, reading skill and text difficulty can affect ORF. The nature of a language (e.g. analytic or agglutinating) and its orthographic system (transparent or opaque spelling) can also affect reading rates. The ORF norms referred to in this article refer to English ORF norms and are not transferrable to other languages.

In the early stages of reading, young children in Grade 1 start off by reading connected text slowly and haltingly, at about 20-30 WCPM. According to fluency norms for English L1, by the end of Grade 1 children at the 50th percentile read at about 53 WCPM, this increases to 89WCPM at the end of Grade 2, 107 WCPM by the end of Grade 3, and 139 by the end of Grade 5 (Hasbrouck & Tindal 2006). There is considerable variation within grades, with stronger readers reading faster and more accurately than their weaker peers, such that ORF scores can range between 80-100 WCPM within a grade. Denser, more difficult text containing many new and unfamiliar words can slow fluency rates down too.

2.2 Fluency and decoding skills

If fluency is a bridge between decoding and comprehension, then it is important to understand what kinds of skills give rise to fluency. There have been many studies that have investigated the precursors to early reading skills. Phonological awareness in general (awareness of the sound structure of words such as recognising word boundaries, syllables in words, rhymes, alliterative sounds) and phonemic awareness in particular (awareness of sounds within words),

[4] Lexical access refers to accessing the meaning of a word while reading it. Nonwords are words that follow the phonological conventions of a language but do not exist. One can read the word without having to access meaning. Lewis Carroll's poem *The Jabberwocky* consists mainly of nonwords.

knowledge of letters and letter-sound relations, and word recognition skills are all subskills on which fluency is based.

Oral language skills (including expressive vocabulary knowledge and understanding syntactical and morphological forms) have also been shown to predict reading in early school (Hart & Risley 1992; Snow et al. 1998). Locally, Wilsenach (2015) found that receptive vocabulary reliably predicted the development of early literacy skills (e.g. letter knowledge, letter-sound correspondences, and early writing) in emergent bilingual Northern Sotho-English Grade 1 learners. Using developmental data from Finnish children from 1-7 years, Silven et al. (2007) found three domains of oral language skills that were strong precursors of early reading ability in groups of emergent and precocious readers as opposed to non-readers, viz. vocabulary, morphological and phonological knowledge.

Phonological awareness has long been identified as a precursor to learning to read and spelling. Preschool children with greater sensitivity to the sound structure of words learn to read more easily than children who lag behind in phonological awareness (Stanovich 1986; Adams 1990; Chiappe & Siegel 1999; Bus & Ijzendoorn 1999; National Reading Panel 2000). Silven et al. (2007) found that around age six there seemed to be a spurt in phonemic awareness before children began to read, but increased phonemic knowledge also emerged while they were learning to read, thus supporting previous suggestions (Ehri 1979; Bus & Ijzendoorn 1999) that phonemic awareness is both a precursor to as well as a consequence of reading. The link between phonological awareness and reading ability has been shown in languages such as English, Dutch, French, Finnish and German, and locally, too, in Northern Sotho (Wisenach 2013) and Zulu (Pretorius 2015). Phonological awareness also seems to transfer across languages (Muter & Snowling 1998; Geva & Zadeh 2006;).

The direction of the relationship between phonemic awareness and early reading ability has been questioned by some researchers, who argue that phonemic awareness is a rapid consequence of learning to read rather than a precursor (e.g. Ehri 1979; Craig-Thoreson and Dale 1992). Evidence, however, suggests that the relationship is reciprocal (Bus & Ijzendoorn 1999; Silven et al. 2007).

A salient feature of skilled readers at all ages is their ability to recognise words quickly and effortlessly. Accurate word recognition skills as well as automatic word recognition, in and out of context, are strongly correlated with fluency (Fuchs et al. 2001; Spear-Swerling 2006). However, simply improving the automatic word recognition of learners does not ipso facto lead to increased text fluency. Fluency involves more than recognising words; chunking units of words

in connected text into meaningful phrases, taking note of morphology and punctuation while reading, and processing meaningful connections within and between sentences are also skills that underlie fluency. It is for such reasons that fluency is considered to be the 'bridge' to reading comprehension and why it regarded as a proxy for reading comprehension.

Because reading is complex and the multiple components need to be simultaneously orchestrated, to the extent that any of these skills are not well developed will naturally compromise the overall efficiency of the reading process. The developmental pathways of the different skills on which fluency relies also need to be recognised and their relative importance in reading identified. For example, although phonological awareness and knowledge of letter-sound relationships are important predictors of early reading development, by Grade 3 their influence diminishes as other skills at the lexical and text level exert greater influence. Yet if older learners are still in the early stages of reading development, then phonological awareness will likely still correlate with their fluency rates and overall reading ability.

Before looking at the relationship between fluency and reading comprehension, it is important to consider the role of automaticity in skilled reading and its relation to fluency.

2.3 Fluency and automaticity

Explanations of the way in which complex behaviour comprising different subcomponents is orchestrated efficiently and seamlessly rely on notions automaticity and the extent to which cognitive processes demand attention. The concept of limited resources in theories of reading acquisition was made popular by LaBerge and Samuels. In their seminal work (1974) on the importance of automaticity in the reading process, they focused on attention mechanisms in word recognition. They proposed an information processing model of reading, arguing that the subprocesses in reading (e.g. visual perception, sounds, word recognition) should be executed automatically so that cognitive processes could be 'freed up' and allocated for comprehension. If readers spent too much time and cognitive resources trying to figure out the lower levels of reading, comprehension would be compromised. Perfetti's verbal efficiency model of reading (1985) is predicated on similar assumptions about limited resources and attentional capacity. In contrast, Stanovich's interactive compensatory model of reading (1986) proposed that because unskilled readers were less able to employ automatic processes in word decoding, they developed compensatory strategies such as looking for contextual cues to help them make sense of the text. This slowed the reading process down and made it less regular and efficient.

The notion of automaticity is a complex one that entails several interrelated but partially dissociable concepts such as speed, obligatory processing (i.e. the execution of automatised processing regardless of where conscious attention is directed), conscious attention or lack thereof and consequent resource or capacity usage. Criticism of the LaBerge and Samuel's model is that it conflates these concepts. For example, obligatory processing may still incur some cognitive resources. Automatic word recognition of high and mid frequency words can emerge in the middle of Grade 1 already, but the speed and efficiency of their execution (in terms of decreasing resource usage) can continue developing even after recognition has become obligatory (Stanovich 2000: 228).

In contrast to the limited-resources and process-based view of automaticity, the focus shifts to representation quality and encapsulation within a modular approach. Logan proposed (1988, in Kame'enui & Simmons 2001:2005) an item-based approach to automaticity, where mapping occurs between an accumulation of specific stimuli (e.g. neural responses to a printed word) and specific learning responses over time (rapid word recognition). Thus the properties of automaticity develop not through the gradual execution and integration of subprocesses but through memory-based mapping between stimuli and responses in consistent contexts. Here, automaticity reflects the "development of a domain-specific knowledge base; nonautomatic performance is limited by a lack of knowledge rather than by scarcity of resources" (Logan 1988, in Stanovich 2000:236). More recent modifications to both views may enable notions of resource allocation and representational quality to both be accommodated within reading theories. Whatever explanations of automaticity are proffered at the neurocognitive level, the notion of 'freeing up resources' is a useful metaphor for describing the rapid and effortless way that fluent readers read connected text, with little apparent conscious attention to the mechanics of reading.

2.4 Fluency and comprehension

Behaviorally, an ORF score is an indicator of the speed and accuracy with which readers recognise individual words in sequence in connected text. On what basis can claims be made that this indicates that fluent readers can derive meaning from text?

There is a strong empirical basis attesting to a relationship between fluency and reading comprehension. ORF in particular, defined in terms of accuracy and speed in reading words in connected text, has been found to be a reliable indicator of reading comprehension. Many studies have consistently found robust and significant correlations between performance on ORF and reading comprehension measures. In their large scale study of 1,000 Grade 4 readers,

Pinnel et al. (1995) found a significant relationship between oral reading abilities and reading comprehension. Fuchs et al. (2001) report high correlations between ORF and various kinds of reading comprehension measure such as high stakes state mandated comprehension tests, as well as a variety of other comprehension tests using different formats (e.g. multiple choice or open questions, cloze procedures or story recall protocols). ORF scores have also been found to correlate more strongly to reading comprehension than isolated word reading fluency or silent reading fluency scores (Fuchs et al. 2001; Spear-Swerling 2006). The relationship obtains across schools serving children from different socioeconomic backgrounds or instructional programmes, and occurs with children without reading difficulties as well as with children with learning disabilities with reading (Deno et al. 2001; Wolf & Katzir-Cohen 2001).

Fluency is an outcome of learned skills. Exposure to print and practise in reading extended texts is critical for developing fast and accurate reading (Adams 1990; Nathan & Stanovich 1991; Blachowicz et al. 2006). Not only is ORF seen as a reliable *measure* of reading performance, fluency practice is also now regarded as a *treatment*, not only to improve ordinary learners' reading proficiency but also for learners with reading difficulties. Independent reading for pleasure, paired reading, matching learners with texts appropriate to their level, timed repeated reading in class and regular/daily reading homework are all activities that increase readers' decoding skills, increase their fluency rates and help them engage their higher order processing beyond decoding.

In their study on fluency Mathson, Allington and Solic (2006:110) found that "individual scores varied substantially" across three passages that were supposedly equivalent in difficulty according to readability analyses. The children who showed the least variability were the slowest readers, who seemed not to have yet developed automatic word recognition. However, their sample size was small (n=39). Mathson et al. (2006) state that accuracy first emerges, then children read with increasing automaticity, and prosodic features of intonation, pitch and stress and observance of punctuation cues occur. The relationship between prosody and comprehension is a chicken and egg one. Prosody is a result of reading comprehension – it is difficult to read with appropriate intonation if one doesn't understand what one is reading. Schreiber (1980; 1990) focussed on the prosodic and syntactic features of reading and argued that through exposure and repeated timed practice, readers learn to integrate intonational patterns that help to mark syntactic phrasing within and across sentence boundaries. This in turn further enables comprehension.

It is important to note the developmental trajectory of ORF. The greatest growth in ORF typically occurs in the early school years, between Grades 1-4. The strong correlation between ORF and reading comprehension levels off or declines as

children get older, with a "negatively accelerating curve" during the later primary school and early high school years (Chall 1996; Fuchs et al. 2001; Spear-Swerling 2006). Furthermore, Spear-Swerling (2006) cautions that there is an important caveat to the fluency growth reported in the early years: fluency only increases if children have phonological awareness, are familiar with letter-sound relationships, and have acquired fairly accurate decoding skills for common words. The levelling-off effect of ORF in the later grades is attributed to the changing nature of reading development. Once basic reading skills have been automated and reading is relatively fast and accurate, other reader and text-based variables account for differences in reading comprehension. As they get older, learners are expected to read longer, more complex texts, and higher-order reading skills such as making inferences, integrating text information and breadth and depth of vocabulary knowledge become increasingly important in reading expertise. Fluency in reading connected text thus relies not only on decoding skills, but also on multi-level processes beyond decoding (Fuchs et al. 2001; Jeon 2012).

2.5 Reading in a second language and ORF

Much of the research on fluency in reading is based on first language reading, and the norms that have been developed for English reading rates are based on L1 reading data. For example, in their research on English readers Good, Simmons, Kame'enui, Kaminski & Wallin (2002) found that Grade 1 readers who, by the end of the grade year, read below 40 WCPM were at risk of reading failure, and children reading below 20WCPM were at high risk of failure. Would such scores similarly signal L2 children at risk of reading failure? What would an ORF developmental trajectory look like for L2 readers, especially those in developing countries where schooling is characterised by poverty (a risk factor for reading) and where the L2 is also typically the LoLT? Answers to such questions are vital for policy makers and teachers for determining what can 'normally' be expected and what constitutes a warning light and hence requiring intervention and remediation. Surprisingly, although there has been an increase in L2 reading research focusing on fluency, this has yielded only a small body of empirical research to date, with varied and inconclusive findings.

As a starting point, it is important to note that the main difference between L1 and L2 children is that the former bring a lot of L1 knowledge with them when learning to read, whereas in L2 children the L2 knowledge is developing in parallel to their L2 reading development. It is common sense to assume that having lowered language proficiency will cause L2 students to read text less efficiently. However, there is a strong empirical base that shows that although L1 and L2 learners may differ in oral proficiency, they can perform at the same level of accuracy in basic reading skills such as word recognition and word attack

skills (Lesaux & Segal 2003; Geva and Zadeh 2006; Lipke & Segal 2007), provided that there is systematic instruction in reading. When the language in the text matches that of the learner, then L2 oral proficiency is found not to be a determining factor. When the language of the text is more demanding than the learner's oral proficiency, then the contribution of oral language proficiency might increase.

We look now to research that focussed specifically on L2 English ORF. In a large scale longitudinal study across Grades 2 and 3, Al Otaiba et al. (2009) investigated the developmental trajectories of early reading fluency amongst Latino students reading in English as L2. Using hierarchical linear modeling, differences in fluency were examined between and within three groups of Latino learners: those proficient in L2 English; those not proficient in English L2 and receiving L2 support; those who had exited L2 support services due to increased English proficiency. In addition, within these proficiency groups, 'ordinary' students versus students needing special education were further distinguished, viz. those with learning disabilities and those with speech or language delays. All students in the sample (n=5,004) were taken from high-poverty schools in Florida state and all were in schools where instruction was only in English (i.e. schools not offering bilingual programmes) and where an explicit and systematic reading programme was followed. The ORF measure was obtained from WCPM on a grade-level text, assessed four times across Grades 2-3.

At the start of Grade 2 Latino learners not needing L2 enrichment or special education had ORF scores above the grade-level benchmark (53 WCPM), and 75 WCPM in Grade 3, while Latino students with language delays were reading somewhat slower at 44 WCPM in Grade 2 and 64 WCPM at the start of Grade 3. In contrast, Latino students with learning difficulties struggled, with average ORF scores of 24 WCPM at the start of Grade 2 and 35 WCPM in Grade 3.

The ORF growth rates in Grades 2 and 3 also varied within and across groups. An accelerating growth trend of 1.7 words per week was observed during the first three months of Grade 2 which then decelerated to .61 words per week towards the end of Grade 2 for the normal Latino group. They had an average growth spurt of 2.7 words a week in the first half of Grade 3 but this dropped to 1 word a week in the second half. Similarly, Latino students with language delays had an initial growth rate of 1.6 words a week, slowing down to .71 a week in Grade 2. The initial accelerating then decelerating pattern later in the year also manifested in Grade 3. In contrast, the Latino students with learning difficulties had slow initial growth rates of .61 words a week, increasing to .92 towards the end of Grade 2. However, by the end of Grade 3 their growth rate had decelerated to .32 words a week. Their growth was never enough to enable them to catch up with their peers. The authors conclude that ORF is a useful tool for

screening and monitoring the progress of L2 readers, and for identifying learners who need reading support before they fall too far behind.

Also based on data from Florida state where the Hispanic population is high, Jimerson et al. (2013) examined developmental trajectories in ORF from Grade 1 to Grade 4 amongst monolingual English students with low SES status and English L2 Latino students with low SES, to determine whether growth in ORF predicted achievement in the high stakes Stanford Achievement Test in Grade 4. The latter included two subtests relating to Reading Vocabulary and Reading Comprehension respectively. The ORF of 155 children was measured one-on-one, with a WCPM score averaged on three texts read aloud, at the beginning and end of each grade year. The results showed that for both groups of children, ORF in Grade 1 strongly predicted reading performance in Grade 4, while growth in ORF had a moderate effect on reading performance in Grade 4. In addition, low SES status for both monolingual and L2 English had a similar negative effect on reading achievement in Grade 4, with no significant differences between the groups. In both groups, the gap between lower and higher performing was not closed. Because different levels of language proficiency within the English L2 low SES group were not distinguished, a more nuanced L2 reading trajectory could not be established. The authors conclude that early ORF measures can provide useful predictive information for identifying children at risk in reading in both L1 and L2 student population groups. What is of interest in this study is that the average ORF reading scores for the English L1:L2 children from Grade 1-4 were 64:40, 101:74, 90:63, 146:119 WCPM respectively. In both groups, ORF averages were inexplicably higher in Grade 2 than Grade 3. The averages of the L1 and L2 English readers differed by about 25 WCPM at each grade level.

Coming closer to home, we turn to a study done in Kenya. Like South Africa, Kenya also faces challenges in developing children's literacy skills. In Kenya only 32% of Grade 3 children were found to be able to read Grade 2 level texts, irrespective of the language in which reading was assessed – English and Kiswahili (Uwezo 2012, in Piper & Zuilkowski 2015). In their assessment of reading fluency amongst Grade 2 learners in Kiswahili (L1 reading) and English (L2 reading) in Kenya, Piper and Zuilkowski (2015) found that in both languages oral reading fluency was more strongly related to reading comprehension scores than silent reading fluency. While reading comprehension levels were low in English L2, they were only marginally better (but not statistically significant) in Kiswahali, pointing to reading challenges within the Kenyan education system generally. The Grade 2 learners were averaging 30 WCPM in L2 English reading, indicating a very slow reading rate. The authors conclude that in Kenya and countries with similar language and learning contexts, ORF is a useful tool for literacy assessment.

These studies show some variation within L2 fluency norms in the early grades, some of which could be due to instructional and resource factors. In the Florida schools, reading instruction was explicit and systematic, and even though the school served low SES communities, such schools tend to be better resourced and more functional than schools in developing countries (Abadzi xxx). In these contexts, the L2 students seemed to read about 25 WCPM slower than their L1 grade peers. At 30 WCPM, the Kenyan Grade 2 L2 students were reading at a much slower rate than their Latino L2 counterparts in Florida, where the Grade 1 L2 children were averaging 40 WCPM (Jimerson et al. 2013) and where the typical Grade 2 L2 child was averaging 53 WCPM (Al Otaiba et al. 2009).

In their paper, Draper and Spaull (2015) looked at the …….

The preceding review of the literature has shown that there is scant quantitative research on oral reading fluency for either L2 learners, or on students in developing countries. The aim of the present study is to help ameliorate this lack by analysing the results from a large oral reading fluency study in rural South Africa conducted in 2013. The two research questions that we are concerned with are as follows:

1. How strong is the relationship between ORF and comprehension in English for rural South African Grade 5 students for whom English is an L2?
2. In terms of comprehension, are there differential returns to additional fluency at different points in the ORF continuum?

The research presented in this article can be considered as the second component of a two-tier research project focussing on oral reading fluency among ESL students in South Africa. Where the focus of the first paper was largely descriptive (Draper & Spaull, 2015), the current paper extends that analysis by providing a multivariate perspective on the relationship between fluency and comprehension. While a full account of the instruments, sampling procedures and test administration processes is available in the first paper (Draper & Spaull, 2015), we include the most pertinent information for the present study below.

3. Data

The data used in this study comes from a non-random sample of 4667 Grade 5 learners[5] in 213 rural schools across all nine provinces of South Africa. They were collected in 2013 by the National Education and Evaluation and Development Unit (NEEDU), an independent institution in South Africa similar in nature to OFSTED in the United Kingdom. In response to the findings emerging from the 2012 NEEDU evaluation cycle – which found very poor reading levels among Grade 2 learners with poor letter and word recognition in the home language of learners – it was decided that reading was a critical factor inhibiting improvement in the sector. It is for this reason that in the 2013 evaluation cycle NEEDU chose to assess Grade 5 learners' reading in terms of their ORF and reading comprehension.

Although there were 4667 students that were included in the evaluation, only a sub-sample of 1772 students completed the ORF assessment. These latter students form the basis of the present analysis since this is the group for whom we have both ORF scores and comprehension scores. Within each school one Grade 5 class was randomly selected. All learners in the class were tested on a 40 minute written reading comprehension test comprising 11 questions. Based on the results of the written comprehension test, 10 learners from each class were selected (3 top, 4 middle and 3 bottom achievers) to participate in an Oral Reading Fluency test. In schools with less than 15 learners in the Grade 5 class, all learners were selected for the ORF test so as not to make them feel excluded. The sample for the ORF passage was 1772 learners and these are the students we analyse here.

4. Results

Table 1 below provides basic descriptive statistics on the two outcomes measures subsequently used in the multivariate analyses. The results clearly show that the 1772 students performed extremely poorly on the silent reading comprehension test; scoring an average of 23% on the Reading comprehension assessment despite the fact that the text used in the comprehension test was equivalent to Grade 4 texts in terms of ease of readability (cf. Draper &Spaull 2015). The learners performed equally poorly on the ORF assessment, reading at 46 words correct per minute (WCPM) on a narrative text set at Grade 4 level. When considering differential performance by sub-group one can see that girls performed statistically significantly [6] better than boys on both the

[5] The original sample included 30 English L1 students bringing the total to 4697, however given that the focus of the current study is on L2 learners, these 30 L1 learners were dropped from the analysis. Similarly the full sample would be 214 schools if this school was included.

[6] Throughout the paper standard errors have been corrected for the clustered nature of the data, that is to say they are clustered at the school level.

comprehension test and the ORF test, while the 346 students learning in the medium of Afrikaans performed statistically significantly better than their 1357 peers who were in English-medium schools. The reasons for this have been elaborated on in previous work (Draper & Spaull, 2015) and relate primarily to the fact that most students with Afrikaans as their Language of Learning and Teaching (LOLT) were also home-language Afrikaans speakers, while those in English-LOLT schools typically do not speak English as a home-language. This is an interesting finding since these students performed better on this English-medium test despite the fact that they are currently learning in Afrikaans. Additionally the Afrikaans-LOLT schools were largely from the former "Coloured" education Department while the English-LOLT schools were largely from the former "Black" education Department with the latter having generally lower performance than the former. There was no statistically significant difference between multigrade and monograde schools in either reading comprehension scores or ORF scores.

Table 1: Descriptive statistics for silent reading comprehension and oral reading fluency scores

Silent Reading Comprehension Scores (%)

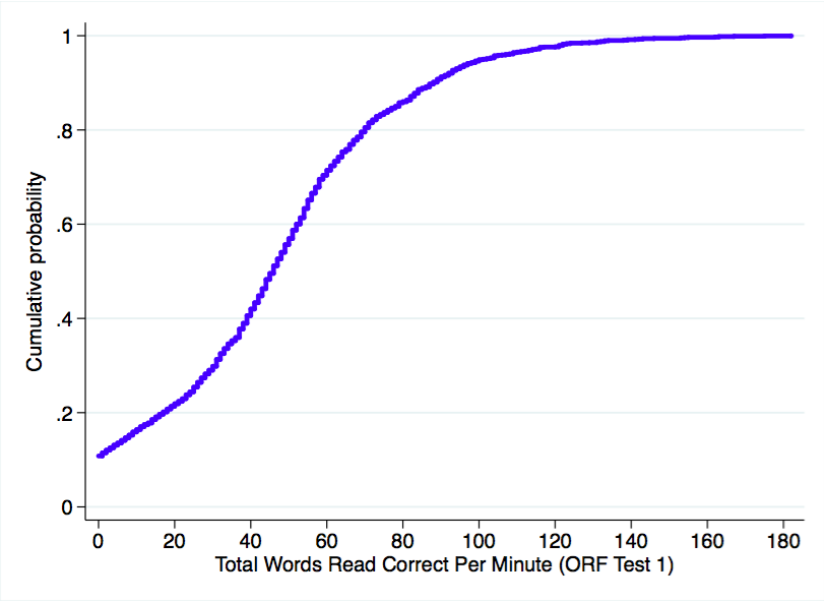
	Obs	Mean	SE Mean	Min	Max	Std. Dev
Girls	844	25,3	0,9	0	100	19,5
Boys	918	21,8	0,9	0	95	18,1
Afrikaans LOLT	346	30,8	2,6	0	100	23,1
English LOLT	1357	21,6	0,6	0	95	17,2
Monograde	964	24,0	1,1	0	95	19,9
Multigrade	808	22,7	1,1	0	100	17,5
National	1772	23,4	0,75	0	100	18,9

Oral Reading Fluency Scores (Words Read Correct Per Minute)

	Obs	Mean	SE Mean	Min	Max	Std. Dev
Girls	844	52,4	1,35	0	163	30,7
Boys	918	40,3	1,42	0	182	30,4
Afrikaans LOLT Gr5	346	56,5	3,48	0	182	36,0
English LOLT	1357	43,5	1,12	0	167	29,3
Monograde	964	46,3	1,67	0	167	32,8
Multigrade	808	45,9	1,64	0	182	28,9
National	1772	46,1	1,17	0	182	31,1

While not the explicit aim of this paper, it is helpful to place the achievement of South African rural Grade 5 ESL students in an international context, largely because the level of ORF achievement may influence the relationship between ORF and comprehension, as will be seen in the multivariate analysis. Figure 1 below shows the cumulative density function (CDF) of ORF for the 1772 students. One can see that approximately 40% of the sample are reading at less than 40 WCPM. It is especially disconcerting that 11% of the sample could not read a single word correctly, despite five years of formal full-time schooling.

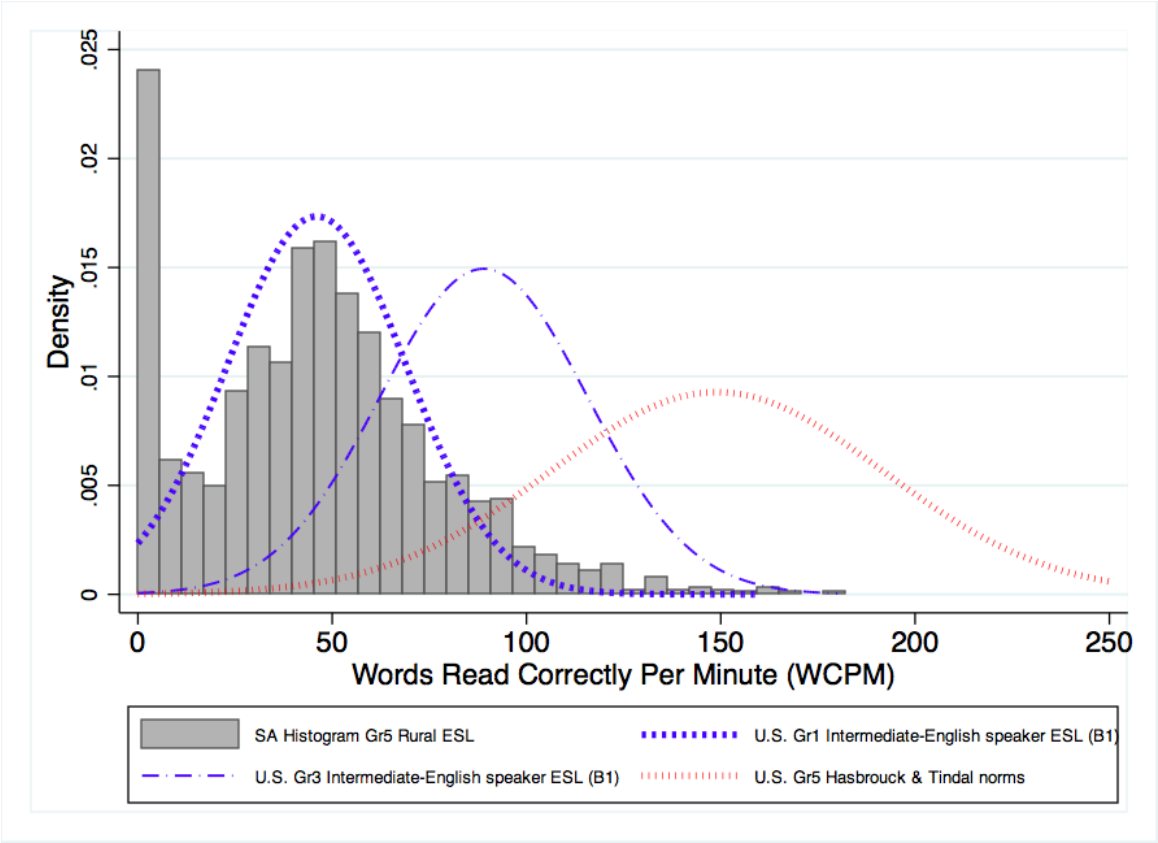
Figure 1: Cumulative Distribution Function (CDF) of Oral reading Fluency scores (in Words Correct Per Minute) (n=1772).



In our previous analysis (Draper & Spaull, 2015), we showed that the ORF distribution of Grade 5 ESL students in rural schools in South Africa approximates the distribution of Grade 1 or Grade 2 American ESL students that have been earmarked for remedial instruction. Using ESL benchmarks developed by Broward County in Florida, we showed that our South African rural Grade 5 sample fits the "Non-English speaker (A1)" Grade 2 classification, or alternatively the Intermediate English Speaker (B1) Grade 1 classification. That is to say that South African rural grade 5 ESLs are achieving at the same level as the lowest performing (A1) Grade 2 ESLs in Broward County (Florida, U.S.). These students cannot communicate meaning orally in English and demonstrate very little understanding of English. They are "unable to participate in regular classroom instruction" in America (Broward County, 2009: 1).

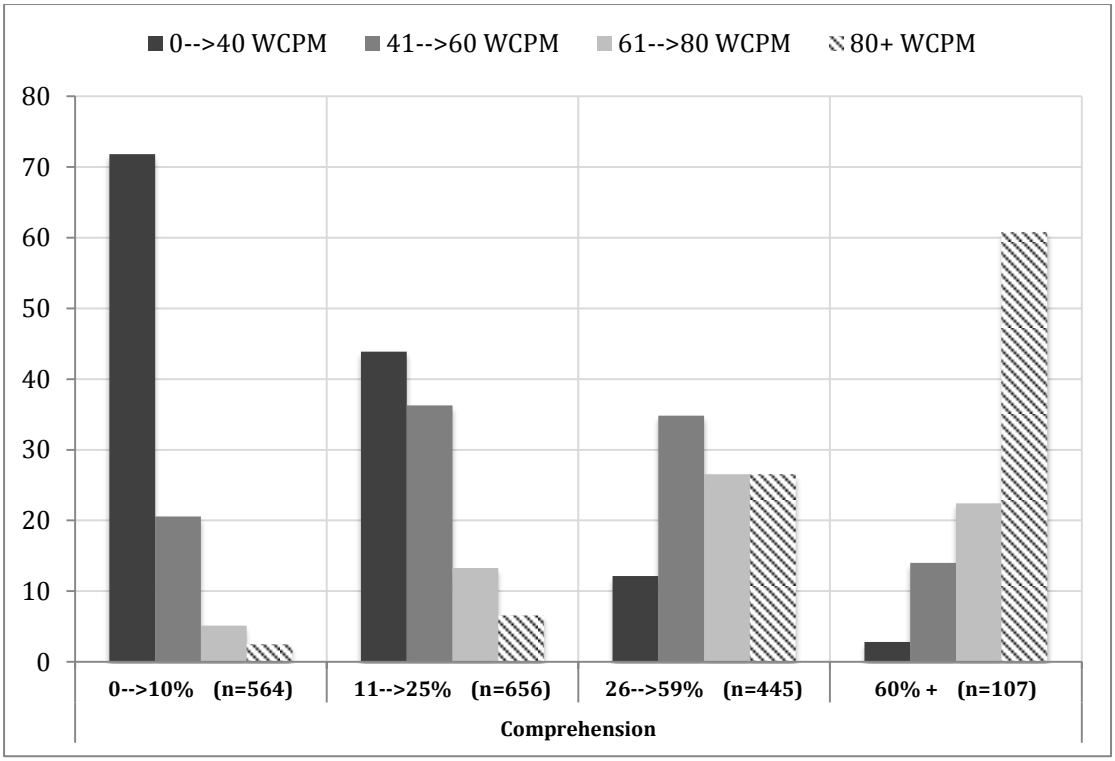
Further analysis showed that while the American Hasbrouck & Tindal (2006) norms were inappropriate for the South African context, there is a case to be made that the Broward County B1 ESL ORF schema could operate as a tentative benchmarking system for ESL students in Grades 1-5 in South Africa, at least until more data becomes available on ORF benchmarks in South Africa. This conclusion is based on the fact that the small number of South African Grade 5 ESL students with acceptable levels of comprehension (60%+ on the comprehension test) have a very similar ORF distribution to Grade 3 B1 ESL students in Broward County (Draper & Spaull, 2015). This is shown visually in Figure 2 below.

Figure 2: Distribution of oral reading fluency scores (WCPM) for rural South African English Language Learners (ESL) relative to Broward Country ESL learners (Florida, US) (Broward County, 2012) (Source: Draper & Spaull, 2015).



In addition to a large body of literature attesting to the strong relationship between ORF and reading comprehension our preliminary descriptive analysis also suggests that there is a strong relationship between these two variables. Figure 3 below shows the distribution of ORF scores (WCPM) by categories of comprehension scores (0-10%; 11-25%; 26%-59%; 60%+). One can clearly see that at the lowest level of comprehension the vast majority of students (70%) are reading at less than 40 WCPM. This is in stark comparison to those at the highest level of comprehension where the majority of students (60%) are reading at 80 WCPM or higher. As one might expect, there are almost no students in the highest comprehension category who are reading at 40 WCPM or less.

Figure 3: Distribution of ORF scores by comprehension category



While these results are suggestive and confirm our *a-priori* expectations, one cannot make causal claims about this relationship given the descriptive nature of the analysis. Consequently, we now turn to the multivariate analysis to determine whether this relationship holds after controlling for school-level factors, as well as the strength and uniformity of the relationship.

5. Multivariate analysis.

Table 2 below presents the results of the initial multivariate analysis in the form of five regressions. In all five regressions the outcome variable is the comprehension score of the child which has been standardised to have a mean of zero and a standard deviation of one. Similarly, the variables Words Correct Per Minute (WCPM), 'Words read incorrectly', and 'Words skipped' have all been standardised to have a mean of zero and a standard deviation of one. In each case the mean and standard deviation of the original variable are included in square brackets for intuitive interpretation.

Before controlling for any variables, Regression 1 shows that a one standard deviation increase in WCPM is associated with a 0.7 standard deviation increase in reading comprehension score. Or alternatively that an increase of 31 WCPM (one standard deviation) is associated with a 14 percentage point increase in comprehension score (0.7347 x 19%=14). This is an extremely strong association. However, given that this first regression has not controlled for any individual or school level characteristics, it is possible that higher WCPM scores

are simply proxying for school level factors such as quality of instruction, grade arrangement (multigrade or monograde) or resources at school. Consequently, for Regressions 2 to 5 we include school-level fixed effects to control for all school level factors. Thus, the coefficients in Regressions 2 to 5 reflect only intra-school variation in the variables. Regressions 3 to 5 systematically add additional individual control variables relating to the child's ORF test (words read incorrectly and words skipped), as well as the age and gender of the child. After controlling for school-level factors, the coefficients on age, gender and words skipped are not statistically significantly different from zero; i.e. there is no observable relationship between these variables.

The relationship between WCPM and comprehension is largely unaffected by adding school fixed-effects or child covariates, with the coefficient remaining approximately 0.7. This indicates that the impact of WCPM on comprehension is clearly not just proxying for school-level factors (or between-school and that the impact of additional fluency is independent of school-level factors. This adds further weight to the argument that oral reading fluency is an effective predictor of reading comprehension, as has been found in a number of other studies (REF). The coefficient on 'Words read incorrectly' is stable at 0.21 and statistically significant at the 1% level. This means that for a one standard deviation increase in Words read incorrectly there is a 0.21 decrease in standardised comprehension score. Or, interpreted intuitively, for every 6 Words Read Incorrectly, a child's comprehension score decreases by 4 percentage points (0.21 x 19%).

Table 2: *School fixed-effects regressions predicting standardised comprehension scores using standardised ORF variables (WCPM=Words Correct Per Minute]. Significance levels *=0.1; **=0.05; ***=0.01*

Outcome variable: Reading comprehension score (standardised) *[mean: 23%; SD: 19%]*

	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5
WCPM (standardised)	0.7347***	0.6682***	0.6949***	0.6989***	0.6947***
[mean: 46WCPM; SD:31WCPM]	*0.04*	*0.03*	*0.03*	*0.04*	*0.04*
Words read incorrectly (standardised)			-0.215***	-0.212***	-0.211***
[mean: 9WRI; SD: 6WRI]			*0.03*	*0.03*	*0.03*
Words skipped (standardised)			-0.0260	-0.0259	-0.0243
[mean: 1WS; SD: 3WS]			*0.02*	*0.02*	*0.02*
Female (Ref: Male)				-0.0400	-0.0464
				0.05	*0.05*
Age 12 or 13 (Ref <12)					-0.0680
					0.06
Age 14+					-0.0340

					0.10
School fixed effects	NO	YES	YES	YES	YES
Constant	0.189	-0.550***	-0.593***	-0.584***	-0.575***
	0.03	0.05	0.06	0.05	0.05
N	1772	1772	1677	1677	1677
R-squared	0.3799	0.53769	0.56091	0.56115	0.56156

Differential returns to additional oral reading fluency

To explore the possibility that the returns to additional oral reading fluency are different at different points of the fluency distribution we employ a spline modelling regression technique which allows the slope coefficient to differ before and after a specified cut-point. By running a series of regressions, each with different cut-points we can compare the size of the coefficients and, using marginal effects, can determine if these coefficients are statistically significantly different from each other. Table 3 below shows the results from this analysis.

Where previously we used standardised ORF measures (Table 2), here we use the variables in their original format. This was because there is no intuitive explanation of 'breaks' in a standardised distribution. Knowing that a break occurs at 0.65 of the standardised distribution is not particularly useful, especially in comparison to specifying breaks in terms of traditional WCPM measures. Table X4 reports the results of 10 regressions, nine of which employ spline modelling with different breaks. As in previous regressions we include school-level fixed effects in all regressions as well as age and gender. Given the different functional form specification it is perhaps helpful to interpret the non-spline regression before proceeding to the interpretation of the spline modelling. In the non-spline regression the coefficient on WCPM of 0.35 can be interpreted as showing that for a one word increase in WCPM there is a 0.35 percentage point increase in comprehension, holding all other factors constant. As earlier, this relationship is strong and statistically significant at the 1% level. The spline regressions each report the slope coefficient on WCPM both before the "break" and after the "break". Based on the distribution of WCPM we institute breaks at 40 WCPM and raise the break-point by 10 WCPM in each regression all the way up to 120 WCPM. The marginal effects coefficient shows the difference in the slope coefficient before and after the break, and whether the difference is statistically significantly different from zero. For the first spline regression (40 WCPM), the slope coefficient for additional WCPM up to 40 WCPM is 0.3648 and after 40 WCPM is 0.3485. This difference (-0.0163) is reported in the marginal effects row, is not statistically significantly different from zero.

If one observes the regression outputs of all the spline regressions ranging from breaks at 40 WCPM all the way to 120 WCPM (in conjunction with the marginal

effects for each regression), it becomes clear that the returns to additional fluency are relatively uniform up to 70 WCPM, but thereafter they decline. This is shown by the statistically significant marginal effect in the 70 WCPM spline. In this regression an 10 additional WCPM adds 3.876 percentage points to comprehension up to 70 WCPM, but after 70 WCPM an additional 10 WCPM only adds 2.779 percentage points to comprehension. This difference is statistically significant, as can be seen in the marginal effects row. Furthermore, the returns to additional fluency after 70 WCPM continue to decline as one moves to higher and higher levels of WCPM – as can be seen by the increasing difference in the marginal effects row. In fact, after 110 WCPM there do not appear to be additional comprehension benefits to increased fluency, at least none that are statistically significant. This may be because so few students in the sample actually scored at 110WCPM or above (only 3% of the sample).

What this analysis seems to suggest is that, unlike L1 English speakers where returns to additional fluency are highest up to 90 WCPM, for L2/ESL speakers the returns to additional fluency are highest up to 70 WCPM, where after they are still positive but decline as WCPM increase.

Table 3: Spline regressions predicting comprehension score (in %) using Words Correct Per Minute (WCPM)

	Non-spline	40 WCPM	50 WCPM	60 WCPM	70 WCPM	80 WCPM	90 WCPM	100 WCPM	110 WCPM	120 WCPM
Female	-0.7471	-0.7378	-0.7393	-0.7398	-0.7494	-0.7651	-0.7878	-0.8216	-0.8556	-0.8542
Age 12 -13 (Ref <12)	-1.0954	-1.0583	-1.0041	-0.9279	-0.8972	-0.9283	-0.9829	-1.0388	-1.0647	-1.0775
Age 14+	-0.5475	-0.4659	-0.3505	-0.2131	-0.1781	-0.2285	-0.3205	-0.4234	-0.4903	-0.5130
Words read incorrectly	-0.5558***	-0.5636***	-0.5732***	-0.5874***	-0.5959***	-0.5932***	-0.5880***	-0.5823***	-0.5764***	-0.5711***
Words skipped	-0.1414	-0.1416	-0.1392	-0.1314	-0.1272	-0.1239	-0.1215	-0.1220	-0.1251	-0.1270
WCPM ORF1	0.3539***									
Up to 40 WCPM		0.3648***								
40+ WCPM		0.3485***								
Up to 50 WCPM			0.3740***							
50+ WCPM			0.3370***							
Up to 60 WCPM				0.3846***						
60+ WCPM				0.3114***						
Up to 70 WCPM					0.3876***					
70+ WCPM					0.2779***					
Up to 80 WCPM						0.3839***				
80+ WCPM						0.2439***				
Up to 90 WCPM							0.3788***			
90+ WCPM							0.2032***			
Up to 100 WCPM								0.3739***		
100+ WCPM								0.1601**		
Up to 110 WCPM									0.3691***	
110+ WCPM									0.1188	
Up to 120 WCPM										0.3654***
120+ WCPM										0.0658
Marginal effects	NA	-0.0163	-0.0370	-0.0732	-0.1097**	-0.1401**	-0.1756***	-0.2137***	-0.2503***	-0.2996***
School Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	-0.3235	-0.3803	-0.3578	-0.2560	-0.1688	-0.2017	-0.3340	-0.6441	-0.9773	-1.1309
Observations	1677.00000	1677.00000	1677.00000	1677.00000	1677.00000	1677.00000	1677.00000	1677.00000	1677.00000	1677.00000
R-squared	0.56156	0.56160	0.56179	0.56246	0.56332	0.56381	0.56418	0.56416	0.56382	0.56352

6. Discussion

While this study confirms at Grade 5 level the comprehension problems that PIRLS 2006 and 2011 identified amongst Grade 4 and 5 learners, it also identifies very poor fluency skills, which index basic reading skills. The low ORF and RC scores in this study point to severe reading instructional deficiencies in our primary schools. If children struggle to read, it's because they are not being taught properly to read. Although anecdotally the perception is that teachers spend too much on the mechanical aspects of reading to the detriment of comprehension, these results suggest that whatever time is being spent on the mechanics of reading, it is ineffective and inadequate. Mc Guiness (2004) pulls no punches when she states that "reading is a learned skill. Ignorance or incompetence in teaching this skill can produce a large number of children with severe reading problems" (2005:217).

It could be argued that ORF and reading comprehension measures in L2 reading may not correlate as strongly as in L1, because L2 learners with low proficiency in the L2 may learn to decode texts without necessarily understanding what they read. This is often referred to as 'barking at print'. Two points to be made here: as L2 research has shown, if reading is taught systematically, L2 readers can perform at similar levels of accuracy in basic reading skills such as word recognition and word attack skills as their L1 peers, even though they may differ in oral proficiency, (Lesaux & Segal 2003; Geva and Zadeh 2006; Lipke & Segal 2007). The fact that the Grade 5 learners in this study were performing at ORF levels similar to Grade 2 L2 learners in Florida State, USA, suggests that systematic reading was not being taught in earlier years.

Secondly, since L2 readers develop language proficiency at the same time that their L2 reading develops, it is vitally important that reading become pivotal in the early grades, so that both reading and language can develop in tandem. There is evidence that much of the activity that passes for teaching and learning in South African classrooms involves whole class oral chorusing of information, with a strong emphasis on oral teaching, to the detriment of reading and writing. Lack of attention to reading not only has detrimental consequences for the development of skilled reading but also for improvements in L2 proficiency.

The research literature indicates that fluency develops most quickly in the early grades, with the growth curve tapering off as children move up through the grades. The fact that the Grade 5 children in this study still have low ORF scores point to instructional deficiencies in the earlier grades. The fluency growth that should have happened under sound instructional practices in Grades 1-3 never really happened, and learners are lagging behind.

The levelling-off effect between the higher ORF scores and comprehension in this data set is not unexpected. This is attributed to the changing nature of reading development. As mentioned previously, once basic reading skills have been automated and reading becomes faster and more accurate, other processes critical

for reading comprehension come to the fore. As they get older, learners are expected to read longer, more complex texts, and higher-order reading skills such as making inferences, integrating text information and breadth and depth of vocabulary knowledge become increasingly important in reading expertise.

The research by Mathson et al. (2006) shows that accuracy is an important first step in fluency development; as children's accuracy in decoding improves, so does their reading rate, indicating increasing automaticity The concomitant drop in comprehension with inaccurate reading found in this NEEDU study confirms the importance of accuracy in skilled reading. The fairly strong effects still found amongst the Grade 5 learners is also indicative of their immature reading skills; Inaccurate decoding is typical of the early stages of reading; by Grade 5 these effects should start tapering off.

7. Recommendations

Teacher training – strong reading foundation in FP
Putting resources in classrooms
Daily practice in reading - homework

The dismal literacy levels of our learners strongly indicate that our teachers don't know how to teach reading. Urgent attention should be given to upskilling teachers in terms of their content knowledge of reading and their pedagogical knowledge of how to teach it.

Given the converging evidence, internationally and locally, that ORF scores reliably predict reading comprehension and reading ability in general in both L1 and L2, it is important to set up current ORF benchmarks for reading in English L2. Even if these norms are later adapted in the light of new L2 reading research evidence, benchmarks serve an important purpose in making teachers aware of fluency developmental trends, of what is possible in terms of reading development, and of raising expectations of what children can achieve, even if they are L2 learners.

Because fluency relies on the development of strong decoding skills, it is important that early reading instructional approaches used in Foundation Phase classrooms are evidence based, and support the explicit and systematic teaching of phonics in both L1 and L2. As the L2 research shows, decoding skills can transfer across languages, and if decoding skills are well developed in the L1, they support L2 reading in alphabetic written languages. Furthermore, strong decoding skills are necessary (albeit not sufficient) for establishing basic reading skills in the early grades. As Spear-Swerling (2009) has pointed out, fluency only increases if children have phonological awareness, are familiar with letter-sound relationships, and have acquired fairly accurate decoding skills for common words. Although it is difficult to teach children to engage high order reading skills and to apply comprehension strategies while they read if their decoding skills are not strong, comprehension should never be neglected. A strong emphasis on meaning in reading, reading for

pleasure and for information should be developed in tandem with decoding skills, right from the early grades.

Both preservice and inservice teacher development programmes should make teachers aware of what reading is, what the different components of reading and their subcomponents are, how they develop and how they can be assessed. Such knowledge empowers teachers as it helps them better understand how reading develops, and it enables them to assess reading in a focussed way in order to identify strengths and weaknesses in their learners' reading. Identifying reading problems is important for early intervention. At the same time, teachers themselves should be encouraged to become more active readers and become familiar with children's literature and the power of reading. The strong relationship between reading and motivation suggests that unless children can be made to enjoy reading and find it meaningful, they will not be inclined to engage in the activity voluntarily. It is the teachers' responsibility to encourage and motivate children to read on a daily basis.

8. Conclusion

Using a large sample of schools (213 schools) and students (1772 students) we have shown that the relationship between oral reading fluency and reading comprehension is large and robust for Grade 5 ESL students in rural South Africa. Our analysis showed that an additional 31 words correct per minute (one standard deviation) was associated with a 14 percentage point increase in comprehension score (0.7 standard deviations) after controlling for all school-level variables and certain student-level variables (age and gender).

Secondly we showed that the returns to additional fluency are not uniform across the ORF distribution. In a similar finding to the L1 research base, we found that comprehension returns to additional fluency are higher at lower levels of fluency, and decrease once a certain threshold is reached. However, unlike the L1 research base, our data suggests that for rural ESL students in South Africa, this threshold is at approximately 70 WCPM, rather than the 90 WCPM found in the L1 literature.

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