GET SET… GET READY… GET READING! A STUDY OF ECOLOGICAL AND PSYCHOLOGICAL FACTORS EXPLAINING LOW READING COMPREHENSION OF ENGLISH AS A SECOND LANGUAGE

by

ZABANGUNI ZAMA MAKANYA

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Abstract

It is important to understand reading anxiety because it affects learning negatively and if it is not resolved in early childhood, reading anxiety continues to compromise academic pursuits and limits children's futures. The present research project had several aims, (a) to establish the impact of ecological and psychological factors on reading anxiety, , (b) if an impact is established, to identify the independent variables (IVs) that have strong effect on the dependent variable (DV), reading anxiety, (c) to establish the potential differences in reading anxiety outcomes between boys and girls, (d) to establish whether gender has a moderating effect on the relationship between IVs and the DV, and (e) to establish whether home language played a role in reading anxiety outcomes between English First Language Learners (EFLs) and English Second Language Learners (ESLs), across the three language groups, English, Nguni, and Sotho-Tswana.

Participants consisted of 76 grade four learners, boys, and girls, in quintile level five schools, who spoke English, Nguni and Sotho-Tswana languages. Convenient sampling method was applied to identify schools for participation. Three primary schools participated, and the data were collected using a paper-pen method/ questionnaires, and analysed in four phases, descriptive statistics, hypotheses testing, multiple regression as well as additional analysis using Models of Mediation and Moderation.

Findings revealed that psychological factors play a significant role in explaining reading anxiety, but not ecological factors. More specifically, variables reading time frequency, reading attitude, and reading self-concept strongly predict reading anxiety. However, neither language nor gender appeared to influence the relationships among these variables.

Key terms: *reading anxiety, reading comprehension, reading outcomes, reading attitude, reading self-concept, reading time/frequency, English as second language, Comprehensive Emergent Literacy Model, Expectancy Value Theory of Anxiety, psychological factors.*

Declaration

Name: ZABANGUNI ZAMA MAKANYA

Student number: 340 33 270

Degree: MA PSYCHOLOGY

Exact wording of the title of the dissertation as appearing on the electronic copy submitted for examination:

Get Set, Get Ready…. Get Reading!: A study of ecological and psychological factors explaining low reading comprehension of English as a second language

I declare that the above dissertation is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

I further declare that I submitted the dissertation to originality checking software and that it falls within the accepted requirements for originality.

I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other higher education institution.

(The dissertation will not be examined unless this statement has been submitted.)

27th February 2022
DATE

Dedication

I dedicate this work firstly to all my unsung heroes and heroines, who were always there with a word of encouragement, to support, to lift me up when my own energy levels became low.

Secondly, to all the academic staff who went above and beyond their call of duty, and give me advise, support and provided much needed direction.

All these wonderful people have been with me since I started this journey nine years ago and this work is a culmination of all the blood, sweat and tears. I hope I can make them proud.

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LIST OF ABBREVIATIONS

CELM: Comprehensive Emergent Literacy Model

CHHs: Child Headed Households

DVs: Dependent Variables

EFLs: English First Language Learners

EVTA: Expectancy Value Theory of Anxiety

ESLs: English Second Language Learners

HICs: High Income Countries

IVs: Independent Variables

L1: First Language/ Home language

L2: Second Language

LMICs: Low- and Medium-Income Countries

LoLT: Language of Learning and Teaching

SES: Socioeconomic Status

UNESCO: United Nations Educational Science and Cultural Organisation

UN: United Nations

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Chapter 1: Introduction

Increasing numbers of learners are experiencing reading difficulty, which is problematic as reading compromises their academic pursuits. This is a worldwide phenomenon (United Nations Education, Science and Cultural Organisation (UNESCO), 2018; United Nations, 2019). If learners cannot read, they cannot learn. One of the causes of poor reading outcomes is learners' inability to comprehend what they are reading, low reading comprehension. One of the strongest predictors of low reading comprehension is reading anxiety. The relationship between reading anxiety and reading comprehension has been well established (Nazarinasab et al., 2014; Katrancı & Kuşdemir, 2016; Chow et al., 2021). The present research project thus focuses on exploring and understanding reading anxiety. To achieve this the current research project will use reading anxiety to investigate low reading comprehension.

Reading anxiety is a feeling of uneasiness and unsettling, discomforting, undesired and worrying emotion that is associated with reading (Capan & Karaca, 2012). Reading anxiety is implicated in compromised reading efforts and poor reading outcomes. Further, if not addressed in early years, reading anxiety persists as do its consequences, poor reading outcomes, low reading comprehension as well as learners' inability to learn. Reading anxiety will be explored in detail in the literature review section, chapter three. Reading anxiety discussion will be framed using the Expectancy Value Theory of Anxiety (EVTA). The main tenet of EVTA is the cognitive appraisal of situations that results in a situation being appraised as either anxiety inducing or not, by different individuals (Pekrun, 2019). Expectancy Value Theory of Anxiety argues that different learners participating in the same experience, such as being in class and expected to read with comprehension, some learners will appraise the situation as non—anxiety inducing, while others will appraise it as anxiety inducing. The differences in the situation appraisal are due to each learner appraising the situation differently. Expectancy Value Theory of Anxiety will be discussed in detail in chapter two.

Reading comprehension is the ability to read for meaning. Reading comprehension can be characterised as the ability to identify letter distinctions quickly enough to maintain text flow and fluency (Nevills & Wolfe, 2009; Tunmer & Hoover, 2017). Reading comprehension is commonly used to assess and measure reading skill. The current research project will establish whether ecological and psychological factors, as independent variables, play a role in reading anxiety. In addition, the current research project will seek to establish whether there is interplay between these two independent variables.

The present research project will argue that both ecological and psychological factors are significant contributory factors to reading outcomes, specifically, reading anxiety. To investigate, reading anxiety will be used as a proxy to understand low levels of reading comprehension. Because reading and reading comprehension are fundamentally cognitive skills, aspects relating to reading, reading anxiety, and reading comprehension will be explored from a cognitive perspective. The current research project is in part, a replication of the research project conducted by Chiu and colleagues (2011) on a global scale, when they compared data from 38 countries, investigating ecological and psychological impact on reading outcomes. Chapter one offers a general overview as it explores the relationship between reading anxiety and reading comprehension, which will clarify the premise for the use of reading anxiety as proxy. Chapter one will further give a detailed account of the background to the reading problem, highlighting global as well as local challenges. The overview of aims, research questions, and hypothesis, aim to illustrate the guiding principles, the line of enquiry adhered to, and the assumption made by the research project throughout the investigation. An overview of the organisation of the research project concludes the chapter one.

Overview

Based on the proven relationship between reading comprehension and reading anxiety (Shi & Liu, 2006; Li, 2012; Mohammadpur & Ghafournia, 2015; Sparks et al., 2018; Nejad & Keshavarzi, 2015; Badara et al., 2019; Wu, 2011; Nazarinasab et al., 2014;

Katrancı & Kuşdemir, 2016; Chow et al., 2021), the present research will use reading anxiety as a proxy to investigate reading comprehension. Reading is fundamentally a cognitive skill (Keung & Ho, 2009; Welsh et al., 2010; Cockcroft, 2013; Dunn, 2016), and reading comprehension is a skill that is enabled and supported by a host of underlying skills as well as neural, cognitive, and mental processes (Ghelani et al., 2004; Pirozzolo & Wittrock, 2013; Baghaei & Ravand, 2015; Chen, 2018). For a young reader to achieve reading comprehension, there are foundational elements that must be in place and be adequately developed. One of these foundational elements is language. Language is 'inherently and distinctly human' and its importance cannot be overstated (Pinker, 2003). Further, language is a window of the human mind, as humans convey their thoughts, abilities, belief system and intensions, through language (Hoff, 2013). Language is a way to convey the essence of the internal world, into the external one.

Background to the problem

Reading outcomes have been previously widely investigated. However, such efforts have predominantly addressed reading outcomes relative to ecological factors (Bharuthram, 2012; Seabi et al., 2012; Zimmerman, 2014; Moolman et al., 2020). Problems associated with children's experiences seem to be on the rise, and this is a global problem (Performance In Reading Literacy Study (PIRLS), 2011; PIRLS, 2016).

The situation in South Africa (SA) is one with the poorest reading outcomes, as 78% of grade four learners cannot read for meaning, according to PIRLS reports (PIRLS, 2011; PIRLS, 2016; Howie, et al., 2017; Rule, 2017). The poor outcomes remained unchanged when SA participated for the third time in the PIRLS in 2016 and repeatedly achieved the last position out of the fifty countries (PIRLS, 2016; Rule, 2017). Reading skills are fundamental as they are the foundation for other types of learning to take place, such as mathematical reasoning, and analytical skills (Rule, 2017). The ability to read and comprehend texts permeates into most if not all aspects of learning, at least the conventional ones, which makes it key for advancement in the educational sphere (Yussof et al., 2013;

Romeo et al, 2018). It is critical to address children's reading challenges whilst they are young. If these reading challenges are not addressed at this young developmental phase, these children remain at risk of highly compromised academic performance as they progress academically (Ciullo et al., 2016). Furthermore, research findings suggest that reading deficits in children are positively correlated with 'undesired' behaviour such as disruptive and defiant behaviours, aggression, and impulsivity, among others (Roberts et al., 2015).

One of the most important factors explaining low reading comprehension is reading anxiety. This has been consistently demonstrated by various studies which highlights the negative relationship between these two concepts, reading anxiety and reading comprehension (Zi & Rafik-Galea, 2010; Capan & Karaca, 2012; Rajab et al., 2012; Tsai & Li, 2012; Mohammadpur & Ghafournia, 2015; Sparks et al., 2018). More specifically, research has demonstrated that high levels of reading anxiety decreases reading comprehension (Baki, 2017; Katzir, 2018). Therefore, using reading anxiety as a proxy for reading comprehension, the current research project will investigate the ecological and psychological factors that influence reading anxiety. Based on the well-established negative relationship between reading anxiety and reading comprehension, interpretation of the findings of the present research project should shed light on the effects of ecological and the psychological factors on reading anxiety, and thus on reading comprehension. In addition, the outcomes from the current research project will progress the understanding of reading achievements a step closer towards understanding, managing, and eliminating low reading comprehension.

Low reading comprehension levels among grade fours in SA have been in the spotlight since the initial PILRS international measurements of grade four reading performances in 2006. As a result, reading outcomes have been studied extensively, in part, as a reaction to these widely publicised outcomes.

Rationale for the research project

The rationale for the present research project is premised on the following, (1)

Reading comprehension is foundational in relation to other academic skills, such as mathematical skills, scientific abilities, metacognition, and abstract level thinking (Martin & Mullis, 2013; Watts et al., 2013). (2) Leaving poor reading outcomes unattended only serves to compound the problem as learners grow and progress into upper grades. Further, addressing poor reading outcomes could potentially have a positive impact on learners experiencing other learning difficulties (Wolfe & Nevills, 2004; Johnson et al., 2007; Westwood, 2012). (3) Neglecting learners' cognitive aspects in the reading comprehension debate compromises the efforts to resolve the reading crisis. This is because reading comprehension is an aspect of cognition, therefore, excluding cognition is and would be missing and disregarding a crucial link that makes reading comprehension conceivable. (4) Much of the focus of the previous studies on reading outcomes and reading challenges on lower grade learners have been predominantly relative to a variety of ecological factors. Previous research has focused on aspects such as teacher's own level and quality of education, the environment in which learners are taught, availability of sufficient resources, the country's reading culture and learners' home environment, among others (Montague et al., 2005; Pierce et al., 2011; Rule, 2017) as well as parental rearing practices (Muris et al., 2006). As a result, more research exploring the psychological factors is needed. (5) Over the past century, reading has grown to be an integral part of daily existence (Seabi et al., 2012; Araújo & Costa, 2015; Glynn, 2017; Samsuddin et al., 2019). Thus, understanding what underpins attainment of reading comprehension, could potentially improve reading comprehension amongst the young learners and subsequently, that of the population (Simmons et al., 2002). (6) The national momentum on improving reading outcomes that grew from the widely publicised 'national reading crisis' was an additional motivator that contributed to the rationale for the present research project.

Aims, Hypothesis, and Research Questions

The current research project will argue that both ecological and psychological factors play a significant role in understanding learners' reading outcomes. To this extent, five

research aims were developed and psychological measurements were employed to investigate the impact on reading anxiety, as a proxy for reading comprehension. Research aims were, (a) establish the impact of ecological and psychological factors, on reading anxiety, (b) if an impact is established, to identify the independent variables (IVs) that have strong effect on the dependent variable (DV), reading anxiety, (c) establish the potential differences in reading anxiety outcomes between boys and girls, (d) establish whether gender has a moderating effect on the relationship between IVs and the DV, and (e) establish whether home language plays a role in reading anxiety outcomes between EFLs and ESLs, across the three language groups, English, Nguni, and Sotho-Tswana.

The six research hypotheses were developed in line with the research aims, and are detailed in the hypothesis testing section below, in the discussion of ecological and psychological factors. Briefly, the first hypothesis stated that a positive school climate is negatively related with reading anxiety. Secondly, female learners show significantly stronger reading anxiety than male learners. Third, parental reading support at home is negatively related with reading anxiety. Fourth, reading time/frequency is negatively related with reading anxiety. The fifth and sixth hypotheses stated that a positive reading self-concept and positive reading attitude reduce reading anxiety, respectively. Research questions were developed in line with research aims .

Research Questions

1) Do ecological and psychological factors have an impact on reading anxiety?
2) If an impact exists which independent variables (IVs) that have strongest effect on the dependent variable (DV), reading anxiety?
3) Is there a difference in the reading anxiety between girls and boys?
4) Does gender have a moderating effect between ecological and psychological factors on the one hand, and reading anxiety on the other?
5) Does home language have a moderating effect on reading anxiety between ecological and psychological factors on the one hand, and reading anxiety on the other?

Research aims, questions and hypothesis offer a guideline that will be adhered to through the research project.

Overall research hypothesis. The present research project hypothecises that both ecological and psychological factors have a statistically significant impact on reading anxiety for grade four learners.

Overall Research Project Layout

The objective in chapter one was to lay the foundation for the entire report, to this extent, the chapter briefly outlines the separate phases of the research project that will be addressed in successive chapters. The global data that reflects poor acquisition of literacy skills by young learners is indicative of poor reading outcomes being a global phenomenon. Similarly, the persistent low levels of reading comprehension in SA presents a compelling case for additional and alternative variables to be investigated, to find sustainable solutions.

Chapter two details the theoretical foundation of the present research project. The first is Comprehensive Emergent Literacy Model (CELM) which is used to frame the overall project. The second is Pekrun's Expectancy Value Theory of Anxiety (EVTA), for framing the reading anxiety discussion. The discussion further highlights the relevance of CELM as well as EVTA, for the current research project as well as for the South African multi-diverse context.

Chapter three presents a discussion of literature relating to reading anxiety, reading comprehension and cognitive development. First, the model of reading will lay the foundation for understanding the brain mechanisms that process reading. Thereafter, the discussion on reading expectations and outcomes will briefly highlight the commitment to reading efforts in SA and the recent reading outcomes in other Low- and Middle-Income Countries (LMICs).

The discussion on the relationship between reading anxiety and reading comprehension will demonstrate the rationale and lay the foundation for using reading anxiety as a proxy for reading comprehension. In line with SA's reading efforts, a section on the South African context will briefly highlight a historical view of education and specific reading challenges,

leading to the present state of affairs on reading. The section on reading anxiety overview outlines a detailed description of reading anxiety as well as offer insights into its causal factors.

Next, the section on ecological and psychological factors as well as the associated hypothesis illustrates the basis for the formulated hypotheses.

The examination of cognitive functioning will explore and discuss the foundational elements of cognitive functioning, including, neurological development, early cognitive development, developmental theories, and learners' cognitive development, among others.

This section will demonstrate the extent of the cognitive function, from its foundation to its functions. Neurological development is discussed as an element of cognitive function, which highlights the model used to understand neurological formations and development, and the actual development of neurons that would form the basis of cognitive functioning.

The next section, language overview, highlights its foundational nature in reading achievement and the critical developmental phases that prepare young learners for reading comprehension achievement, in later school-age years. Additionally, the section will briefly highlight literacy, as a link between language and reading. The three language groups, English, Nguni, and Sotho-Tswana are outlined and briefly discussed in relation to their structural linguistic differences and how such differences can potentially impact reading. Thereafter, the discussion on reading overview, will demonstrate the complexity of reading from neurological, cognitive, and linguistic perspectives. This section further highlights prevalent poor reading outcomes globally as well as reflects on efforts aimed to mitigate the reading challenges. The section on reading in English as second language (L2), discusses reading anxiety within the context of English as a second language, which progresses the discussion into the challenges faced by ESLs when learning English, and learning in English. To highlight the challenges, examples of potentially challenging English words are highlighted.

Chapter four details the methodological choices made in the present research project. The methodological elements include ethical clearance process, in line with adherence to research protocol. Further, research design, participants, procedure used, measures undertaken to ensure research credibility, measurements as well as results will be detailed. Additionally, the chapter presents the outcomes from the statistical analyses, preliminary results, hypothesis testing, multiple regression as well as additional analysis, the models of mediation and moderation. The discussion section, as presented in chapter five, responds to, and integrates research questions, research hypotheses, literature review and data analyses outcome, in relation to the current research project's findings. The conclusion section presents a summary from the different sections throughout the report, outlines the present research project's strengths, limitations and offers recommendations for future research.

Chapter 2: Theoretical Framework

This chapter presents the two chosen theoretical models used in this research project: the Comprehensive Emergent Literacy Model (CELM) (2015) and Pekrun's Expectancy Value Theory of Anxiety (EVTA) (Pekrun, 1992; Pekrun, 2019). The initial discussion addresses CELM's evolution, which is followed by CELM's key features which were fundamental the CELM's selection and distinguishes it from other models. Thereafter, a detailed exploration of CELM's five fundamental elements is presented, namely language development, phonological awareness, lexical restructuring, print awareness and writing. The discussion further elaborates on the contextual aspects of CELM, demographics, culture, and environment. Thereafter, a brief exploration of the linguistic character of the environment is presented to highlight the relationship between linguistic character and its context. Within this context, English is discussed as a Language of Learning and Teaching (LoLT).

In addition, the theoretical model selected for analysing reading anxiety is Pekrun's EVTA is explored. The model's evolution and its key features are detailed, as well as its relevance to the present research project. This chapter concludes with a summary of the concepts and the main discussion points.

Comprehensive Emergent Literacy Model

Model Evolution

Emergent Literacy Model (ELM) was originally conceived by Clay (1966) and further developed in the 1980s, primarily as a challenge to the previously accepted notion that children were only ready for literacy at a certain age and maturity level (Fosnot & Perry, 1996; Fosnot, 2013). ELM was founded on the principle that it is children's interaction with their environment that stimulates initial literacy ambitions within a child (Rhode, 2015). The components of ELM i.e., language development, phonological awareness, print awareness and emergent writing, were understood to be critical in the nurturing and the development of

literacy. The development of these components was understood to be, at the very least, a series of experiences that often interact with each other and perhaps, at times, run concurrently towards building literacy. For instance, children's emergent writing development may be supported by language development. ELM was instrumental in identifying and conceptualising these components, which play a critical and foundational role in literacy development.

The significance of understanding the ELM components is that children develop literacy skills before conventional and formal reading and writing programmes are initiated. These aspects of ELM have led to it gaining wide acceptance, both in practice and in research (Blank, 2012). Even though each of the components was known to have its own individual developmental trajectory, the relationship between the components, the nature of their interaction and their contribution to literacy, was less understood (Rhode, 2015). It was this weakness in the understanding of their interaction and the value of the contribution of each aspect towards literacy that was the premise for the development of Comprehensive Emergent Literacy Model (CELM). Therefore, CELM is a progressive version of the E L M aimed to mitigate against the shortcomings of the ELM (Rhode, 2015).

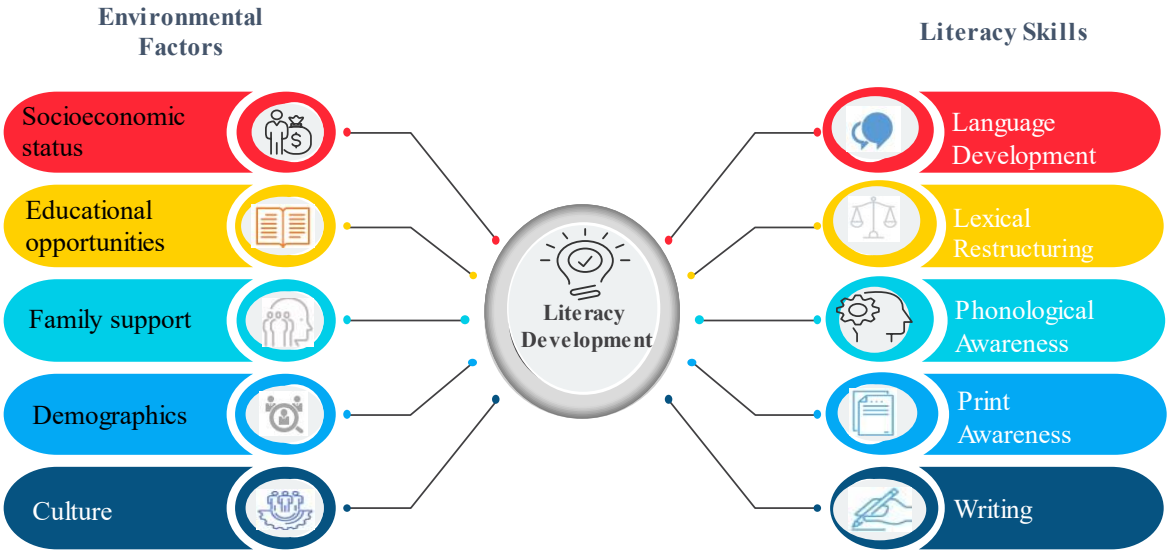
CELM identifies the contribution of each component and describes the environmental influence of each on young children. The components of CELM are identical to those of ELM, with the exception of the new component, lexical restructuring, the five components are elaborated on, below.

CELM views emergent literacy as an interactive process of young learners' emerging learned literacy skills and their context, rather than viewing the acquisition of literacy skills as a linear process that encompasses separate events and experiences (Foorman, 2002; Rhode, 2015; Moonsamy & Carolus, 2019). Other literacy and reading models focus only on the skills that are needed to develop literacy skills, such as phonetic awareness, phonemic awareness, phonological awareness, and word reading skills (Olson et al., 2006; Cummings et al., 2011; Taylor et al., 2016; Manten et al., 2020). CELM is distinguished by

encompassing both skills and context, as well as the interaction between the two, to produce the emergent literacy skills model (Rhode, 2015). Figure 1, created by the author, illustrates that both environmental factors and literacy skills contribute towards learners' literacy development.

Figure 1

Comprehensive Emergent Literacy Model



Practical application of CELM at home would involve families knowing the importance of early emerging literacy skills who would use available opportunities to encourage and nurture the development of literacy skills such as reading to young children to encourage them to develop literacy skills. Other ways to develop literacy skills include participation in word games and accompanying young children to libraries and bookstores. In school, CELM application would see teachers encouraging and complementing the literacy development activities being done at home. This would be achieved by facilitating the different CELM academic components, because they would understand the significance and the benefits of a complementary process (Manten et al., 2020). Emergent literacy skills, the outcomes of CELM, include reading skills such as alphabetic knowledge, symbolic representation and communication and phonological awareness that children learn long before they have a

concept of a book and its uses (Rhode, 2015; Moonsamy & Carolus, 2019). The comprehension of the concepts of literacy progressively builds up as children grow (Rhode, 2015).

The application of CELM has several benefits, of which two will be briefly stated. Firstly, CELM is useful as a guiding and supporting mechanism in young children's learning. 28 The mechanism demonstrated that CELM encompasses the significant and pertinent aspects of learning that are environmentally informed (Rhode, 2015). Secondly, it is a tool that can be used to establish children's current learning patterns as well as how the current learning can impact their later academic performance (Rhode, 2015; Trainin et al., 2016). To this extent, CELM is most suitable for the present research project as the project is similarly premised on the significance of contextual differences in relation to the learned literacy skills, as determinants of early literacy outcomes (Rhode, 2015).

The varying contextual differences within the diverse South African landscape have a primary and a fundamental influence on all literacy efforts, more specifically, reading efforts and reading outcomes in both early and later years (Manten et al., 2020). The contextual differences influenced the selection of the theories that frame the present research project. The sample for the current research project is made up of young learners from diverse backgrounds, with differences including home languages, ethnicity, and culture. Essentially, these young learners differ in most aspects of their lives. Contextual differences extend to the availability and the utilisation of literacy resources that nurture, grow, facilitate, and encourage the development of literacy skills, within their respective environments. It is within these distinctive contexts that the development of literacy in young learners is determined.

The process of selecting a theoretical model was informed by the foundational assumptions about how the world works, more specifically about diverse contexts, such as those of South Africa (SA), with respect to the acquisition of literacy skills in young children. (a) Young learners come from diverse backgrounds. (b) Due to these diverse backgrounds, young learners have varying degrees of literacy development, informed by their families'

efforts, their exposure to and experiences with literacy resources. (c) This variation in literacy developments is influenced predominantly by contextual differences. (d) It is these contextual differences that primarily and fundamentally influence all literacy interventions, more specifically reading outcomes in both early and later years.

The suitability of CELM as a theoretical foundation for the present research project is premised on the heterogeneous nature of the SA context (Rule, 2017; Moonsamy & Barnes, 2021). Reading comprehension, as an important element of literacy skills, is therefore subjected to the same contextual elements or differences. Therefore, the ideal theoretical framework should be based on the same or similar underpinnings. To this extent, CELM is appropriate for this study, as it meets the contextual diversity of SA. In its application, CELM employs five main elements; language development, phonological awareness, lexical restructuring, print awareness and writing.

Elements of the Comprehensive Emergent Literacy Model

Language Development. The specific role of oral language is in the understanding and the use of semantics, vocabulary, and background knowledge of the subject matter in the text, which are all used to achieve silent reading comprehension. The centrality of language to life cannot be overstated (Pinker, 2004; Beitchman & Brownlie, 2005; Kathard et al., 2011; Stevens et al., 2017). Therefore, inadequate language development in early childhood is likely to produce adverse outcomes in childhood and adolescence and continue into adulthood. These adverse outcomes include speech and language incompetence; problematic educational adjustments and achievements; challenges with intellectually challenging academic tasks; psychosocial challenges; poor academic performance; anxiety disorder; increased risk of psychiatric disorders; attention deficit (Beitchman & Brownlie, 2005; Moonsamy & Barnes, 2021). These outcomes relate predominantly to oral language development, which is important for many reasons in young children, including, demonstrating the extent of knowledge, acquiring new knowledge, general communication, social engagements and, of course, learning literacy (Morrow, 2015; Rhode, 2015). The

benefits of adequate language development extend to more than academic pursuits. They are also beneficial for social relationships, as well as emotional regulation, among others (Cohen, 2006; Pillay et al., 2010).

The role of language in emergent literacy is widely recognised and accepted, due largely to context-specific rules (Chow et al., 2017; Mzimane & Mantlana, 2017). Such rules can vary from being restrictive, to being liberal and flexible. In classrooms, which are somewhat formal environments, rules can limit children's opportunities to explore their linguistic development by imposing strict rules about how to express themselves and what type of information is allowed to be communicated, whereas at home and in playgrounds, rules can be more liberal and flexible, allowing young children to be more expressive with few to no rules, such as speaking freely without permission, within reason, at least for much younger age groups (Pungello et al., 2009; Rhode, 2015). It is through these linguistic expressions that young children learn the appropriate sounds and their associated structures, linguistic rules and learn to place all these language structures in appropriate contexts. These lessons are critical in the development of young children's literacy and reading skills (Cohen, 2010; Rhode, 2015). These examples highlight the extent to which language development is partly dependant on context (Pungello et al., 2009; Morrow, 2015). In addition, development in young children's (oral) language is linked to growth in their phonological sensitivity (Goswami, 2001; Foorman, 2002; Dickinson et al., 2003).

Phonological Awareness (PA). Phonological awareness includes skills like rhyming, synthesising, and segmenting sounds, which are beneficial for learning to read. Phonological awareness (PA) is the ability to 'detect, identify and manipulate the sound structure of language' along with being one of the strongest predictors of later reading success (Foorman, 2002; Rhode, p. 5, 2015). This highlights the significance of PA in reading efforts and subsequent reading success or failure. There is evidence which demonstrates that the size of young children's vocabulary may have an effect on encouraging the emergence of phonological awareness (Goswami, 2001; Dickinson et al.,

2003). The absence of opportunities to increase vocabulary in young children, can potentially compromise the development of their phonological skills (Moonsamy & Carolus, 2019). Whilst PA development is to some extent an automatic process, Goswani (2001) contends that there are young children who do not benefit from this automated development and acquisition process. These young children have great difficulty distinguishing the differences between the sound structures of words, sentences, and languages. The reason for this difficulty is the location of the brain region that is responsible for PA, the angular gyrus, and corresponding regions in the occipital and temporal lobes, in the cerebral cortex which is deeply embedded in the language system and the auditory ventral stream pathway responsible for sound recognition (Price, 2000; Ward, 2015; Kalat, 2017; Bamiou & Murphy, 2018). This language system encompasses the phonological loop which processes and routes language to the central executive functions, as demonstrated by Baddeley's model, a working memory model (Baddeley, 2000; Gathercole & Baddeley, 2014; Ward, 2015). A defect in this part of the language processing system will most likely result in difficulty in processing language to varying degrees. It also indicates that lack of resources and environmental input leads to deficits too.To compensate for this deficit, the skill might need to be taught directly. Adequate PA skills enable learners to recognise rhyming sounds of words and the ability to distinguish these rhyming sounds from other non-rhyming sounds (Manten et al., 2020). In addition, it is a skill that enables blending of different sounds that form a word (Foorman, 2002; Rhode, 2015). When young children lack PA skills, their reading efforts will be greatly compromised and subsequently, their reading comprehension efforts. Based on the proven negative relationship between reading comprehension and reading anxiety (Ghonsooly & Elahi, 2010; Capan & Karaca, 2012; Sparks et al., 2018; Zoghi & Alivandivafa, 2014), lacking in a skill that results in low reading comprehension will invariably increase reading anxiety.

The additional role of PA is its facilitation of reading by enabling learners to match the sound to the letter of the alphabet, known as 'sound-letter' correspondence reading

(Foorman et al., 2002). Typically developing EFL toddlers develop phonological sensitivity at ages between two and a half (2 ½) and four and a half (4 ½) years (Foorman, 2002; Pufpaff, 2009). Notably, it remains unclear whether the development of strong phonological representations that occur in home language (L1) through natural vocabulary growth, would behave the same when that same young child is in a second language (L2) context and learning to read in L2, and if they behave differently, how differently? (Jiménez, & Venegas, 2004). The ability to distinguish the different sound structures that result from a developing PA, enables young children to grow their vocabulary and reduce their phonemic units, which is enabled by lexical restructuring.

Lexical Restructuring (LR). Lexical restructuring broadly encompasses two main tasks that young children must accomplish, managing a growing vocabulary and restructuring and reducing phonemic units (Ward, 2015). A growing vocabulary is the cumulative increase in the number of words that are stored in memory (Al-Dersi, 2013; Jacobson, 2013; Raikes et al., 2017). The reduction of phonemic units entails the breakdown of words into their smallest sound units (Gruenefelder, 2009; Ward, 2015). As young children's vocabulary grows, their words must be represented in smaller phonemic units and this change creates pressure for words to be stored phonologically. It is this phonological storage that enables smaller distinctions between the words and the phonemes (Weismer & Edwards, 2006; Ward, 2015). CELM indicates that LR is influenced by both language and PA; therefore, if either of these is compromised, the learner's ability to read will be compromised, as will their reading comprehension (Rhode, 2015). Lexical restructuring does not occur all at once for the complete vocabulary. Instead, lexical restructuring occurs at a pace of one word at a time during language development, as toddlers learn additional words. Toddlers then associate additional words with similar sounding words that they have already learned and are stored in their vocabulary. All these similar sounding words are often linguistically referred to as phonological neighbours. This process is the creation of groups of similar-sounding words (Gruenenfelder & Pisoni, 2009). Notably, the recognition of phonetic

changes, by way of recognition of mispronounced words, by children as young as fourteen to fifteen months old, is a strong suggestion that LR is effective and highly sensitive from a very young age (Gruenenfelder & Pisoni, 2009). In addition, both pseudo-words and real words appear to share the same properties of the language and lexical structures (Wittenburg et al., 2002; Racine, 2018). The sharing of these structural properties suggests that these structures are not exclusively dependant on language evolution, language acquisition, physiological development, or the process of LR itself. These structural properties emerge naturally, independent of these stated processes (Gruenenfelder & Pisoni, 2009). Once young children have demonstrated an increasing vocabulary and the ability to reduce their vocabulary's phonemic units, they are better positioned to relate to printed material. Young children apply their learned skills of language development, phonological awareness, and lexical restructuring, all of which are mental construct, onto an external physical construct, print awareness. Essentially, their learned language processing skills serve as a foundation to progress to the concept of print and its relevance (Biancone et al., 2014; Goodrich & Lonigan, 2016).

Print Awareness. Print awareness enables the identification of printed words, which leads to identification of printed sentences and thus contributes towards reading comprehension (Rhode, 2015). Print awareness is knowing and understanding that print is intentionally organised in a certain way (Taylor et al., 2016). For example, to understand written text in Western cultures, it is important to understand that: reading is accomplished by reading from left to right and top to bottom; sounds are grouped by phonemes; phonemes are grouped by words; words are grouped by sentences and sentences, by paragraphs (Kulo et al., 2020). Understanding written text also requires understanding the existence and the meaning of boundaries between words and sentences (Foorman et al., 2002). For young children especially, it is understanding the nature and the functions of printed texts, and perhaps most importantly, that print has meaning (Rhode, 2015). Print awareness can be compromised if young children do not receive adequate language stimulation during their

early development phase (Moonsamy & Carolus, 2019). However, one study found that print awareness did not predict reading abilities for school readiness among kindergarten children (Foorman et al., 2002). This finding, together with the weak inter-rater reliability for print awareness assessments two decades ago, resulted in print awareness not being used as a proxy for other literacy emergent skills, especially in the Texas Primary Reading Inventory (Foorman et al., 2002).

Print awareness is divided into two categories, alphabetical knowledge, and concepts of print (Justice & Pullen, 2003). Alphabet knowledge entails the understanding of text systems, how texts are structured, their representative symbols, where and how they are positioned in relation to one another and the overall objective of communicating and/or inferring meaning from text (Rhode, 2015). The task that young children must achieve in alphabetic knowledge includes the recognition and naming of all twenty-six letters of the English alphabet, identifying the sounds of letters, verbally and textually producing the letters, and the matching of letters with their corresponding sounds, i.e., essentially, mastering the alphabetic principle (Mather, 2010; Rhode, 2015). The second category, concepts of print, encompasses the concept of print itself, what it is, how it works, and the differences in printed materials. From their early years young children progressively acquire knowledge about the concept of print, as they do other reading skills (Justice & Pullen, 2003; Rhode, 2015). This progression typically starts from viewing print as a ‘non-linguistic’ object, to understanding that print can be positioned to construct certain words, and finally to understanding the print and the language it represents (Foorman et al., 2002). Once young children have developed an awareness of print, their exploratory curiosity tends to motivate them to explore the print they have been exposed to, as they attempt to replicate it (Watts et al., 2013). This exploration leads them to their initial attempts at writing.

Writing. The early emergent stage of writing requires the coordination of phonological awareness, print awareness and language skills. To this extent, early emergent writing has come to be associated with young children’s expressions of emergent literacy

(Rhode, 2015). Following this line of logical reasoning, it therefore stands to reason that early emergent writing in young children contributes to, rather than being a consequence of literacy and reading skills. Initial attempts at writing are typically around young children's developmental phase when they learn that writing can potentially create meaning, even though their writing skills are yet to develop (Pretorius & Naudé, 2002; Hayes, 2011; Rhode, 2015). Previous research has demonstrated that young children between the ages of four- and five-years, can identify printed text relative to scribbles of writing (Foorman et al., 2002). Worldwide, the typical start of formal schooling varies between the ages of six and seven, with a few exceptions of age five (Black et al., 2011). This age would make young learners print aware at the time that they start their formal schooling. As such, this is the ideal developmental phase to start learning the meaning of words (Moonsamy & Carolus, 2019). However, their overall state of school readiness would predominantly be determined by their context.

Contextual Influence on Emergent Literacy

One of the CELM's assumptions is that environmental factors, culture, demographics, and community are fundamental in young children's literacy acquisition skills and development, because everything, including literacy skills, happens within these varying environmental elements (Rhode, 2015). Demographics, culture, and community are the three intertwined contextual elements of emergent literacy (Rhode, 2015). The role of demographics in emergent literacy is such that literacy has different levels of significance for different groups of people, such as different societal classes, which can be observed in terms of their backgrounds and lifestyles. As a result, these different groups, will conceptualise and address literacy differently (Strauss & Bipath, 2020). To this extent, these three contextual elements can either serve as sources of support of, or barriers to young children's literacy efforts. Understanding the role of these contextual elements is critical to provide a holistic understanding of the emergent literacy skills (Rhode, 2015; Piper et al., 2016; Eysenck & Keane, 2020).

These contextual elements determine young children's emergent literacy. They include the awareness of the mere concepts of literacy such as books, reading, writing, and literacy access that support literacy exploration and acquisition of literacy material. The contextual elements further include availability of linguistic opportunities, and all these are aimed at promoting literacy development. All these elements are applicable from immediate families to wider social support networks (Friedman, 2018; Moonsamy & Carolus, 2019). In home environments in which people believe in the benefits and the value of literacy and consequently the value of books, people are more likely and willing to create and to maintain a literate environment, subject to financial affordability. In such environments, books are provided for the children, and children are often read to and encouraged to read frequently and independently. In a culture that frowns upon expressive language, people are more likely to reprimand young children who dare to explore linguistic freedom. A community that does not place intrinsic value on the acquisition of literacy, is less likely to afford their young children library facilities. The influence of these contextual elements serves to discredit the 'silo fallacy' which asserts that accomplishments are achieved without support from or the influence of others (Friedman, 2018).

CELM argues that these contextual elements have the power to determine young children's literacy outcomes. This is achieved by determining access to emergent literacy opportunities, by shaping the significance that is associated with emergent literacy and determining whether young children will receive support from those around them (Rhode, 2015). The significance of the role of culture, environment, and that of community, has been increasingly recognised over the past three decades. This recognition is in part, due to the consistent demonstration that there are strong correlations between social and cultural experiences and academic success, including reading and writing (Von Tetzchner et al., 2005; Makin et al., 2007; Weisberg & Reeves, 2013). This recognition further demonstrates the effect of environment, which incorporates both culture and community, especially the negative impact of poverty on language acquisition and learning, as an element of literacy

(Hart & Risley, 1995). Lastly, this recognition is a demonstration of the critical role of the environment in efforts that support literacy development in young children (Fosnot & Perry, 1996; Fosnot, 2013).

Environmental factors include socioeconomic status (SES), family support, educational opportunities, demographics, culture, nutrition, political stability, lastly, community.

Socioeconomic status (SES). Socioeconomic status (SES) is a measure of the social and economic position of an individual or a group of people, relative to others (Bendix, 2010). Socioeconomic status is typically associated with proximity to privilege and power (Hackman & Farah, 2009; Noble et al. 2015; Hackman & Kraemer, 2020). It includes predominantly, but is not limited to, societal stability, social standing, educational level, type and nature of occupation, income level, security, and availability of, and access to literary environments, as well as household valuables (Bendix, 2010). South Africa (SA), like other developing LMICs, such as Brazil and India, is increasingly being characterised as becoming a more unequal society, which by nature widens the gap between lower and higher economic and social classes (Celeste et al, 2011; Malaquias et al., 2017; Rastogi & Ragabiruntha, 2018). The consequences of this divide extend to the unequal access to the resources that foster and support literacy development (Moonsamy & Carolus, 2019). It further determines the different levels and the extent of economic participation and involvement by different members of society, whereby there is a differential economic contribution and associated benefit (Bendix, 2010; Seery & Arenda, 2014).

Educational opportunities*.* Such opportunities include the availability and the quality of Early Childhood Development (ECD) opportunities as well as the home environment. Due to varying levels of SES, some learners have access to excellent ECD opportunities to the extent that they get adequate preparation for formal school entry, whereas others do not (Moonsamy & Carolus, 2019; Manten et al., 2020). Educational opportunities are closely associated with SES (Bendix, 2020). As a result, in SA, it is

estimated that fewer than 10% of young children benefit from the national government subsidy of R15 per day for ECD development, equivalent to approximately one US dollar (US$1) per day (Stolz, 2021). The second aspect of educational opportunities is the home environment, also referred to as family support.

Family support. Family support can be characterised as the conscious activities that are carried out within families, aimed at improving a challenging situation faced by a family member (Bahn & Barratt-Pugh, 2013; Barratt-Pugh & Anderson, 2013). The acquisition and development of literacy skills involves the availability of family members to help learners attain literacy skills, and the provision of a stable home environment that fosters and supports learning efforts. If family members are literate, they are better equipped to assist learners to become literate by participating in literacy developing activities, such as playing word games, and helping learners with their reading activities and homework (Moonsamy & Carolus, 2019).

Demographics. Demographics typically include the learner's age, sex/gender and language(s) spoken at home, SES, and parental education, among others (Bendix, 2010). Certain demographics tend to demonstrate higher levels of young learners' English literacy. These demographic characteristics typically include higher parental education, English spoken as home language and being in relatively higher income brackets (Olson et al., 2006). The available demographics for the present research project were limited to learners' age, sex/gender, language(s) spoken at home and SES. However, the SES of learners' families was inferred from that of the school, rather than by asking parents to indicate their income scale on the survey. This decision was largely informed by findings of earlier studies which demonstrated that parents are less inclined to give out personal details (Reiter & Kinney 2011; Sorbie, 2020). The behaviour of any demographic group should be viewed within the context of their cultural norms.

Culture. Culture can be defined as sets of practices that are shared by a group of people who share traditional and familial lineage, sets of behaviours and belief systems,

people who observe, and participate in the same traditional activities, and typically share ethnicity (Jee, 2014). However, in the context of reading, culture can be created, shaped, and shared by people who either share or do not share any particular and distinguishable similarities, both historically and contemporarily. One such example is the culture of reading. Previous research highlighted the weak 'reading culture' in SA as one of the contributing reasons for low levels of literacy and poor reading comprehension (Zimmerman, 2014; Howie et al., 2017; Rule, 2017). The contribution of culture to the low reading comprehension levels is such that learners emulate the behaviours they observe in their surroundings. To this extent, if the behaviour reflects low levels of literacy-enriching behaviours, and particularly in reading, learners are likely to internalise and emulate such behaviour. This would result in the culture being perpetuated which would consequently have a significant effect on literacy efforts and subsequently, the reading culture. The recognition of a weak reading culture by the Department of Basic Education (DBE), has led to the prioritisation of 'reading and comprehension in the first year of school' program as well as supporting the establishment of a reading culture within South African communities (DBE, 2019).

Nutrition. This aspect refers to either adequate or inadequate provision of nutrition. Adequate nutrition has been linked with positive academic outcomes, where a positive relationship was established (DBE, 1997; Naidoo et al., 2009; World Health Organisation (WHO), 2015; Beckman et al., 2021). The significant benefits of good nutrition to a young learning brain have been widely recognised in SA (Stolz, 2021; Zali, 2021), on the African continent (Alderman et al., 2009; Haggblade et al., 2016; Vandeplas et al., 2019) and in other parts of the world (Bryan, 2014; Ip, 2017; Schneider & Garcia-Rodenas, 2017). In line with this recognition, the South African government introduced measures that would ensure adequate nutrition for the young and developing learners. These measures included 'school feeding schemes' as well as mandating the sale of maize meal.

Maize meal is a staple diet, predominantly for impoverished communities, who do not have the financial means to provide sufficient alternative nutritional meals for their families (Stolz, 2021; Mboweni, 2021). As such, young learners who come from these communities, who have inadequate nutrition, are likely to suffer the negative consequences of poor academic performance. The basis for this mealie meal directive by the national government was premised on the need for the provision of sufficient nutritional meals to provide the support necessary for neuron growth, that will in turn support brain functioning that facilitates effective learning (Schneider & Garcia-Rodenas, 2017).

Political stability. While political tensions have drastically reduced over the past three decades, some pockets of society regularly experience sporadic political tensions in South Africa (Moonsamy & Carolus, 2019), in the African region (De Wet, 2014; Southall, 2020), in developing countries (Azeng & Yogo, 2013) and around the world (Houle, 2019). When these political outbursts occur, they often result in displacement of people or other forms of disruption to livelihoods. Such disruptions can potentially have a negative impact on learner's academic pursuits (Ossokina & Swank, 2003; Moonsamy & Carolus, 2019). Political stability is typically associated with thriving communities (Bendix, 2010; Landau, 2018). It has been demonstrated that political stability has a positive impact on learners' academic performance (Ossokina & Swank, 2003; Fleurbaey et al., 2008). For this reason, ensuring political stability is desirable.

Community. The first aspect of community is communal engagement, which involves the provision of community resources that support and enable access to literacy development, in the form of bookstores, libraries, or book-share initiatives (Ossokina & Swank, 2003). The second aspect is communal security, which involves the levels of stability within a community, or the lack thereof, likely to result in displacement (Krause & Snyman, 2014; Landau, 2018; Moeng, 2019; Moonsamy & Carolus, 2019). The third aspect is communal support, and it involves providing literacy activities and encourages the prioritisation of young learners in these activities (Moonsamy & Carolus, 2019).

Addressing these contextual factors will support young learners' emergent literacy to the extent that learners' can achieve adequate reading comprehension, and consequently, experience low reading anxiety.

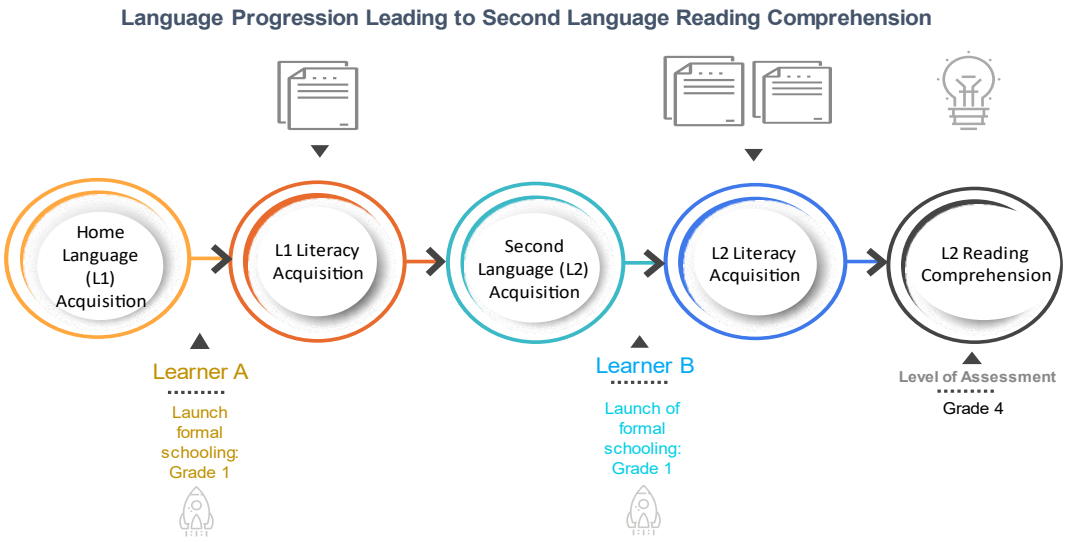
These environmental factors demonstrate the presence of intersectionality. Intersectionality is the idea that all the experiences and behaviours of an individual are the product of multiple factors that intersect at a particular moment, to produce an experience or behaviour (Cho et al., 2013; Hancock, 2016). For the purposes of the present research project, intersectionality provides insights into the dynamics that have shaped and produced the literacy development in each learner. Learners who do not have literacy development opportunities are at risk of delayed literacy acquisition (Tayob & Moonsamy, 2018). Delayed literacy acquisition has a negative impact on academic progression and overall academic success. For the most part, some of these factors are historically inherited because political instability, economic exclusion, and social inequality challenges were originally, and to some extent continue, to be intertwined, and are predominantly played out along racial lines (Moonsamy & Carolus, 2019). The high number of children who live in poverty in SA, over 60%, is a strong indication that the redress of past inequalities has been inadequate (Moonsamy & Carolus, 2019). At the very least, it suggests that the redress has not had a positive effect on those who continue to be exposed to instability, economic exclusion, and widespread inequalities (Moonsamy & Carolus, 2019).

All these differences translate into a scenario whereby even though a group of learners are in the same school and in the same classroom, it is likely that some of the environmental differences stated above are present in each group of learners. This presents a challenge for teachers and school administrators, who must determine the appropriate academic level at which learning will be facilitated and delivered. This academic level for learning is relevant because it addresses the matter of ensuring that all learners are at the same level of literacy development, regardless of their prior literacy exposure, development, acquisition, and opportunities. Therefore, in SA and in other LMICs, literacy acquisition must

be seen against the backdrop of these factors. Similarly, the results from an international Performance In Reading Literacy Study (PIRLS) should be seen in the light of these predominantly historical, persistent instabilities, exclusions and inequalities (Moonsamy & Carolus, 2019). The Performance In Reading Literacy Study which undertook an international measurement of literacy levels of grade four learners, found that 78% of South African grade four learners did not meet the required literacy levels, relative to international literacy standards (PIRLS, 2016; Howie et al., 2017; Rule, 2017; Moonsamy & Carolus, 2019). Such results were consistent with three previous assessments conducted since 2006. Such outcomes must be read in context. Figure 2 reflects a scenario in which learners with different literacy levels enter their schooling career.

Figure 2

Simplified View of Language, Literacy, Comprehension Progression



Note. The diagram illustrates the link and progression from language acquisition to literacy and reading comprehension acquisition.

While some learners launch their academic pursuits after having learned only their home language, as represented by Learner A, others, such as Learner B, begin their schooling with a literacy advantage. The differences in literacy development among learners

such as Learner A and Learner B, is a result of contextual differences.

If young learners do not achieve grade-appropriate and adequate literacy skills in earlier grades, their progression into higher academic grades merely compounds the literacy problem, and progressively compromises reading comprehension. To this extent, if the steps preceding second language (L2) reading comprehension are adequately attained, L2 reading comprehension will be relatively easier to attain. In this context, low levels of L2 reading comprehension in grade four become a process, rather than an event. The factors that play a significant role in determining the success or failure of reading comprehension are predominantly premised upon emergent literacy and how such emergence is addressed and managed. One such factor is one of the CELM's component, language development, which is moulded, at least in part, by the character of the environment in which it is practised.

The linguistic character of an environment

Language is an inherent concept of literacy and as such, the context in which language is acquired, learned, practised, and used as a communication tool, is relevant in the literacy discussion. Specifically, the context in which language is used is relevant because it offers an insight into the speaker or the learner of the language. The linguistic character of an environment is in constant change, at times subtly, at times blatantly, largely because of different users, monolinguals, bilinguals, and multilinguals, from various backgrounds (Ravid & Tolchinsky 2002). Languages come in different variations that are often mirrored in community's sociological patterns. For instance, one might find a version of English being spoken by members of the working class different from a version spoken by members of the upper middle-class (Ravid & Tolchinsky 2002). Other language variations include 'ethnic' and 'dialectal' variations. An example of an ethnic variation is 'Black English', which was formulated from the original version of the English language and converted into a version that can be representative and take the identity of Black people in the United States (US) (Ravid & Tolchinsky 2002; Dillard, 2010). This new formulation is likely to have resulted

from strong feelings of dissociation with the original version, and from the language's original speakers (Braine, 2012). The dialectal variation refers to the differences within the language that are phonological, morphological, and syntactical in nature (Ravid & Tolchinsky 2002). These dialectal differences are typically observed in people who speak the same language and reside in the same country, but in different regions (Doyle, 2014; Ruch, 2018). Given all these factors, it is appropriate that language should be understood from the perception of a speaker, rather than holding a conventional, rigid view of the language. Understanding the speaker's perception acknowledges that the speaker expresses their own linguistic character, which is in turn influenced by their environment.

The relationship between the linguistic character and context presents fascinating dynamics in contexts that are characterised by diversity. In contexts partly characterised by multilingualism, such as in SA, the choice of a language of learning and teaching (LoLT), has raised thought-provoking and challenging questions. One of these questions is the value and the significance of other official languages in relation to academic pursuits. This is a matter on which the debate is ongoing (Zimmerman, 2014; Howie et al., 2017). Even though English is the home language of eight-point one percent (8.1%) of the population (Statistics SA, 2019), it holds immense economic power, and this economic leverage can be accessed through the acquisition of adequate academic English proficiency, which includes literacy. Academic English literacy can be accessed predominantly through formal academic pursuits, progression, and success (Bharuthram, 2012). English is the predominant Language of Learning and Teaching (LoLT) for most learners, with some exceptions, a decision which has a historical colonial legacy (Moonsamy & Carolus, 2019). For EFLs, English is the predominant LoLT throughout their schooling, whereas for ESLs who are in schools which use learners' ethnic languages as LoLT, English is used as LoLT from grade four upwards (Zimmerman, 2014; Howie et al., 2017; Rule, 2017).

English as Language of Learning and Teaching (LoLT)

The decision to start the use of English as LoLT in grade four for ESLs, is premised,

at least in part, on the argument that learning in one's native language at the start of formal schooling, offers cognitive and subsequent academic benefits (Peters, 1974; Marjorie, 1982; DBE, 1998). On the one hand, the delayed introduction of English as LoLT for ESLs is said to support the building of a solid L1 literacy foundation which should be used as a foundation for later L2 learning. This approach has been credited as instrumental in supporting young learners' cognitive development (Dewey et al., 2015; Wijnand, 2021). On the other hand, this approach presents challenges relating to vast differences in English proficiency and literacy levels as well as reading outcomes among young learners (Manten et al., 2020). It is these differences that contribute towards varying levels of reading performance outcomes. In SA, this was demonstrated in the PIRLS outcomes for three consecutive literacy assessments, in 2006, 2011 and 2016, in which ESLs performed poorly compared to their EFL counterparts (Howie et al., 2017; Rule, 2017; Moonsamy & Carolus, 2019).

The role of language in multi-diverse contexts, such as that of SA, is such that each context determines the language that is spoken by learners (Mesthrie, 2002). To elaborate, in school or classrooms, children could be encouraged to communicate in English, whereas outside of school premises they could communicate in Setswana, Afrikaans or IsiZulu, or in some or in all these languages. Due to the multi-ethnic and multilingual character of families and certain neighbourhoods in SA, particularly in the Gauteng Province, where the present research project was carried out, it is common for many young children to grow up speaking at least two of the eleven official languages (The South African Constitution, 1998; Mesthrie & Rajend, 2002; Seabi et al., 2012; McBride, 2019). This practice is similarly featured in other parts of the world (Thompson, 2014; Jee, 2015; Piper et al., 2016; Thompson & Khawaja, 2016). Most of the ESL learners who engage with English within the school premises, engaged with it inside the classroom, because outside the classroom, English could be neither mandatory nor preferred (Zimmerman, 2014). Such limited opportunities and, arguably, interest and lack in proactive use of English, further compromise English literacy acquisition for the ESLs (Branum-Martin et al., 2010). The lack of interest in the use

of English outside of the classroom could be associated with the lack of association with English language and the desire to maintain one's sense of identity (Anyiendah et al., 2019).

In addition to ESLs late formal introduction to English as LoLT, other factors ESLs must contend with include their perception of learning English language as a threat to their sense of identity and culture (Kulo et al., 2020a). This threat is based on learners' belief that by learning English they slowly lose a sense of themselves, their culture, and their identity, as they accommodate their growing English knowledge, vocabulary, and way of life (Reyes & Ervin-Tripp, 2010; Vehabovic & Paul, 2018; Rante et al., 2020). Secondly, ESLs lack an association with the English language. Studies have demonstrated that one of the factors that make it difficult to acquire L2 is the lack of association with a target language (Anyiendah et al., 2019; Kulo et al., 2020b). This lack of association can contribute to a lack of interest in the target language, thus limiting acquisition and progression of ESL's English language development and subsequently English literacy acquisition and proficiency.

If learners can associate with learning English, it is more likely that they would willing to learn English and thus an opportunity to improve their English literacy. All these factors contribute towards our understanding of the relationship between the linguistic character and context that are inherent in CELM. Further, the linguistic character of diverse contexts has nuances of hierarchical significance, and for SA, English has the highest ranking (Mesthrie & Rajend, 2002; Bharuthram, 2012; Edmondson, 2019; McBride, 2019). These are the contextual factors that are inherent and fundamental in understanding CELM. Context plays an important role by way of presenting opportunities and situations for linguistic expression. These situations can potentially trigger reading anxiety for some learners.

Pekrun's Expectancy Value Theory of Anxiety (EVTA)

The evolution of the theory

The discussion of reading anxiety will be framed using the EVTA, which was initially proposed by Vroom (1964) as a motivational theory. The theory's distinguishing feature is its

focus on cognitive precursors that influence motivation (Studer & Knecht, 2016). Vroom argued that the two factors that determine motivation are expectancy, the likelihood that a desired outcome can be attained, and value, the value that is attached to the desired outcome. In short, motivation = expectancy X value (Parijat, & Bagga, 2014). Two decades later, Eccles and colleagues (1983) extended Vroom's theory, by including the argument that expectancy and value have a direct influence on motivation, meaning there is a direct relationship between these variables. They additionally argued that the influence of expectancy and value is not on performance alone, it also includes an individual's persistence and choices made relating to the desired outcome (Studer & Knetch, 2016). Pekrun (2019) progressed expectancy theory by applying it in the anxiety domain, by postulating that there are broadly three predominant factors that give rise to anxiety, cognitive mediation, genetics, and habits. The cognitive mediation resulting in anxiety, pertinent to the present research project, Pekrun contends, is not merely the presentation of an anxiety-threatening situation that triggers anxiety. Rather, the outcome of anxiety is a result of a cognitive appraisal of such a situation (Pekrun, 2019).

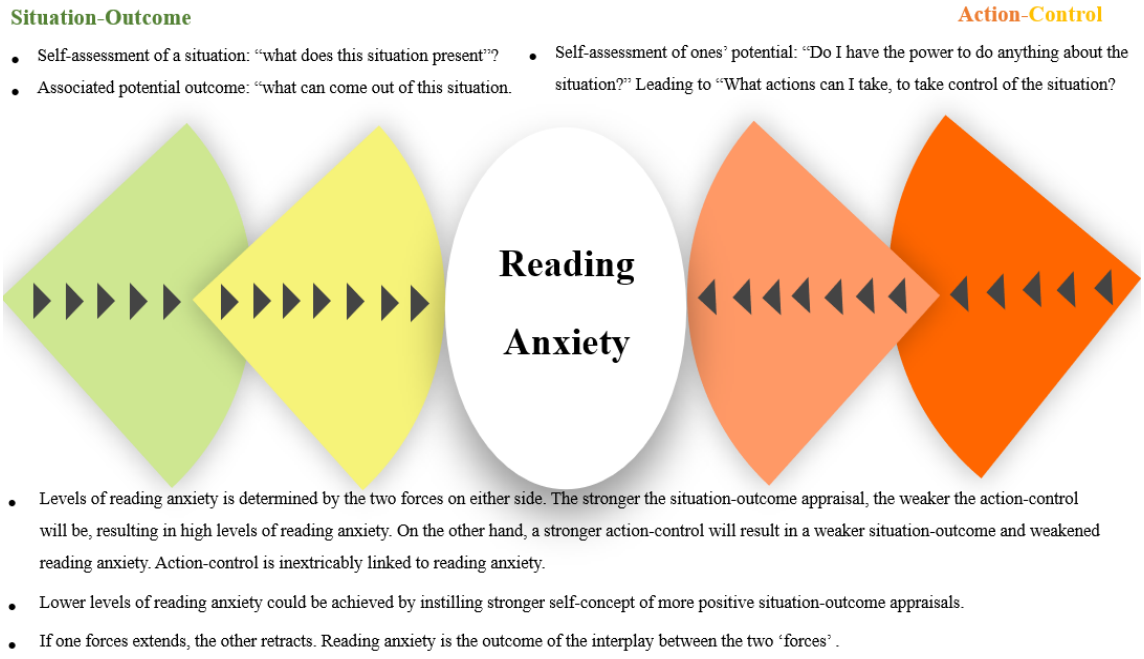
Expectancy Value Theory Anxiety (EVTA) combines situation-outcome expectancies, which is the appraisals of situations as either threatening or not, with action-control expectancies, which is the self-appraisal of one's ability to initiate and carry out an effective solution (Pappamihiel, 2002; Howley & Rosé, 2018). An illustration of simplified situation-outcome and action-control forces on either side is indicated in Figure 3, created by the author. Essentially, the person assesses the situation they are in, and its associated potential outcomes, together with assessing the potential actions they can take, to take control of the situation. Those who are prone to anxiety are likely to lack the ability to appropriately appraise situations, and this lacking could potentially result in situations being appraised as threatening, even though they might not be. This lacking also compromises learners' self-concept, which plays a significant role relating to achievement of academic tasks (Pappamihiel, 2002; Wigfield & Cambira, 2010).

In the context of the current research project, the academic environment is a classical 'situational' context. As such, it is its situational nature that can potentially trigger situation-specific anxiety, reading anxiety. Therefore, anxiety could potentially be triggered by one or both of the following scenarios. (a) The presence of specific factors (Ueki & Tkeuchi, 2012; Galante, 2018), such as a non-English learner reading and answering questions as homework, in English; Reading in a second language (L2) and the presence of classmates. (b) When a person appraises specific situations as anxiety producing (Maloney et al., 2014; Fakka et al., 2022). Additionally, situational anxiety is associated with a feeling of inadequacy, which can also be understood as a self-concept, and the self-concept is strongly associated with academic achievement (Ofan et al., 2014; Fakka et al., 2022). This logic is in line with the fifth hypothesis of the current research project, the relationship between self-concept and reading anxiety. L2 learning environments are by nature, situational, and as such, can potentially produce reading anxiety which could compromise learning of L2.

The L2 learning difficulties are associated with, among other factors, anxiety over expectations to read English aloud in class, fear of a negative evaluation by both the teacher and classmates, test or assessment anxiety, communication apprehension as well as identity and cultural factors. Identity and cultural factors relate to the internal conflict within the learner, between the desire to learn L2 and the fear or discomfort that by learning L2 the learner will lose part of their identity, as they accommodate L2 in their linguistic character (Reyes & Tripp, 2010; Kulo et al., 2020b). All these factors can negatively impact self-concept and contribute to the L2 learning environment being perceived as threatening and thus undesirable (Cohen & Horowitz, 2002; Dörnyei, 2008; Fakka et al., 2022).

Figure 3

Pekrun's Expectancy Value Theory of Anxiety



The situation becomes more challenging for anxious learners as they are prone to appraise situations negatively (Galante, 2018). Anxious learners are not as well equipped to automate their cognitive systems that are necessary for cognitive academic performance, relative to their non-anxious counterparts (Pappamihiel, 2002). Not being well equipped in this regard is an indication of the challenge with cognitive resource allocation, which is predominantly due to the proximity of brain mechanisms for learning, the hippocampus, relative to the brain mechanism that processes anxiety, the amygdala (Ward, 2015; Kalat, 2017). A second language learning environment and efforts to increase L2 proficiency is one such situation that can potentially trigger reading anxiety. Learning in a second language is an anxiety-inducing environment and frame of mind (Huang, 2012; Rajab et al., 2012; Zhao et al., 2013; Ismail, 2015). Based on the low percentage of native English speakers in SA, eight-point one percent (8.1%), is more likely that there are higher numbers of non-native English speakers in the grade four population. The implication thereof is that the remainder

of the learners (91.9%) who do not have English as their home language, are likely to experience reading anxiety when learning in English.

Chapter overview

Theoretical frameworks are meant to offer a structure, a scaffolding aimed to anchor and offer the reader context within which to understand a research project (Babbie, 2020). CELM has achieved this objective by outlining the contextual landscape that informs young children's emergent literacy. This is important for making a case for the inclusion of the environment together with the actual learned literacy skills when children's emerging literacy skills are investigated and debated. The relevance of the five CELM for the present research project was on two levels, the role and the significance of each element, as well as the role of and the interaction of learners with their environment.

Language development is important for various functions including its expressive value as children learn the rules of language expression for various contexts and how these rules mould their linguistic characters. Phonological awareness underlines the importance of sounds manipulation.

Lexical restructuring highlights the necessary skills of managing a growing vocabulary as well as the reduction of phonemic units of words. Print awareness emphasizes the significance of the print principles and their purpose in modern life as well as the age at which writing emerges. This brings to the fore a developmental shift which results in an understanding of writing's main purpose. All the elements articulate the skills that young children must develop in their literacy acquisition process and subsequently, linguistic growth, which supports reading comprehension. CELM is helpful to understand that literacy acquisition occurs within context, rather than in isolation, thus highlighting the importance of contextual influences. Further, CELM is cognisant of the environmental factors that have a significant impact on literacy acquisition, relative to other literacy theories that only focus on literacy itself, as though literacy occurs in a vacuum. To this extent, CELM presents the idea that even though literacy acquisition is one concept, it is nurtured and influenced by external

factors that are environmental, cultural, and demographic in nature. For multi-diverse contexts, such as SA, CELM is helpful in accommodating diversity within the research context of diverse groups of learners. The suitability of CELM as a theoretical foundation for the present research project is in part, premised on the non-homogeneous nature of the chosen sample.

Expectancy Value Theory of Anxiety (EVTA) is appropriate for a context in which the anxiety is triggered by the person's own cognitive assessment of two factors, the situation they are in, and its relationship to their own capacity to manage the situation effectively (Pappamihiel, 2002). In the context of reading anxiety, as present herein, the EVTA is appropriate because reading anxiety is a result of cognitive mediation and is situation specific. As such, when learners are in a situation in which they are expected to read, they would assess the situation they are in, relative to whether they can effectively manage the situation, such as achieving adequate reading with comprehension. Adequate reading comprehension is likely to result in reduced reading anxiety. In addition, the level of anxiety experienced would be determined by whether a learner is anxiety-prone or not. Anxiety-prone learners are more likely to appraise situations as anxiety-producing, whereas non-anxiety-prone learners are likely not to. L2 learning environment is one such potentially anxiety-triggering situation. In addition, independent of the anxiety, is the perception of learning L2 as threatening to learner's sense of identity. The inability to appropriately appraise situations, which increases the likelihood of an anxiety-trigger, as well as the perception of L2 learning as a threat, both compromise learner's self-concept. This compromise is more likely to result in a 'repeat cycle' of being anxiety-prone, failing to appropriately appraise the situation, which is likely to result in anxiety being triggered, which could result in viewing the situation as threatening and having a compromised self-concept. The cycle then continuously repeats itself. Learners who are trapped in this cycle will find it difficult to pay attention, allocate adequate cognitive resources to manage their academic demands and attain academic success.

Chapter 3: Literature Review

In this chapter the extensive literature on poor reading outcomes and reading anxiety, globally and locally in South Africa is reviewed. First, the model of reading to be used, the dual-route model is reviewed. Thereafter, the chapter briefly outlines reading expectations and outcomes in South Africa and in other LMICs. Thereafter it explores the relationship between reading anxiety and reading comprehension and gives the outlook on the South African context. A section on reading anxiety overview details the description, the sources as well as the stigma associated with this emotional disorder. Next, ecological, and psychological factors are discussed in terms of their hypothesised relationship to reading anxiety. The discussion proceeds to explore the cognitive functioning of young learners. This section will briefly discuss the foundational elements of cognitive functioning, including, neurological development, early cognitive development, developmental theories, and learners' cognitive development, among others.

The next section, language overview, highlights the developmental phases of language acquisition and illustrate the crucial role of language in the process of attaining reading comprehension. In addition, the linguistic nature of the three language groups will be briefly explored. The section on reading overview, will outline the problem of reading globally and locally, and the measures taken to address the reading problem. Thereafter, the section on reading as an aspect of cognition explores reading from a cognitive perspective and argues that reading should be viewed within the context of cognitive ability, rather than as an isolated occurrence. This section further explores the acquisition of the reading skill as well as reading in English as a second language. The latter, presents the challenges faced by ESLs when learning English and learning in English.

Model of reading applied

Whilst the present research project aims to investigate the impact of ecological and psychological factors on reading anxiety, it aims to do this investigation within the context of a relatively holistic approach. This approach seeks to offer the cognitive context within which

reading occurs. In line with this approach, this section presents and briefly outlines the reading model that can be used to understand ‘reading’, from a cognitive perspective.

The reading model used to underpin the discussion in this section is the dual-route model of reading. The model was initially proposed by Marshall and Newcombe (1973) and its prominent feature is the mechanism used by the brain to process and understand text (Ziegler et al., 2008; Coltheart & Adelman, 2012). Key features of this model are, (1) a semantically based reading route in which visual words can access semantics, directly. It is used to read words that have meaning, known words, and as a result, it is a much faster route applied by readers. Essentially, it is a process of recalling words from memory, as triggered by text that is being read. The direct semantic access route is generally considered to work faster when processing reading, because it processes individual words holistically . (2) A phonologically based reading route that uses known regularities between spelling patterns and phonological patterns to achieve reading. This route uses letter shapes, by comparing the letter shape that is being read, with the stored lexical representation [memory] in the brain. Thereafter, the route composes and then reads each word aloud. This is a longer process than the semantically based reading (Levy et al, 2009; Purcell et al., 2017). To simplify the understanding of these ‘routes’, they can be understood in the same way as one understands alternative traveling routes, from one place to the next. The brain determines the best route to use, depending on the brain’s assessment of the reading task, the text.

For the present research project, when learners’ reading anxiety is measured, it will be theorised that they use one of the two reading routes, in their regular reading tasks. The one they choose to use will depend on, amongst other things, the word frequency and the word familiarity (Coltheart & Adelman, 2012; Ward, 2015). With regards to the investigation of the impact of reading anxiety on reading performance, the dual-route model, specifically the ‘semantically based reading route’ feature, learners’ reading of known words is likely to result either low or no reading anxiety, whereas the reading of less familiar words,

specifically using a ‘phonologically-based route’ is likely to result in the presence of or increased reading anxiety. The former, is likely to be used by EFLs whereas the latter, by ESLs, in line with the present research project’s overall second argument, as stated below, that ESLs are more likely to experience reading anxiety.

Reading expectations and outcomes overview

“Every [South African] child should be able to read for meaning by age ten” proclaimed South African president Cyril Ramaphosa (2019). The persistence of poor reading outcomes in developing countries, relative to their counterparts in developed countries, have consistently been reported in countries such as Chile, in South America, Georgia in Eastern Europe, Azerbaijan in central Europe, Iran, in the Middle East, Egypt, in North Africa, Morocco in North-West Africa and in South Africa (SA) (PIRLS, 2006; PIRLS, 2011; PIRLS, 2016). Based on these persistent poor reading outcomes in developing countries, the case for the inclusion of an ecological and a psychological approach in the investigation of causal factors, is even more compelling. The present research argues that ecological and psychological factors play a significant role in reading outcomes (Chiu et al., 2011). With respect to academic outcomes, there are broadly two schools of thought. One argues that academic responsibilities and the associated outcomes are largely the responsibility of the school and school administrators (Robinson, 2009). The other, argues that parents have a greater role in academic outcomes (Bharuthram, 2012; Zimmerman, 2014; Flanagan, 2020).

Then the question becomes, can these two positions be reconciled? Notably, in SA such contestations are nothing new, however, they have been highlighted in part by the new democratic dispensation’s education policies (Department of Basic Education (DBE), 2006). These academic contestations have in addition been put in the spotlight because of repeatedly poor international reading assessment outcomes by grade fours. The present research project’s investigation of ecological and psychological factors, essentially the school environment as well as the home and the personal aspects affecting learners’ reading

outcomes, is an indication that the school, learners, and their parents have a significant contribution to make, in efforts to eliminate the schism between the two positions.

The outcome of the present research project will shed light into whether the ecological and / or psychological factors can potentially impact the attainment of the goal of 'reading for meaning by the age of ten'. To this extent, the present research project argues that ecological and psychological factors play a statistically significant role in the levels of reading anxiety. In addition, the two non-English groups will present with relatively higher reading anxiety levels relative to their English counterparts. The 2nd part of the overall argument is based on the understanding that EFLs' early exposure and proximity to the English language offers EFLs an advantage on English reading comprehension, and not for ESLs (Miley & Farmer, 2017). Therefore, having an advantage in reading comprehension, significantly reduces the potential for high reading anxiety.

A strong relationship between high reading anxiety and low reading comprehension has been well established (Ghonsooly & Elahi, 2010; Capan & Karaca, 2012; Zoghi & Alivandivafa, 2014; Sparks et al., 2018). However, more research is required to understand the role of the different contextual (ecological) and psychological factors that influence reading anxiety (Jalongo & Hirsch, 2010; Tsai, 2012; Mohammadpur & Ghafournia, 2015; Baki, 2017). Understanding these dynamics should help to further explore the type, nature and extent of appropriate interventions required to reduce reading anxiety, which would invariably increase reading comprehension. Reading comprehension is the result of complex multiple brain, neurological and cognitive, processes that identify letter distinctions quickly enough to maintain text flow and fluency (Tunmer & Hoover, 2017; Nevills & Wolfe, 2009). Attaining reading comprehension requires three broad processing skills, the ability to decode the information, the ability to connect information being read with what is already known and the ability to think more deeply about the information being read (Kočiský et al., 2018; Zuilkowski et al., 2019). The persistent low reading comprehension levels in LMICs, especially in SA could, be indicative of lacking in these required skills.

The South African context

Prior to the adoption of a democratic government in SA, access to education and all other disciplines, including economics, residential settlements, and healthcare, was accorded along racial lines, and was regulated by government policy (Delius, 2021). All Blacks received education that was inferior to that received by the White population. Particularly, the Black population received a concentrated dose of sub-standard education. This sub-standard education was labelled 'Bantu education' and was primarily aimed at addressing the needs of the economy, by limiting Black people's economic participation, which would restrict Blacks to inferior education and low-status work opportunities, as well as continuing to cement racism in education (Christie, 2021). The apartheid government's policy was further entrenched in the great disparity in their education spent, which was evidenced by the unequal fiscal allocation. Their allocation saw White schools receiving a substantially larger allocation at the expense of other races (see appendix A) (Kathard et al., 2011; Christie, 2021).

Prior to 1994, SA had four provinces and 'homelands' and each of the provinces taught in the ethnic language which was dominant in their respective provinces (Worden, 2011). After the landmark democratisation in 1994, the government policies were immediately changed to offer equal access and the same education to all racial groups. However, the education disparities have largely remained unchanged, owing at least in part, to the quality of education as well as the quality of teaching methods and teaching staff (Donohue & Bornman, 2014). While the democratic government shares the responsibility for the persistence of poor reading outcomes, racially discriminatory policies of the earlier decades planted the seed. Recurring poor reading outcomes have born witness to the persistent disparities. Black schools have consistently produced the poorest reading outcomes compared with their predominantly White school counterparts (Moonsamy et al., 2017). Because reading is an aspect of cognition, poor reading outcomes could be

interpreted as either an indication of poor cognitive skills and / or, they are likely to be contributory factor in weak cognitive skills.

The combination of learners from culturally, racially, economically, and specifically linguistically diverse backgrounds, was thrust upon multiracial schools, which had the responsibility of dealing with and managing the concept of multilingualism. This was the case for schools in affluent areas, as learners migrated from Black, under-resourced and poorly governed schools (Lekgotlo, 2014). This meant that learners who spoke eleven languages had to be accommodated and had to adjust to English medium schools and these learners were not linguistically and literacy as well equipped as their English counterparts (Moonsamy et al., 2017). Notwithstanding the persistent social and economic inequalities learners come from, this integration gave learners an opportunity to grow, strengthen and nurture their cognitive skills at the same level.

By and large, the integrated learners in the affluent, English medium schools have adjusted, as evidenced by final schools' examination outcomes through the years. However, learners in the less affluent and less developed schools remain plagued by poor reading performances (Ramashala, 2012; Swart & Becker, 2014; PIRLS, 2011; PIRLS, 2016). , Resulting from the integration from racially and provincially demarcated systems, including educational systems, to an all-inclusive non-racial system, was the emergence of the ‘new South Africa’. Emanating from the destruction of previously racially and provincially discriminatory policies, the integration of systems led to the characterisation of the young democracy, as a nation of diversity, termed the ‘rainbow nation’ (Hartley, 2014; Buga, 2015). While integration was the initial phase, the work that remains is to offer quality education to all learners, especially adequate literacy and reading skills. However, persistent poor reading outcomes indicate that the ambition to achieve adequate reading skills remains unattainable and elusive for many learners (Moonsamy & Carolus, 2019).

Reading Anxiety overview

Reading anxiety is a sub-type of generalised anxiety and shares two defining

characteristics with generalised anxiety, namely, its internal and silent nature (Jalongo & Hirsch, 2010). These characteristics make it rather difficult to identify, diagnose and treat (Watts et al., 2013). Reading anxiety is further characterised by feelings of trepidation, worry, unease, avoidance of eye contact and poor fluency, all of which are reading task related (Zin, 2010; Rajab et al., 2012; Mikami, 2019), and feelings of frustration resulting from experiencing reading difficulties (Capan & Karaca, 2012). Reading anxiety is associated with reading-related activities such as preparation for reading, the actual reading of text and any other discomforting expectations of a reader relating to the text he or she reads (Zin, 2010; Capan & Karaca, 2012; Mikami, 2019). By its very nature reading anxiety is situational, as it arises only when reading-related activities are imminent (Ghonsooly & Elahi, 2010; Capan & Karaca, 2012; Mikami, 2019). Reading anxiety is a typical situational anxiety. Situational anxiety is a sub-type of anxiety that only occurs in response to a specific situation (Mardiyan et al., 2017; Artishcheva, 2019), and shares most of the characteristics as generalised anxiety (Cherevichko et al., 2021).

In order to better understand reading anxiety, it is important to consider its additional sources, which include unfamiliarity with the topic being read, unfamiliarity with the words used in the text and constantly worrying about the reading outcome (Rajab et al., 2012), previous negative reading experiences (Ramirez et al., 2019), individual personality traits, learners' inadequate management of their affective factors and ineffective use of reading strategies, as well as inadequate target linguistic acquisition (Zin & Rafik-Galea, 2010). Notably, research has shown that not all languages attract the same level of reading anxiety. Some languages elicit higher levels of reading anxiety than others (Capan & Karaca, 2012). These differences between the reading anxiety level and the different languages could be related to 'rhetorical narratives' and 'cultural topics', which were identified by Mohammadpur and Ghafournia (2015, p. 212). These are the rhetoric and narratives people adopt about other cultures, which primarily inform and influence people's behaviour towards other cultures and their associated languages. Such rhetoric and narratives are inherent in every

culture (Lamont & Small, 2010; Reyes et al., 2020). Based on the culture's influence on the totality of lived experiences, such rhetoric and narratives will invariably impact reading outcomes, including reading anxiety. In the South African context, this difference in the reading anxiety levels could be true of the research project's participants. English could very well attract a higher level of reading anxiety because there is a lot riding on adequate acquisition of English reading comprehension, such as, interaction with a diverse group of people across the diverse spectrum, it offers confidence to engage for the purposes of work, academic pursuits, and play, it offers access to be engaged in the formal economy, as well as access to formal, and arguably, sustainable employment opportunities.

In terms of levels of reading anxiety and its associated sources, the question that follows is, what factors contribute to reading anxiety and do these factors affect the EFLs and ESLs differently? Some of the factors that have been conclusively linked to reading anxiety include poor decoding skills, inadequate vocabulary (semantics) and poor syntax (grammar/parsing), leading to poor reading comprehension (Moonsamy & Carolus, 2019). To narrow this question down, in the present research project, the effect of two broad factors were studied to investigate their potential influence on reading anxiety: ecological factors and psychological factors. Ecological factors refer to the context within which learning takes place, specifically, the interaction of the living organisms in an environment (Chiu et al., 2012). In the context of research in academia, ecological factors are commonly conceptualized as a socioeconomic status that influences individuals' everyday experiences and the school environment (Cross, 2017).

Ecological factors

The current research project's hypotheses will be presented in relation to ecological and psychological factors. The first ecological factor that will be investigated is socioeconomic status (SES). Socioeconomic status is a combination of elements such as income, occupation, and education level of parents, all of which are associated with material wealth, prestige and family and social status (Bendix, 2010; Farah, 2018). However, the

question of whether socioeconomic status is viewed and understood the same in all cultural groups remains disputed (Cowan et al., 2012; Yamamoto & Sonnenschein, 2016; Korous et al., 2018). The benefit of using SES is that it incorporates more elements than other psychological and social constructs do, individually (Bendix, 2010). The definition of socioeconomic status typically includes, the level and the amount of income, parental education and status determine availability of resources, educational opportunities and availability of goods and services. This means that those who have higher SES are likely to have more and can afford more. Conversely, those with low SES are likely to have less and afford less (Yamamoto & Sonnenschein, 2016; Korous, 2018). From an early childhood developmental perspective, families which have a low SES are likely to give birth to and raise children who have more health problems, are more prone to injury and are more likely to experience challenges with their cognition, behaviour, and intelligence than children from families with a high socioeconomic status (Bradley, 2016; Korous, 2018). The fact that forty percent of premature infants born into low SES families in the US had deficiencies in two areas of functioning by the time they reached their third birthday, illustrates the point that there is a greater likelihood of negative effects resulting from low SES (Yamamoto & Sonnenschein, 2016; Korous, 2018). In the context of the current research project, participants from low SES are likely to experience poor cognitive health, which would be manifested in high reading anxiety. as such, in line with the established relationship between reading comprehension and reading anxiety, high reading anxiety is indicative of low reading comprehension.

Evidence from the past nine decades is rather contradictory with respect to cognition and educational achievement. There is a view that the level of SES has a significant impact on cognition, whereas others argue against this view (Bradley, 2016). However, the association with intelligence has been irrefutable, albeit, that this link weakens with time (Yamamoto & Sonnenschein, 2016; Korous, 2018). Similarly, Farah (2018) argues that the association of SES with intelligence is lifelong. Further, SES has been used to predict

neurocognitive performance, which underlies reading achievements (Romeo et al., 2018). To this extent, Buckingham and colleagues (2013) argue that poor children become poor readers. Based on these findings, it is hypothesized that:

Hypothesis 1**:** Socioeconomic status has a negative relationship with reading anxiety.

The second ecological factor is the school environment, more specifically, the school climate. School climate encompasses the actual physical space and more importantly, learners' attitudes, their thoughts, and views about the actual physical space in school. An ideal school climate is one in which learners feel safe, welcomed, connected to each other and the school, wherein mutually beneficial relationships are created, maintained, and nurtured, and the teachers play an important positive role in learners' academic pursuits (Gizi, 2019; Moolman et al., 2020). School climate further incorporates the conditions that exist in a learning environment that either promote or hinder learning. Such conditions have a strong influence on learners' behaviour, academic results, and further academic development (Moolman et al., 2020). School climate plays an important role in learners' reading outcomes and overall academic achievements. Furthermore, school climate is an integral part of the learning process, such that a positive and favourable climate has a positive relationship with learning outcomes (Gizi, 2019; Moolman, et al., 2020).

Ogundokun (2011) argued that both school climate and anxiety, significantly predicted learning outcomes. Similarly, school climate was demonstrated to have a positive relationship with educational aspirations (Fadiji & Reddy, 2020). In line with Fadiji and Reddy's argument, Gizi (2019) found that anxiety is prevalent among young learners where the school climate was unfavourable. Based on the relationship already established between anxiety and learning outcomes several authors have argued that it is reasonable to conclude that an unfavourable school climate is more likely to negatively impact learning outcomes (Zi & Rafik-Galea, 2010; Capan & Karaca, 2012; Rajab et al., 2012; Tsai & Li, 2012; Mohammadpur & Ghafournia, 2015; Sparks et al., 2018), Put differently, learners in an unfavourable school climate are less likely to have educational aspirations. Such aspirations

are fundamental to learners' motivation to progress academically (Motivation To Learn, 2018). If learners do not have aspirations, and motivation to learn, they are less likely to achieve adequate literacy, and inadequate literacy levels, which can manifest as low reading comprehension. To this extent, the school climate scale will indicate whether participants of the present research project believe that their school climate is motivating, engaging, nurturing and a positive influence.

Based on this, it is hypothesised that:

Hypothesis 2**:** The perception of a positive school climate has a negative relationship with reading anxiety.

Psychological factors

Psychological factors are those factors that relate to the 'self' (Joinson et al., 2016). Psychological factors relating to reading anxiety are concerned with the way in which learners, in their individual capacity, understand, interpret, and process information that influences their mental state (Watts et al., 2013). The first psychological factor, gender, has been investigated extensively in different contexts in relation to psychological performance and the differences found were almost always significant (Tennant et al., 2015; Quadlin, 2018). The inclusion of gender as a psychological factor is aimed at addressing the third and fourth aims, relating to the differences in reading anxiety between girls and boys.

Gender is a psychological factor to the extent that leaners' gender is inherent in the way learners interpret and understand their own abilities about learning (Quadlin, 2018). Girls are typically encouraged towards 'softer' avenues that are less physically demanding, whereas boys are typically encouraged towards activities that incorporate physical exploration. Such ways of thinking are primarily due to the sociological adherence to 'feminine' and 'masculine' roles, for girls and boys, respectively (Beckett & Taylor, 2010; Mayeza, 2017; Raselekoane et al., 2017).

Reading falls precisely within these sociologically structured boundaries, whereby

girls are perceived to be better than boys at reading (Quadlin, 2018; Reilly et al., 2019; Lee, 2019). This 'gender stereo-typing' of activities, at least in part, accounts for the unfavourable reading outcomes in boys (Chiu et al., 2011; PIRLS, 2016). Whilst some studies have reported reading anxiety to be more prevalent among girls, than boys (Lien, 2011; Capan & Karaca, 2012; Park & French, 2013), others have reported conflicting results (McLean & Anderson, 2009; Reilly et al., 2019), and others have reported boys experiencing significantly higher levels of reading anxiety (Ramirez et al., 2019). In addition, other studies have reported that there are no significant differences in reading anxiety between the two genders (Capan & Karaca, 2013). Evidence suggests that the two genders have different sources of anxiety which they experience and report differently. Girls are more likely to experience anxiety from fear of physical harm and being self-conscious (Ginsberg, 2004), whereas the most likely sources of anxiety for boys include parental rearing practices and maternal depression (Feng et al., 2008). It is these differences that perpetuate the narrative that one gender experiences higher levels of anxiety than the other (Wharton, 2005; McLean & Anderson, 2009).

Evidence has demonstrated that both genders suffer equally from anxiety resulting from their internal biological activities such as rapid production and / or an increase of hormones, oestrogen for females and testosterone for males (Wharton, 2005; MacLean & Anderson, 2009), parental expectations, immature brain development, peer pressure and early developmental trajectories (Carter et al., 2010). However, a large body of evidence indicates that the likelihood of females experiencing anxiety is almost double that of males (Tabrizi & Yaacob, 2011; Euler et al., 2015) and this prevalence is reported to start as early as six years of age (Ginsberg, 2004). Similarly, a disproportionally larger sample of young females exhibit a greater level of anxiety than young males (Carter et al., 2010). The prevalence of reading anxiety is partly informed by the prevalence of generalised anxiety, due to their similarities. It is therefore hypothesised that:

Hypothesis 3**:** Female learners show significantly stronger reading anxiety than male

learners.

The second psychological factor refers to students' reading activities at home. This psychological factor will partly inform the first and second aim, 'establishing the impact of ecological and psychological factors on reading anxiety'. The level and the nature of support either received by or withheld from participants, will inform whether their reading anxiety is more influenced by ecological or psychological factors. Young children's perception of the support they get from their parents at home is an inherent part of this activity. Young children's reading interest and activities are initially and predominantly motivated and nurtured at home (Jalongo & Hirsch, 2010). Consequently, parents' reading activities, which refer to reading being part of the family's activities, play an important role. Family has the strongest influence on people's overall behaviour to the extent that children internalise the activities of their immediate surroundings and home, and thus these activities become normalised (Watts et al., 2013). The normalised activities speak to norms, values and the amount of effort parents put into reading activities. Chiu and colleagues (2011) demonstrated that parents' reading activities were strongly related to learner's reading proficiency. The more frequently parents endorsed reading at home, the higher their children's reading proficiencies were. Therefore, it is hypothesised that:

Hypothesis 4: Parental reading support at home has a negative relationship with reading anxiety.

The third psychological factor refers to students' reading time/frequency. The contribution of this psychological factor to the first and the second aims, is similar to that of second psychological factor. Existing evidence on the brain region that processes first language (L1) and the region that processes second language (L2), suggests that both are performed predominantly in one region, the temporal lobe (Ward, 2015; Kalat, 2017). To highlight this, evidence has demonstrated that increased reading in a Chinese language led to a decrease in English language reading anxiety (Chuang, 2014). The implication for the present research is that decreasing a young learner's reading anxiety can be achieved by

frequently exposing them to reading materials in any language that they can read. Therefore, it is hypothesised that:

Hypothesis 5: Reading time/frequency at home has a negative relationship with reading anxiety.

The fourth psychological factor is self-concept, which expresses itself in learners' reading self-concept. The contribution of this psychological factor to the first the second aims, is similar to that of third psychological factor. Self-concept refers to reading abilities and skills that are linked to the extent to which learners believe they have the necessary skills to achieve reading tasks (Watts et al., 2013; Csizér & Magid, 2014). Self-concept has been shown to be situational in nature. By virtue of its situational nature, therein lies the opportunity for self-concept to be fluid and such fluidity can result in contradictory self-concepts (Mercer, 2011). Self-concept can be both dynamic, as well as stable, both of which are informed predominantly by the environment in which the learner finds themselves (Mihaljević Djigunović & Nikolov, 2019).

This aspect speaks to the affective aspects of reading, in which little research has been done (Jalongo & Hirsch, 2010; Katzir, 2018). Students' reading self-concept is mediated by affective factors because reading achievement is influenced equally by both affective factors and cognitive factors (Jalongo & Hirsch, 2010). In addition, self-concept has a strong negative relationship with reading anxiety (Retelsdorf et al., 2014). Therefore, it is hypothesised that:

Hypothesis 6**:** A positive reading self-concept has a negative relationship with reading anxiety.

The fifth psychological factor is students' reading attitudes. The contribution of this psychological factor to the first the second aims, 'establishing the impact of ecological and psychological impact on reading anxiety', will determine whether young learners' attribute their own reading attitudes, with external dynamic, outside of their control, their ecological

factors, or learners believe that their reading attitudes are within their own domain of control. Reading attitudes describe learners' attitudes towards reading in general. Reading attitudes are primarily influenced by the two main categories of reading, reading for a specific goal, and reading for pleasure (Hirsch & Jalongo, 2010). Furthermore, reading attitudes are fundamentally about balancing the three psychological components, cognitive, emotional, and behavioural (Baki, 2017). Cognition relates to comprehending text, the emotional component speaks to whether there are feelings that the reader experiences, put differently, whether text evokes any emotions for the reader. Behaviour speaks to how the reader engages with reading material. Reading attitudes have been shown to influence reading anxiety. In addition, both reading attitudes and reading anxiety explain as much as 42% of reading habits (Baki, 2017). Therefore, it is hypothesised that:

Hypothesis 7**:** Positive reading attitudes have a negative relationship with reading anxiety.

The model of the precursors of reading skills, originally proposed by Fletcher et al. (2002), proposes that the two features that are within learners' control regarding the achievement of adequate reading comprehension, are reading attitudes and cognitive functioning (Conlon et al., 2006).

Cognitive functioning

Cognitive functioning is a higher order mental faculty that anchors various functions (elements), such as the use of memory, reasoning, problem solving, attention, language understanding and performance and reading (Conlon et al., 2006; Harvey, 2019). Cognition can be characterised in terms of its functions, brain regions, or level of processing (Harvey, 2019). In the present research project, cognition is conceptualised predominantly in terms of its function, reading, and reading comprehension, and, to a lesser extent, the level of processing, such as working memory, and the associated brain regions, such as the temporal lobe for language processing, the Visual Word Form Area (VWFA). At the bottom of the basic functioning - sensory input - reading requires the sense of sight, and at the top

end of the hierarchy it requires reasoning to interpret the text (Ward, 2015; Kalat, 2018, Harvey, 2019). Overarching all these, is executive functioning, which is responsible for the coordination of all these functions, levels, brain regions and structures (Harvey, 2019). Thus, the impairment of any of the functions, the levels of processing, brain regions and the hierarchal structures, will invariably compromise reading efforts, potentially contributing to reading anxiety.

The significance of addressing cognitive functioning is that by and large, behaviour, ability and the skill indicators that are present in early childhood, are good indicators of functioning in later adulthood (Ip et al., 2017). Such indicators include cognitive indicators (Pistell et al., 2010). The significance of cognition is that higher order mental processes, which are essential for survival in a literary functioning society, require adequately developed cognitive capabilities (Van der Fels et al., 2015). Table 1, created by the author, illustrates the foundational as well as the higher order cognitive skills that are required for the attainment of reading comprehension.

Table 1

A Simple View of Cognitive Foundation and Cognitive Functioning

Level of Functioning	Brain Region & Functioning	Functioning Evaluation		Outcome
Level 4: Cortex	Reading Function: * decoding * information integration * think deep about information	Language Comprehension		Reading Comprehension Skill
Level 3: Cognitive Structures	Cognitive Functions: * language * learning * attention/ concentration * executive functions	Coordination of various brain functions	At a broad level: * Phonological Skills * Print Awareness * Lexical Restructuring At a specific level: * language development * working memory * attention * visual recognition * short & long-term memory	Reading Skill
Level 2: Biological	Brain Regions/ Structures: * Temporal Lobe * Prefrontal cortex * Frontal Lobe	Ability to carry out reading-supporive tasks	* Planning, coordination, situaltional nalysis * Cerebrum functions?	Appropriate neurological and psychological assessments/ tests
Level 1: Foundational Core	Neurological Formations In Utero: * From stem cells to cognitive-specific neurons	MRI Scans	* In utero by scans, for specific gestational periods	Brain Scan Images illustrating neurological formations

*Note***.** The table shows the neurodevelopmental nature of reading, which offers an opportunity to better understand reading difficulties. If left unaddressed, neuro developmental challenges will remain and continue to compromise learners' learning efforts.

Neurological development

Brain development framework. In line with the present research project's efforts to offer the context within which reading comprehension should be understood, this section will

outline two dominant brain development theories, the protomap and the protocortex theories. These theories offer a conceptual framework within which to understand brain development, which is foundational for attainment of reading comprehension. Outlining these brain development theories, further gives foundation which will be the basis for addressing the aims of the present research project. These two brain development theories are both influential and opposing, the protomap and the protocortex, specifically address cortex development. As can be seen in Table 1, *'Simple View of Cognitive Foundation and Functioning'*, the cortex is the brain region that enables and supports reading comprehension (Han & Šestan, 2013; Antón-Bolaños et al., 2018).

On the one hand, protomap theory argues that the cortical layout is established in the prenatal developmental phases. During these developmental stages, it is the different levels in the molecular signals that determine each brain region's characteristics, which the neurons of that region will eventually embody (Gascon et al., 2016). To clarify, if the molecular signals resulted in the creation of temporal lobe characteristics, then the neurons of that brain region will follow suit, embody the characteristics of a temporal lobe, and become part of the temporal lobe. Notably, in their creation, such neurons are 'pre-determined' for a specific role, in a specific cortical area (Antón-Bolaños et al., 2018). On the other hand, the protocortex theory argues that the neurons in the cortex are created equal in terms of the level, the nature, and the extent of specialisation (Grossberg & Seitz, 2003; Han, 2013). Because of this 'equality in creation', the newly created neurons in one brain region can, theoretically, be interchanged or migrate to other cortical regions and perform as adequate as they would have, had they been created in that destination region (Ko et al., 2009; Han & Šestan, 2013; Ward, 2015; Antón-Bolaños et al., 2018; Xu et al., 2019). However, the migrated neurons would be functionally inferior to the neurons that are native to that brain region (Ward, 2015). To clarify, neurons created in the cortical frontal lobe can migrate into the critical temporal lobe and would subsequently respond to language stimuli. This is because language is localised in the temporal lobe (Ward, 2015).

What does this mean for cognitive skills? Both theories can be understood as complementary to each other. The emergence of cognition can result from the levels of molecular signals being deployed. It could also result from neurons that have migrated from other brain regions and the ones that were created and remained in their place of original creation. Thus, cognition can be understood as an outcome of either one or a combination of these theories. Within the context of investigating reading comprehension, as a sub-element of cognition, see Table 1, understanding the processes of appropriate brain development, which supports cognition, which in turn enables and supports reading comprehension, plays a crucial yet invisible role in our understanding of reading comprehension. To this extent, reading comprehension should be understood as the outcome of this underlying neurological process.

The neurological reading evolution. Reading was an invention necessitated by development of writing skills, as it became necessary to be able to read written texts. As such, the brain does not have a single and specific brain region dedicated to this relatively new neurological skill. To compensate for this, the brain evolved to draw the resources it required from its existing [localised] brain functions, which enabled the brain to adequately perform this newly invented skill (Coles, 2004; Ward, 2015). As such, the brain is unlikely to have formed a dedicated neural pathway for reading (Perfetti et al., 2007; Ward, 2015). However, when the brain is exposed to and undergoes repeated and regular reading experiences, it may eventually acquire dedicated neural structure for reading. This is known as ontogenetic development (Ward, 2015). Ontogenetic development is the creation of a dedicated neural pathway for a specific skill due to the repeated exposure of an individual to that specific skill (Ward, 2015; Krägeloh-Mann et al., 2017). This ontogenetic development is likely to become part of a person's genetic make-up, as a form of epigenetics which will be passed on through lineage. This will play a role in determining the offspring's abilities, skills, and aptitudes as a result of their parents' exposure (Wolf & Wade, 2009; Kubera et al., 2013; Sriganesh & Ponniah, 2018). The logic is that if a parent had acquired ontogenetic

development resulting from their reading experiences and the exposure to literacy materials, they are more likely to pass on such genes to their children, who could potentially have a neural basis for reading. This is a typical neurological evolutionary development (Cresswell & Teucher, 2011; Naumova et al., 2019). Essentially, children could have the potential to inherit the 'reading gene' from their parents. Within the context of reading comprehension, having acquired a gene that is responsible for the ontogenetic development, learners are more likely to read with ease and subsequently, are arguably more likely to achieve high reading comprehension. In line with this logical reasoning, the opposite is also true, 'not all brains are born equal'.

Early Cognitive Development

Foundations for later cognitive skills and functions are laid during the early childhood development period (Bruchhage et al., 2020). This period is predominantly characterised by early motor and language milestones for young children. The attainment of language milestones is crucial for later acquisition of reading comprehension skills.

Cognitive development. If cognitive developmental challenges are not adequately addressed in the early developmental phase, they could lead to weak cognitive skills. Weak cognitive skills are likely to compromise reading comprehension. Based on the already established relationship between reading comprehension and reading anxiety, a compromised reading comprehension would invariably increase reading anxiety (Capan & Karaca, 2012; Sparks et al., 2018). In addition, inadequately developed cognition typically persists well into teen years, adolescence, and adulthood. This persistence tends to impact academic activities, employment, family, social security, and other aspects of life (Schneider & Garcia-Rodenas, 2017). Initial phases of cognitive development have been observed in infants, as infants interact with their external environment through their sensory processing, starting with the sense of sight, as young as at four months old (Bornstein et al., 2006). Language development can be assessed as early as six months old, mental performance at eighteen months, and verbal competencies at twenty-four months (Bornstein et al., 2006). All

these skills are strong indications that the foundation for later adequate reading comprehension is laid in early developmental phases.

Developmental Theories

A cognitive theorist, Noam Chomsky, argued that cognition is a matter of 'nature', relative to 'nurture', the primary and underlying implication of which was, cognitive skills in humans occur naturally (Farrall, 2012; Costley & Nelson, 2013; Deák, 2014). Chomsky based his argument, at least in part, on the natural neurological development that anchors cognitive development. Neurological development forms part of the brain-based aspects of cognition, however. Chomsky excluded the rest of the cognitive aspects, including, functionality, such as reading, attention and processes, such as working memory, that require training for their development (Harvey, 2019). In addition, Chomsky redefined cognition as a multifaceted discipline that encompasses psychology, linguistics, and later added the discipline of anthropology together with the new fields of computer science and neuroscience (Farrall, 2012). The multifaceted nature of Chomsky's theory is validated in the current research project in that reading comprehension skill, processed in the neurological cortex, is premised on the reading skill, in the cognitive structures, which is in turn premised on psychological domain, which has foundations in the neurological structure, as indicated on Table 1. The theory's multifaceted nature is further validated in the inclusion of ecological and psychological elements in the investigation of reading comprehension. However, challenges to Chomsky's argument include the concept of ontogenetic development and epigenetics, and that reading, and the subsequent reading comprehension, are unnatural skills that require formal tuition.

In addition to Chomsky's argument of the 'natural cognitive' process, Piaget, another twentieth century influential developmental theorist, incorporated the 'environmental element' into his developmental theory (Farrall, 2012; Hanfstingl et al., 2019). Piaget emphasised that the successful progression from one cognitive stage to the next, depends upon both the child's basic mental functioning and the child's interaction with its environment, or its

experiences (Ward, 2015). Within the context of the current research project, ‘mental functioning’ is akin to the ‘psychological factors’, and the ‘child’s interaction with its environment’, to the ‘ecological factors’. As such, Piaget’s developmental theory represents the first and the second aims of the research project, ‘establish the impact of ecological and psychological factors on reading anxiety’. Piaget argued that children’s cognitive development, is more pronounced than their observed physical developments (McLeod, 2018). As young children grow, Piaget (1964) added, they progress from living in a reactionary state through their senses, to becoming thoughtful and proactive (Hanfstingl et al., 2019). Their thinking progressively becomes logical, coherent, organised, and flexible. It is in this progression, that cognitive development is embedded (McLeod, 2018; Hanfstingl et al., 2019;).

Piaget argued that young children’s developmental phases, from sensorimotor through to formal operational phase, earn them progressive cognitive points which results from their biological maturation and their experiences with the environment (McLeod, 2018; Hanfstingl et al., 2019;). These points become young children’s cognitive foundational building blocks (Sarama & Clements, 2009). For the purposes of the present research project, learners’ cognitive development was presumed to be at formal operational phase, primarily based on the participants’ age group, nine to eleven years old. As such, the cognitive developmental verification was not done because such a verification was outside of the scope of the research project. Therefore, in line with Piaget’s logic, the participants of this research project, nine to eleven-year old’s cognitive development is ripe for learning and more specifically, to achieve adequate reading comprehension. This cognitive readiness is partly informed by one of the characteristics of this phase, the use of logical reasoning, which is a necessary skill for reading comprehension.

Critique of Piaget’s developmental theories

Piaget’s theory of development has been challenged and this section will discuss four of these challenges.

Child-headed households (CHHs). The first, child-headed households (CHHs), a phenomenon that is prevalent across the African continent (Ayieko, 2003). A typical CHH is characterised by the absence of adult caregivers, often as a result of their death, and the eldest child assumes the role and the associated responsibilities of an adult to care for the younger members of the household, usually siblings. Child-headed households are largely attributed to AIDS-related deaths, armed conflict, poverty, and natural disasters (Phillips-Veeze, 2011). According to a tradition that has been passed down from generation to generation, looking after family members has been the responsibility of close or extended family (Lobi & Kheswa, 2017). However, the increase of economic hardship coupled with the reduction of family resources regarding finance, stock, manpower and the erosion of arable land formerly used for food production and economic activity, have seen extended families doing away with this long-held tradition. The erosion of strong family traditions has given birth to the phenomenon of CHHs (Meintjies et al., 2010; Van Breda, 2010). The unavailability of family support presents an opportunity for communal involvement to assist CHHs. The communal support would facilitate access to basic health, nutrition, shelter, and education to the children in need (Meintjies et al., 2010; Lobi & Kheswa, 2017). In the context of CHHs, communal support would be in line with another long-held tradition that is informed by the principles of: 'Umuntu, umuntu, ngabantu', loosely translated as 'I am, because you are' and 'A child in Africa is raised by the village'; 'Ubuntu', meaning 'showing humanness and treating others with dignity' (Ncube, 2010; Mabovula, 2011; Mugumbate, & Chereni, 2019). When a child has been thrust into adulthood overnight and his or her childhood has been disrupted, it is difficult to hold a view that such a child would continue to follow a lineal developmental cognitive trajectory. The lack of adult support and supervision in academic pursuit further compromises young learners' chances of academic success. If young learners cannot achieve adequate reading comprehension, it compounds the challenge of their overall academic success. To this extent, learners who do not achieve adequate reading comprehension at foundational phases, are likely to exhibit reading anxiety, which would in turn, likely result in poor reading outcomes.

Differences between the developed and developing countries. The second challenge is the evidence pointing to vast differences between the West or HICs, and LMICs, who are predominantly in the global south. By and large, the LMICs do not subscribe to HICs method of rearing children (Dasen & Mishra , 2013). Therefore, Piaget's cognitive developmental theory should theoretically only be applicable in the context in which it was conceptualised, in HICs. Further, research to validate similar cognitive developmental phases in the LMICs remains limited. This challenge is validated in the present research project in that the research was carried out in a culturally diverse environment, comprising of learners representing both Western and African dynamics in learners' respective home environments.

Assumptions by Piaget's cognitive developmental phases. The third challenge is directed towards Piaget's cognitive developmental phases. Brainerd (1978) posited that (1) the phases are arbitrary and circular, (2) the phases are presented as 'abstract descriptions of behaviour', (3) antecedent variables must be stated and measured separately. In a sense, the notion that behaviour can be categorised into neatly packed arbitrary boxes is at the core of this challenge. Behaviour is dynamic and as such, does not always adhere to preconceived expectations fixed to a developmental schedule (Babakr et al., 2019). In addition, Piaget offers the developmental phases without offering a way to independently verify that the children's observable behaviour is an outcome of the developmental phase they are going through (Lourenço, 2016).

Neurological basis for cognitive development. The fourth challenge is that the human cognitive development and cognitive maturation processes are premised on brain development, which itself is not time-based. Brain development is understood to have approximate periods of growth (Luby et al., 2013; Diamond & Whitington, 2015; Gilmore et al., 2018). For instance, neural pruning is estimated to occur from young toddlers to late teens (Cantlon et al., 2011; Conkbayir, 2021). Brain development is dependent on numerous internal and external biological, environmental, chemical, and nutritional factors (Uauy &

Dangour, 2006; Brito & Noble, 2014; Grandjean, 2015; Mughal et al., 2018). Atypical progression in terms of any of these factors will impact on brain development with a variety of potential consequences, therefore Piaget's association of specific developmental phases with age-specific developmental periods is problematic. Notably, addressing of neurological basis for cognitive development was not within the scope of the research project.

Lastly, Piaget's theory presupposes modularity, which is the idea that cognitive development unfolds across the brain systems simultaneously (Beckett & Taylor, 2010). In a sense, Piaget argues that when one function has developed, for example, the lack or development of reversibility, other brain systems, modules, or other functions associated with the same developmental phase, such as egocentrism, should theoretically also develop or fail to develop at a similar rate.

These challenges to Piaget's cognitive developmental theory suggest that cognitive development might not be as linear as Piaget presented it to be. Rather, their developmental trajectory appears to be contextually and neurologically dependent, at least in part. At times it is as linear as Piaget presented it to be and at other times, it is iterative. To this extent, Piaget's contribution to the investigation of reading comprehension among nine- to eleven-year-olds is such that, while it can serve as a valuable guide, it should be contextually centred. The contextually centred approach could be beneficial to distinguishing between ecological and psychological factors that impact reading anxiety.

The significance of cognitive skills

The acknowledgement of the significance of cognitive skills is on the rise, and with good reason (Keung & Ho, 2009; Welsh et al., 2010; Delgoshaei & Delavari, 2012; Van der Fels et al., 2015). This rise has played a crucial role in the identification of the factors that have a strong impact on cognitive development. This section will briefly outline two, households' economic status and nutrition. The former has been found to have a significant impact on cognitive development (Schady et al., 2014). The impact of the latter is such that children from wealthier households consistently attain better cognitive performance

outcomes, relative to their poorer counterparts (Schady et al., 2014). As demonstrated in the previous section, attainment of reading comprehension, is premised on the attainment of reading skill, which is in turn, premised on the cognitive structures. As such, households' economic status and nutrition have an indirect, yet significant impact on the attainment of reading comprehension. For the current research project, households' economic status = SES = equated to the school's quintile level. The schools' quintile level five, characterised as highly affluent and largely privately funded schools, is indicative of wealthier households and as such, more likely to produce better cognitive outcomes, higher reading comprehension levels. Within the context of the research project, households' economic status is categorised as an ecological factor. The second factor, nutrition, the impact of which is similar to the first. Adequate nutritional consumption is expected to offer children cognitive benefits, to increase the likelihood of reading comprehension attainment. However, further exploration of this factor was beyond the research project's scope.

Cognitive Development of the Learner

For effective learning to take place, there should be an acknowledgement of the criteria which [further] enable learning. This section highlights three of these. The first is the critical period (for learning), which is when the input from the environment is essential for learning; the second is a sensitive period (for learning), when the environmental input is important but not particularly crucial for learning to take place (Ward, 2015). In addition, familial imprinting refers to the young child's ability to identify his or her mother (Ward, 2015), which is fundamental for his or her survival. Within an academic context, it would be a young learner's ability to acquire literacy skills that are crucial for academic progression, or academic survival. Third, is obtaining foundational reading skills, memory, attention, processing, and sequencing (Tayob & Moonsamy, 2018). Memory is crucial for learning the new letters, sounds, word structure, formatting sentences and paragraphs and attention is the necessary discipline that is required to remain focused on the task at hand (Carolus & Moonsamy, 2019). Processing refers to how the new information, text, is processed in the

brain. By means of visual stimuli, that the input is processed in the occipital lobe (see Appendix B), that the working memory adequately processes the newly input information by temporarily keeping it and making the appropriate decision. Such decision would typically regard the next appropriate action to take, whether to store or to discard the new information (Ward, 2015). The next appropriate action is in part, informed by the sequence in which the new information is received. To this extent, it is important that the correct word sequences are learned during the initial reading efforts. Learning of the correct sequence that will enable successful reading, and adequate attainment of reading comprehension, is partly dependent on language development (Ardington et al., 2020).

Language Overview

Addressing the aspect of language within the context of investigation of reading comprehension offers two benefits. The first, language comprehension of the text is key to attaining reading comprehension. Second, it serves as a foundation to address the fifth aim, ‘establish whether home language plays a role reading anxiety outcomes between EFLs and ESLs, across the three language groups’ under investigation.

Language is one of the skills that make individuals distinctly human (Pinker, 2003; Tagarelli et al., 2011; Tagarelli et al., 2016). Language can be characterised as a communication tool. The mental skills that support this communication tool develop in infancy (Pillay et al., 2010). It is the formation and the stabilisation of these skills that will subsequently support the eventual emergence of initial words. The general and typical chronological language development phases are as follows. (1) Birth to six months: understanding of few words. (2) Up to one year: initial speech production attempts. (3) One to two years: significant vocabulary growth, which is a step towards the production of various word combinations. (3) Three to four years: increase in the mastery of grammar which enables the production of full sentences. These developmental phases complete the necessary foundational phases of language development, meaning that all the necessary tools required for language processing, production, and comprehension are in place for

further development, such as communication skills, vocabulary, sentence structures and articulation of language (Hoff, 2013). Based on this language developmental progress, the sample for the present research project is expected to have acquired adequate language skills to support reading comprehension, as demonstrated on Figure 2. Language is demonstrated through its four modalities, listening, reading, speaking, and writing (Moonsamy & Barnes, 2021). The present research project will focus on the reading modality. As depicted in figure 2, reading is preceded by literacy acquisition.

Literacy is closely related to language, which is the knowledge of reading and writing systems, meaning and various applications (Goswami, 2001; Hoff, 2013; Levy, 2016; Chow et al., 2017). Literacy is primarily influenced by changes in knowledge about language and understanding its different forms (Gipe, 2014; Morrow, 2015; Rhode, 2015; Manten et al., 2020). The initial opportunity to develop and nurture literacy skills for many young learners in developing countries, such as SA, is upon entering formal schooling (Kumar et al., 2012; PIRLS, 2016; Tayob & Moonsamy, 2018). Limited literacy attainment at the appropriate developmental phase plays a major role in reading comprehension outcomes because it is a precursor to reading comprehension. If literacy acquisition is compromised, so too will the reading comprehension (Manten et al., 2020).

Language is another element of cognition (Pinker, 2003; Dunn, 2016; Kalat, 2017; Harvey, 2019; Pinker, 2020). Language is both a skill and an ability. In the context of first language (L1), language is an ability, however, in the context of second language (L2), it is a learned skill. Neurologically, significant progress and refinement in the structure that supports and enables language abilities, the temporal region, is typically observed between the age of two and five. This has implications for higher cognitive functions as well as school readiness (Bruchhage et al., 2020). This further solidifies that nine-to-eleven-year-olds grade four learners have acquired the necessary language, literacy, and foundational academic preparedness. These skills position learners to acquire adequate grade-appropriate reading comprehension.

A primary requirement for successful reading comprehension is the understanding of the language of the text (Dewey et al., 2015; Khoso et al., 2018; Matusevych et al., 2018; Tayob & Moonsamy, 2018; Ortlieb & Schatz, 2020). Kotz (2009) argued that the critical period for learning L2 ends at the end of ones' puberty. Similarly, the evidence has shown that there is a sensitive period for a successful and efficient L2 acquisition of grammar (Ward, 2015). However, subsequent research has challenged the view of a limited language learning period by demonstrating that language can be learned in later years (Fromkin et al., 1974; Galupo, 2019). The ability to learn a new language in later years has been adequately demonstrated (Schlegel, 2012). However, the extent to which a new or L2 language can be learned continues to be debated. Evidence from L2 learning examinations has demonstrated that the older one becomes, the less acquisition one attains (Birdsong, 2006) and with less fluency (Dulay, 2019). For the participants of the present research project, it remains unclear whether and to what extent participants' age at which was learned English, as L2, played a role. Whilst the age at which adequate acquisition of learning remains under contestation, the role of the linguistic principle has achieved much agreement, within the L2 and cognitive disciplines (DelliCarpini, 2003; Tyler et al., 2010).

International cross-cultural research evidence has demonstrated that basic cognitive processes are as universal as are linguistic principles (Dasen & Mishra, 2013). This means that when one language, say L1, has been learnt, the learner will then use L1 linguistic principles when learning L2. Within the context of the current research project, learning English as L2, is arguably facilitated by the learners' either Nguni or Sotho-Tswana (L1) language groups' already acquired linguistic principle. South Africa, as a country characterised in part by its diversity, has multiple language and cultural groups, with eleven official languages (Delius, 2021). For the present research project, the language groups have been grouped into (1) English (2) Nguni, and (3) Sotho-Tswana. The grouping of these languages is motivated and informed by the multicultural and multilingual nature of the South African population. This is especially the case for the province in which the research project

was conducted, Gauteng.

Language Groups

One of the ways that language can be characterised is by its orthographic nature, whether it be transparent orthographic or opaque orthographic (Purcell et al., 2017; Ardington et al., 2020; Georgiou, 2021). Transparent orthographic languages are languages in which there is a regular correspondence between letters and the sounds that are associated with each (Ward, 2015; Georgiou, 2021). This correspondence is at a morpheme unit level (Finlayson, & Madiba, 2002; Crane, & Persohn, 2021). Put differently, the words sound the same way that they are spelt. At the other end of the scale are opaque orthographic languages. These are languages in which there is an irregular correspondence between letters and the sounds that are associated with each. Essentially, the words are not always read the way they are spelt (Tsang & Cheng, 2014). English is one such language (Babayigˇit, 2014**;** Ardington et al., 2020; Kulo et al., 2020a). The opaque orthographic nature of English is at the heart of learning and comprehending its text. EFLs are familiar with this aspect of English, whereas ESLs are not and as such, the different levels of familiarity could contribute towards differing levels in reading comprehension (Ardington et al., 2020).

English. English is an opaque orthographic language (Ward, 2015; Kulo et al., 2020b). This is particularly challenging for ESLs learning in English because of the structural and fundamental differences that exist among these three language groups that are a focus of the current research project, English, Nguni, and Sotho-Tswana (Ward, 2015). For the South African academic environment, English is a mandated and regulated academic ‘language of instruction’ or the Language of Learning and Teaching (LoLT) (Bharumthram, 2012). For the purposes of the present research project, the term LoLT will be used. For non-English learners, English is used as a LoLT from the fourth grade (Zimmerman, 2014; Howie et al., 2017; Rule, 2017). English as a home or first language is spoken by only eight-point one percent (8.1%) of the South Africans (see Appendix C) (Statistics S A, 2019).

Nguni and Sotho-Tswana. Nguni and Sotho-Tswana language groups share, to a large extent, similarities in their transparent orthographic nature (Finlayson, & Madiba, 2002; Zerbian, 2009; Ardington et al., 2020). The individual groups themselves were individually grouped, either organically, or systematically, in line with their similarities in culture, social organisations, ceremonies, language and spiritual beliefs (Downing & Rialland, 2016; Bryan, 2017). These two language groups represent 71.6% of the South African language speakers. See Appendix C (Statistics SA, 2019).

Nguni. The Nguni language group is a collection of four South African ethnic language sub-groups, IsiZulu, IsiXhosa, SiSwati and IsiNdebele (Finlayson & Madiba, 2002; Crane & Pershon, 2021). These language groups can be characterised linguistically as agglutinating, transparent orthographic and conjunctive (Ardington et al., 2020). Agglutinating is the combination of the prefix and suffix of a word, meaning the word is not divided up into its phonemic units (Van Rooy & Pretorius, 2013; Pretorius et al., 2020). Their word structure enables and supports the achievement of early reading accuracy because the complete word is read in its entirety, as opposed to initially learning the parts of the separated word. The absence of agglutination could potentially fast track reading comprehension achievement (Ardington et al., 2020). On the other hand, this agglutinating could potentially compromise the attainment of decoding skills. One of the building blocks of English reading comprehension is ‘decoding’, which requires individual words to be segmented into their phonemic units. This separation enables and supports understanding of the word structure and strengthens word structure in the memory. Such word separation cannot be achieved where agglutination is present and this rigidity in individual words hinders the development of fundamental decoding skills (Nakamoto et al., 2007; Silverman et al., 2020). Their second characteristic, transparent orthographic, is evident by way of letter-sound reading correspondence. All letters correspond with the sounds of the letters (Kim & Piper, 2019; Furnes et al., 2019; Ardington et al., 2020). The Nguni language groups is spoken by 44.5% of South African population.

Sotho-Tswana. The Sotho-Tswana language group is a collection of three South African ethnic languages, Sesotho, Setswana, and Sepedi (Zerbian, 2009; Bryan, 2017; Huffman, 2020). Linguistically, this language group can be characterised as being agglutinating, transparent, orthographic, and disjunctive (Ardington et al., 2020). The prominent feature of their disjunctive nature is the segmentation of words into morphemic sound units (Lubinda, 2011; Howell, 2020). The Sotho-Tswana language group is spoken by 27.1% of South African population.

So, what does this mean for learners' cognitive growth? In line with the established understanding that reading is an element of cognition, increased reading opportunities are more likely to strengthen learners' cognitive fortitude. However, challenges to accessing reading opportunities will likely weaken cognitive skills. The implication for acquisition of reading comprehension is that if the text characteristic is a hindrance to achieving reading comprehension, Nguni learners should be supported with complimentary learning mechanism, to help them achieve adequate English reading comprehension.

The languages spoken by the sample in this research project are spoken by 79.7% of the South African population (see Appendix C) (Statistics SA, 2019). The large percentage representation of the South African languages is a strength of the current research project. For the demonstration of the differences among all the participant languages, see Table 2 and Table 3, both created by the author. Table 2 illustrates the different agglutination, for the word, 'thank you', table 3 demonstrates the transparent and opaque orthographic differences, on the words 'knowledge', and 'debt', whereas table 4, focuses on each language group relative to their decoding- and reading comprehension-benefits and challenges.

Table 2

Agglutination among the three language groups

Nguni Group	Sotho-Tswana Group	English Group
IsiZulu: Ngiyabonga	Sesotho: Ke a leboha	Thank you
IsiXhosa: Enkosi	Setswana: Ke ya leboha	
SiSwati: Ngiyabonga	Sepedi: Ka leboga	
IsiNdebele: Ngiyabonga		

Note. The table illustrates how agglutinating is absent in Nguni languages, whereas it is present in both Sotho-Tswana and the English language groups.

Table 3

Orthographic Spectrum

Transparent Orthographic			Opaque Orthographic
Nguni Languages:		**Sotho-Tswana Languages:**	
(1) IsiZulu			
(2) IsiXhosa		(1) Sesotho	**English Language**
(3) SiSwati		(2) Setswana	
(4) IsiNdebele		(3) Sepedi	
(1) IsiZulu words:		**(1) Sesotho words**:	
(a) ulwazi		(a) tsebo	
(b) isikweletu		(b) sekoloto	
(2) **IsiXhosa words**:		**(2) Setswana**	**English words**:
(a) ulwazi		**words**:	(a) knowledge [silent 'k']
(b) ityala		(a) kitso	(b) debt [silent 'b']
(3) **SiSwati words**:		(b) sekoloto	
(a) lwati		**(3) Sepedi words**:	
(b) sikwelete		(a) tsebo	
(4) IsiNdeble words		(b) sekoloto	
(a) ulwazi			
(b) isikweletu			

Note. The table demonstrates how languages range from transparent (on the left-hand side) to opaque (on the right-hand side).

Table 4

Decoding and Reading Comprehension

Language	*Decoding Supportive	*Reading Comprehension Supportive	Benefit	Challenges/ Shortfall
English	Yes	Yes	The disjunctive nature of words strengthens word formation and recall.	Due to the disjunctive nature of the words could potentially delay reading comprehension attainment.
Nguni	No	Yes	The conjunctive nature of words could potentially fast track reading comprehension.	Lack of reading milestones to track and record progress.
				Due to the formation of words, the combination of prefixes, stem, suffixes and morphemes into a single word, decoding skills could potentially be delayed.
Sotho-Tswana	Yes	No	The disjunctive nature of the words strengthens word formation and recall.	The disjunctive nature of the words could delay reading comprehension.

Note. The decoding and comprehension supportive categories only refer to the reading of English language. The nature of the words of other language groups will be either decoding or reading comprehension supportive or non-supportive if they are structured in a manner that is similar to English words.

The present research project hypothesises that the two ESL groups, Nguni, and Sotho-Tswana, develop their English language literacy in school, primarily by being exposed to the English language at school. This is in line with Cho and colleagues' (2019) argument that ESLs have four fundamental, yet equally important and challenging tasks in school, relative to their native English-speaking counterparts. The first is to learn the English language. Second, to learn English language literacy skills. Third, to learn English reading comprehension proficiency; and fourth, to perform at adequate levels on English proficiency assessments.

Based on the poor reading outcomes of the three previous reading assessments, in 2006, 2011 and 2016, the experiences of young learners who participated in the three previous PIRLS assessments can arguably be characterised as either avoidance or endurance. If learners experience challenges with reading tasks, they are likely to either avoid such tasks or endure through the discomfort (Pretorius & Spaull, 2016; Beckers & Craske, 2017; Flanagan, 2020). The implication is that understanding the reasons why learners either avoid or endure their reading tasks, will inform novel targeted interventions aimed at addressing low reading comprehension. The improvement of reading comprehension through targeted interventions could subsequently improve learners' cognition and lay the foundation for improved outcomes on international assessments.

Reading overview

As humans progressed, it became necessary to invent new ways of communication, to record events for future generations, to enable communication exchanges without face-to-face contact. The invention of reading aided the achievement of this ambition (Ward, 2015). Shaywitz and Shaywitz (2016, p.147) asserted, "Reading is the most complex human [brain] function in the world", This is because of the complex processes involved in reading, for example, internal aspects, biological, neurological, cognitive, psychological, and external factors, such as environmental, social, and socioeconomic status. Reading is the product of the coordination of all these internal and external factors, and therein lies its complexity (Pretorius & Spaull, 2016; Shaywitz & Shaywits, 2016; Steacy et al., 2017). The initial phases of learning to read are characterised by young learners' interaction with and visually processing of unfamiliar symbols, letters of the alphabet, the individual words, sentences and paragraphs, and their different associated sounds. Reading, as with all other physiological functioning, performances, abilities, and skills, is brain-enabled. These unfamiliar symbols, individual words, must be fragmented or broken down into manageable sub-sections to ease the learning process. For example, the word "process", must be segmented into "pr" – "o"- "ce"- "ss", known as phonemes, which means these sub-sections

are the smallest meaningful units of a written language (Ward, 2015). Throughout the reading process, the brain also activates inhibitory mechanisms, which suppresses potential distractions (Berninger, 2004; Berninger, 2008; Altemeier et al., 2008; Abbott et al., 2010). Reading must be understood as a function of cognition because the ability to read is premised on neurological cognitive structures (Ward, 2015; Kalat, 2017; Harvey, 2019).

The reading problem

Global and local reflections.

Children seem to display an increasing problem comprehending what they read (Chiu et al., 2012; Howie et al., 2017; Rule, 2017). For instance, 250 000 000 children worldwide do not acquire basic literacy skills whilst in school (UNESCO, 2019). In addition, six out of ten do not acquire basic literacy and numeracy skills after several years in school. Further, 750 million adults are illiterate, fuelling poverty and marginalisation (Slee, 2018; United Nations Educational, Scientific and Cultural Organisation (UNESCO), 2018; UN, 2019; Hanemann, 2019). The high number of illiterate adults is a strong indication that children who do not acquire literacy skills during their earlier developmental phase, are likely to become illiterate as adults. Put differently, illiterate children become illiterate adults.

Spearheaded by the UN, at the beginning of the previous decade, millennium development goals (MDGs) were developed, which defined the course for global efforts to improve literacy. However, MDGs have since been replaced by the sustainable development goals (SDGs), for which, quality education is a fourth goal. Inherent in the quality of education is the attainment of adequate literacy skills (United Nations General Assembly (UNGA), 2015; UN, 2019). The involvement of the UN shows that education continues to be globally recognised as significant and a valuable attainment, to improve individuals' economic positions.

The situation in SA reflects one of the poorest outcomes, as 78% of grade four learners cannot read for meaning, according to the PIRLS (PIRLS, 2016; Howie, et al., 2016;

Rule, 2017). Over the three previous PIRLS assessments, 2006, 2011 and 2016, grade fours have repeatedly achieved poorer reading outcomes than their international counterparts (Rule, 2017). The problem demonstrated by such poor reading outcomes is easy to see. However, there are systematic and persistent factors in the educational sector that have been cited as partly responsible for the poor reading outcomes. Some of these factors include but not limited to, inexperienced or poorly trained teachers, large classroom sizes, under-resourced schools, weak culture of reading in homes, unavailability of reading resources in the residential neighbourhoods, illiterate parents to help and encourage learners to read, and poor households who are dependent on the government's provision of academic textbooks, among others. All of these could be compounded by a weak ECD environment, that does not teach adequate literacy skills in the foundational phase. As a result, a poor literacy foundation from ECD compounds the literacy problem and serves as a recipe for failure in reading outcomes, specifically, reading comprehension. As outlined in Figure 2**,** weak literacy will invariably compromise reading comprehension. However, exploration of these factors falls outside the scope of the current search project.

Reading as an aspect of cognition

Reading, as an aspect of cognition, requires various higher mental order cognitive skills such as, planning, decision making, execution, language, which take place in different parts of the brain, and are co-ordinated by the executive functions in the frontal lobes (Hayes, 2011; Kalat, 2017). These skills are referred to as 'higher order' because they serve functions and demands that are not primary to survival and, as such, have only developed to be present in humans through evolution, and not in other primates (Kalat, 2017). While different parts of the brain are activated to complete any single task, there is a fair amount of localisation (Ward, 2015). These skills are located in different regions of the brain. For example, the 'language system' is predominantly located in the temporal lobes (see Appendix B); 'planning' is located in the frontal lobe (see Appendix B); 'visual word recognition', as an element of the reading process, in the left mid occipitotemporal region, which is itself, part of

the temporal lobe (see Appendix B) (Kalat, 2013; Ward, 2015). These functions that are located in the various regions of the brain are in turn supported by a host of underlying neurological [reading] cortical networks (see Appendix D) (Shaw et al., 2015; Kong et al., 2019). Evidence from functional imaging research has demonstrated that across different languages, similar brain regions are involved, but to varying degrees (Ward, 2015).

The implication for the investigation of reading comprehension is that reading, regardless of any differentiation among learners, is neurologically processed in the same brain regions. As highlighted in the previous section, reading is a cultural invention that partly characterised human literacy progression (Ward, 2015; Rastle, 2016). Even though there was no dedicated brain structure for reading, ontogenetic development could be responsible for potentially passing the 'reading gene' to an offspring. As discussed in the neurological development section, inheriting the 'reading gene', ontogenetic development, does not guarantee children reading abilities without formal reading tuition. Reading skill, Ward (2015) argues, is unlike other skills which develop naturally merely by virtue of the brain's natural progressive developmental trajectory and being in the environment in which the learned skills would be necessary (Baroncelli et al., 2010; Ward, 2015). These "naturally learned" skills include speaking, spatial awareness – the ability to make sense of and navigate the physical spaces that humans inhabit, hearing, physical movements and remembering things, among many others (Ward, 2015; Kalat, 2017; Acevedo et al., 2018). Therefore, the process of acquiring and mastering the reading skill would follow a typical skill learning process. Reading is a skill and just like any other skill, learning it takes time, effort, and practice, and when all these are consistently applied, it improves progressively (Wolfe & Wade, 2009).

Reading skill

Reading skills are fundamental as they are the foundation for other types of learning to take place such as mathematical and general reasoning, metacognitive, and analytical skills (Rule, 2017). To demonstrate the significance of reading skills in other academic pursuits, approximately 85% of learning difficulties have a link with inadequate reading and

language related skills. The ability to read and comprehend texts permeates most, if not all, aspects of learning, at least the conventional ones, which makes reading comprehension key for advancement in the academic pursuit (Yussof et al., 2013; Romeo et al, 2018). It is critical to address children's reading challenges whilst they are young to mitigate against the risk of progressing with academically compromised performance (Ciullo et al., 2016; Kalat, 2017).

Reading in English as L2

In the current research project, English is L2 to 47.3% for participants, the Nguni and Sotho-Tswana language groups. For these two groups, their interaction with English is on a L2 basis, making these two groups English Second Language Learners (ESLs). For the English group, 53.7%, their exposure to English from birth and learning English as their first language, make them English First Language Learners (EFLs).

Reading anxiety tends to make the challenges of reading English as a second language (L2) more pronounced because it compromises the brain's processing capacity that should be directed towards the attainment of reading comprehension (Watts et al., 2013). To clarify, when one adopts a neurological viewpoint to understand reading anxiety, one of the main challenges arises from the location of the amygdala, a hub for the processing of emotion, (see Appendix E) (Ward, 2015; Kalat, 2017). From a sagittal position (see Appendix F), amygdala is positioned right in front of the hippocampus, the brain region which is primarily responsible for learning and processing declarative memory. The close proximity is because both the amygdala and the hippocampus are part of the limbic system (Ward, 2015; Wei et al., 2020). This strongly suggests that the activation of the amygdala will invariably have an impact on the hippocampus, thus if the amygdala trigger is negative in nature, it will render learning extremely difficult (Ward, 2015). Therefore, if reading in L2 elicits reading anxiety, it is plausible that such reading anxiety could compromise reading comprehension, in line with the previously established relationship (Zi & Rafik-Galea, 2010; Capan & Karaca, 2012; Rajab et al., 2012; Tsai & Li, 2012; Mohammadpur & Ghafournia, 2015; Sparks et al., 2018).

Nguni and Sotho-Tswana language groups are more vulnerable to this problem, compared to their English counterparts, due to their less familiarity with the English language. To this extent, the two non-English language groups are expected to experience higher levels of reading anxiety, as outlined in the fifth aim, 'to establish whether home language plays a role in reading anxiety outcomes between EFLs and ESLs, across the three language groups'. The present research project investigates reading anxiety within the context of English as a second language and as a LoLT. In this context, reading has additional complications, which typically elevate levels of reading anxiety. This has an impact on second language (L2) learning, L2 performance and L2 success. L2 success is characterised by adequate and successful English reading comprehension. One of the components of reading comprehension, 'inference making', has been repeatedly cited as the most challenging for ESLs (Baghei & Ravand, 2015). In addition, there is an agreement between linguists and language researchers that reading in a second or foreign language requires the application of an additional and specific set of subskills. However, specific subskills that are required continue to be debated (Baghei & Ravand, 2015). This revelation of the additional subskill that is required to attain adequate reading comprehension, could highlight the "missing ingredient" in the teaching of reading comprehension to ESLs young learners. In addition to the acknowledgement of differences in learners' academic strengths and weaknesses, as well as other differences, this revelation requires an additional constant awareness and the need to identify and teach this foundational skill.

Challenges faced by ESLs

The Nguni and Sotho-Tswana languages are orthographically similar in their transparent orthographic nature, whereas English is opaque orthographic, (Tsang & Cheng, 2014; Georgiou, 2021). As a result of these fundamental orthographic differences in the languages, please see Table 3, the two non-English groups face challenges when they encounter English reading tasks (Georgiou, 2021). The first of these challenges is the English words that have identical sounds. Even though these words sound the same when

articulated, they have different meanings and spelling. Please see Table 5.

Table 5

Identical sounds

Word	**Noun, verb, etc.**	**Meaning**	**Example**
Decent	Adjective	Of a good enough standard or quality.	I need a decent night's sleep.
Descend	Verb	To come or go down from a higher to a lower level.	The plane began to descend.
Descent	Noun	An action of coming or going down.	The plane began its descent to the airport.
Dissent	Noun	The fact of having or expressing opinions that are different from those that are officially accepted.	Political/religious dissent.
Expansive	Adjective	Covering a large amount of space.	Landscape with expansive skies
Expensive	Adjective	Costing a lot of money.	An expensive car/restaurant/holiday.
Gene	Noun	A unit inside a cell that controls a particular quality in a living thing that has been passed on from its parents.	A dominant/recessive gene.
Jean	Noun	Trousers made of denim (= a type of strong cotton).	I always wear jeans.
Reach	Verb	Reach something/somebody to arrive at the place that you have been travelling to.	I hope this letter reaches you.
Rich	Adjective	With a lot of money.	He was born in a rich and powerful family.
Wright	Noun	A worker skilled in the manufacture especially of wooden objects.	John Doe works as a wright at the mill.
Write	Verb	To make letters or numbers on a surface, especially using a pen or a pencil.	Write your name at the top of the paper.

Merriam-Webster. (n.d.).

The second challenge refers to words that share identical spelling and pronunciation, yet have different meanings (Abdul-Jaleel & Larkey, 2003). Please see Table 6.

Table 6

Identical Spelling and Pronunciation

Word	Meaning	Example
Left	The side of your body that is towards the west when you are facing north.	The left side of the field.
	Past tense of leave.	She left school early.
Rally	A large public meeting, especially one held to support a particular idea or political party.	A rally was held on the sports ground.
	Supporting an idea.	The supporters will rally behind their sports teams.
Second	Unit of measure for time.	The girl took only seconds to go up on the stage.
	A position.	He came in second place in the race.

Oxford Dictionary (n.d.).

Furthermore, English has words that have silent characters, characters that are not pronounced. A few examples include:

- Words with silent “h”: ‘anchor’, ‘hour’, ‘ghost’.
- Words with silent “g”: ‘align’, ‘design’, ‘foreign’, ‘high’.
- Words with silent “w”, ‘wrist’, ‘wrapper’, ‘wrinkle’.
- Words with silent “k”, ‘knee’, ‘knife’, ‘knock’ (Ziarek, 2015).

These are only a few examples.

Navigation of different languages, L1s and L2, the different internal processes that are neurological and biological in nature, as well as the different contextual variables that have been presented, are all dynamics that young L2 learners face regularly in their efforts to attain adequate English reading comprehension. If any of these dynamics hinder learners’ efforts to attain adequate English reading comprehension, such hindrance is likely to trigger reading anxiety. These dynamics will play out during learners’ engagement with research and as such, contribute towards investigating whether causes of low reading comprehension are ecological or psychological in nature.

Chapter 4: Methodology

This chapter details the methodological choices made and outline their suitability for the current research project. Ethical clearance supports the adherence to all required parameters. Furthermore, research design, participants, procedure used, measures undertaken to ensure research credibility, measurements as well as results will be detailed.

The Research Project

The aim of the present research project was to explore the role of psychological and ecological factors in understanding learners' reading outcomes, specifically, reading anxiety. The current research project set out to explore the following hypotheses: a positive school climate is negatively related with reading anxiety (Hypothesis 1). Female learners show significantly stronger reading anxiety than male learners (Hypothesis 2). Parental reading support at home is negatively related with reading anxiety (Hypothesis 3). Reading time/frequency is negatively related with reading anxiety (Hypothesis 4). The fifth and sixth hypotheses stated that a positive reading self-concept and positive reading attitude reduce reading anxiety, respectively.

Ethical clearance

In line with adhering to the principles of research guidelines, ethical clearance was sought from the relevant authorities. As a result, scientific approval was received from the Department of Psychology at the University of South Africa, see Appendix G, ethical clearance was received from the College of Human Sciences, Ref.: 34033270_CREC_CHS_2021, (see Appendix H)as well as the approval from the Gauteng Department of Basic Education (DBE), Ref.:8/4/4/1/2, see Appendix I. Ironically, the identified risk factor was potential anxiety arising as a result of conducting reading anxiety measurement. However, it was categorised as a 'low-risk factor' and psychological counselling services were made available for learners who might have experienced distress resulting from their participation in the study. Further, information handout to learners and

parents, explained the concept of research, detailed the aspects of confidentiality, informed consent, rights of participants to withdraw without negative consequences, as well as the reason and the intension of the research project. Please see appendices K, and J, respectively. Additionally, learners and parents were encouraged to contact the researcher directly if they had questions, concerns, or needed clarification. The researcher committed to give feedback, after the completion of the study, to school principals who expressed an interest in the findings.

Research data will be stored only until all the publications of the journal articles coming out of the current research project, at the end of 2022. Thereafter, the hard copy data will be destroyed in a responsible manner, that ensures all the personal identifying information is erased without a trace. The outcome of the dissertation will be published in the university's archives and a journal, however, results will not be available in the public domains.

Research Design

The present research project used a correlative, cross-sectional survey study design. This study design was appropriate to accommodate large numbers of participants, it was convenient and appropriate for the research project's time frame.

Participants

Participants were approached using convenient sampling. All participants were between nine to eleven years old, with a mean age of 10 years (SD = 0.80). More than half of the participants spoke English (52.7%), followed by Nguni (27%) and Sotho-Tswana (20.3%) at home. Participants were not only learning English and learning other subjects in English, but they were also in an English-medium school, presumably, since their start of their schooling, in grade one. However, this presumption is loosely based on the South African education system, in which learners typically remain in one school for their

foundational education, grade one, to grade five. As such, the period that learners had in English-medium schools was not included in the demographics/ questionnaires.

Procedure

Several schools were identified, approached, and invited to participate in the present research project. After receiving the appropriate approvals from the relevant authorities, additional schools were approached to participate. Eventually, three schools participated, and they were all in the Gauteng province. All participating schools were a quintile level five, which means that they are in affluent neighbourhoods and are attended by pupils who are from relatively wealthier households (Ogbonnaya & Awuah, 2019; Maistry & Africa, 2020).

Communication with participating schools was mainly done with the teacher who was appointed by the principal to assist in the present research project. Prior to data collection, parents received detailed information about the research project and were requested to provide their consent to allow their children to participate (see Appendix J). Learners received information handouts together with assent forms (see Appendix K). Due to COVID-19 pandemic, it was proposed by the schools that learners should respond to the questionnaire at home under the supervision of their parents. The handing out and the collection of the questionnaires were organized by the teachers at the respective schools. As learners responded to the measurements in their homes, it is unclear whether and to what extend they were assisted by their family members. This lacking in clarity of the measurement conditions remains a limitation for the research project. However, schoolteachers were asked to give the two important instructions to learners: firstly, to respond to all statements and secondly, to ask their teachers for clarification should they not understand what was asked of them.

The questionnaire was administered in a hard copy format. All the questions were constructed in English. To ensure the appropriate grammatical level of the questions used, questions were checked and verified by the supervisor to be grade and age appropriate. The questionnaire consisted of the following information and measurements: (a) information

about the present research project and consent form, (b) demographic information, (c) reading anxiety scale, (d) school climate scale, (e) students' reading activities at home / perceived parental support scale, (f) students' reading time/ frequency scale, (g) student's reading self-concept scale, and lastly, (h) students' reading attitude scale.

Reliability, Validity and Credibility of the Research

In line with adherence to the principles of conducting credible research, all the measurements used in the current research project were developed, evaluated, and validated in previous similar research. The Reading Anxiety Scale (RAS) was adapted from Foreign Language Classroom Anxiety Scale (RLCAS), with a focus on constructing a scale specifically for second language reading anxiety (Brantmeier, 2005). The RAS is appropriate for use among multilingual samples. However, resulting from the Researcher's oversight, the scale's response options, (1) "Strongly Agree"; (2) "Agree"; (3) "Undecided"; (4) "Disagree"; (5) "Strongly Disagree" were not used. Instead, response options, 1 (never or almost never), 2 (sometimes or regularly) to 3 (frequently or all the time), were used, which compromises the reliability. Even though different response options were applied, the scale proved to have good reliability, Cronbach's Alpha of .84. Additional measures to ensure reliability included rigorous interrogation of the questionnaires, to ensure that questions were structured and sequenced appropriately and were appropriate for the intended grade, grade four. The outcome of all the questionnaires was verified by speech-language pathology and audiology professor. Standardisation of instructions to learners was a further reliability measure, aimed to ensure that all learners receive the same information. The instruction for teachers was to use and respond to one questionnaire statement, to serve as an example for learners. Instructions for learners was to ask their teachers if they did not understand what was asked of them. The second instruction, as reflected on the questionnaires, was to respond to all questions.

The definition of reading achievement, building of assessment framework, creation of test and questionnaire items, forward- and backward-translated items, as well as item pilot

testing, were all done in efforts to adhere to the principles of validity (Chiu et al., 2011; www.pirls.org). As such, even though all questions, questionnaire 2 – questionnaire 6, were arranged on a differently designed questionnaire format, they were identical to the original questions that were used in the original study that is partly being replicated.

Measurements

A demographic form was included as part of the questionnaire-pack (see Appendix L). If not differently stated, the measurements were assessed using a 4-point answer format ranging from 1 (*disagree a lot*), 2 (*disagree a little*), 3 (*agree a little*) to 4 (*agree a lot*). The order of measurements applied in the present research project corresponds with the order of measures presented below.

Reading Anxiety was measured using the Reading Anxiety Scale (RAS), (see Appendix M) (Brantmeier, 2005). The items were adapted to the context of research. The items in the present research project were: (1) “I become anxious when I have to read in English when doing my homework”; (2) “I become anxious when I have to read English out loud in class”; (3) “I fear having to read lengthy texts in English as homework when I am in upper/ higher grades in school”; (4) “I fear having to read lengthy texts in English as homework”; (5) “I fear having to read lengthy texts in English in class”; (6) “I fear not understanding the lengthy texts I will have to read in English”; (7) “I become anxious when I have to answer the multiple-choice questions about what I have read in English”; (8) “I become anxious when I have to answer questions orally in this class about what I have read in English”; and (9) “I become anxious when I am asked to write compositions in English about what I have read in class”. However, due to the use of a different answer format, as earlier indicated, the comparison of results concerning this scale is limited, which will be taken into consideration when interpreting the results. Previous studies reported a Cronbach’s alpha of .93 for this scale (Howitz, 1986; Brantmeier, 2005). In the present research project, the reading anxiety scale reached a Cronbach’s alpha of .84, which implies an excellent internal consistency (Field, 2013).

School climate was measured using items adapted from the original research project by Chiu and colleagues (2011), (see Appendix N). The items assess school climate through learners' views about their school environment. The following items were used: (1) "I like being in school"; (2) "I think that teachers in my school care about me"; (3) "I feel safe when I am at school"; (4) "Students in my school show respect to each other"; (5) "Students in my school care about each other"; and (6) "Students in my school help each other with their work". These six items revealed a Cronbach's Alpha of .75, an acceptable level of reliability, which is similar to the found internal consistency of .77 in previous studies (Chiu et al., 2011).

Parental support was measured by adapting the students' *reading activities at home subscale* of Chiu and colleagues (2011), (see Appendix O). The original items were adapted to reflect the experiences of the learner, rather than those of the parents. The following items were used: (1) "My parent (s) listen to me read aloud", (2) "My parent talk with me about things we have done [in school]"; (3) "My parent(s) talk with me about what I am reading on my own"; (4) "My parents go to the library with me"; (5) "My parents go to the bookstore with me", and (6) "My parents help me with reading for school". Learners were asked to respond to these statements to the answer format ranging from 1 (*never or almost never*), 2 (*once or twice a month*), 3 (*once or twice a week*), to 4 (*every day or almost every day*). The original research project reported a Cronbach's alpha of .85 (Chiu et al., 2011). In the present research project, the Cronbach's alpha was .73, which indicates acceptable reliability (Taber, 2018).

Students' reading time/ frequency was measured using adapted items from the original *Students' reading time/frequency* subscale, (see Appendix P), used in the original research project by Chiu and colleagues (2011). The following items were used: (1) "I read aloud to someone at home", (2) "I listen to someone at home read aloud to me"; (3) "I talk with my friends about what I am reading", (4) "I talk with my family about what I am reading", (5) "I read for fun outside of school", (6) "I read to find out about things I want to learn", (7) "I

read comic books", (8) "I read stories or novels", (9) "I read books that explain things", (10) "I read magazines", (11) "I read newspapers", (12) "I read directions or instructions", (13) "I read brochures and catalogues", (14) "My teacher reads aloud to the class", (15) "I read aloud to the whole class", (16) "I read aloud to a small group", (17) "I answer questions in a workbook or on a worksheet about what I have read", (18) "I write something about what I have read", (19) "I answer questions aloud about what I have read", (20) "I talk with other students about what I have read". The additional items were aimed to get information relating to the amount of time learners spent on reading, (21) "Time spent reading stories", (22) "Time spent reading articles on the internet", (23) "Time spent reading books, or magazines". Learners answered using the format ranging from 1 (*No time*), 2 (*up to one hour*), 3 (*1 – 3 hours*), 4 (3 – 5 hours) and 6 (*5 hours or more*). In a study conducted by Chiu and colleagues (2012), this scale had a Cronbach's alpha of .90 (Chiu et al., 2011). In the current research project, the Cronbach's alpha was .86, which implies an excellent internal consistency (Field, 2013).

Students' reading self-concept was measured using an adapted version of items from the *reading self-concept sub-scale*, (see Appendix Q), Chiu et al. (2011). The following items were used: (1) "Reading is very easy for me", (2) "I do not read as well as other students in my class", (3) "When I am reading by myself, I understand almost everything I read", and (4) "I read slower than other students in my class". In the present research project, the Cronbach's alpha was .86, which is even higher than in the original research project by Chiu et al. (2011) who reported a Cronbach's alpha of .80, which implies an excellent internal consistency (Taber, 2018).

Students' reading attitudes were measured using adapted version of items from *Students' reading attitudes subscale, (*see Appendix R), by Chiu and colleagues (2011). The following items were used: (1) "I read only if I have to", (2) "I like talking about books with other people", (3) "I would be happy if someone gave me a book as a present", (4) "I think reading is boring", and (5) "I enjoy reading". This scale reached a Cronbach's alpha of .80 in

previous research (Chiu et al., 2011), and .81 in the current research project, which implies an excellent internal consistency (Field, 2013).

Data Analysis

The quantitative analysis was done in four phases. The first phase involved determining the means, standard deviations, and intercorrelations among the independent and dependent variables. The second phase was hypothesis testing, which tested all the hypothesis of ecological as well as psychological factors. The third phase, regression analysis, played two main roles. First, it controlled for the shared variance in the independent variables, and it also allowed the identification of the independent variables that best explained variation in the dependent variable, reading anxiety. The fourth and the last phase, running *Process*, which is a sequential mediation analysis. *Process'* main contribution was that it showed the nature, structure, and the direction of the relationship between dependent variables and the independent variable. For the first three analysis, the data were analysed using IBM's Statistics Package for Social Sciences (SPSS) Version 27. For the fourth analysis, Models of Mediation and Moderation analysis were used. The outcome of all these analyses will be detailed in the 'results' section.

Results

This section presents the results of the quantitative analyses of the data and is divided into four sections, preliminary analysis, hypothesis testing, multiple regression as well as additional analysis of mediation and moderation.

Preliminary Analysis

Table 7 reports the means, standard deviations, and inter-correlations of the principal variables. Reading anxiety correlated significantly and negatively with both reading self-concept and reading attitude. Reading at home was positively related with reading time frequency, which in turn correlated, also moderately, with reading self-concept. Both the reading time frequency and reading self-concept were positively associated with reading

attitudes.

Table 7

Means, standard deviations, and intercorrelations of the principal variables (N = 76)

	1	2	3	4	5	6
M	1.64	3.06	2.87	2.40	2.98	2.91
SD	0.48	0.59	0.66	0.56	0.71	0.77
Min	1	1	1.25	1.23	1.25	1
Max	2.88	4	4	4.14	4	4
1. Reading Anxiety	-					
2. School Climate	-.153	-				
3. Reading At Home	.080	.105	-			
4. Reading Time Frequency	-.062	.128	.533***	-		
5. Reading Self Concept	-.519***	.123	-.009	.300**	-	
6. Reading Attitudes	-.338**	.104	.101	.402***	.407***	-

*Note. *p < .05, **p < .01, ***p < .001* (two-tailed)

Hypothesis Testing

Hypothesis 1 (H1) stated that perceived positive school climate has a negative relationship with reading anxiety. As the results of the intercorrelation showed, reading anxiety and positive school climate were found to indeed have a negative relationship, however, did not reach statistical significance, $r = -.153$, $p > .05$. Thus, Hypothesis 1 could not be supported.

The second hypothesis (H2) stated that female learners show significantly stronger reading anxiety than male learners. An independent samples t-test was conducted to compare the reading anxiety means of girls, $M = 1.\ 64$, $SD = 0.52$, and boys, $M = 1.66$, $SD = 0.41$. The mean difference was not statistically significant, $t\ (70) = -.191$, $p = .849$, $d = 0.47$. Thus, Hypothesis 2 was not supported.

The third hypothesis (H3) stated that parental reading support at home is negatively related with reading anxiety. Reading anxiety and parental reading support at home were found to be positively correlated but not statistically significant, $r = .080$, $p > .05$. As a result, Hypothesis 3 was not supported.

The fourth hypothesis (H4) stated that, reading time/frequency at home is negatively related with reading anxiety. Reading anxiety and reading time/frequency at home were found to have a negative relationship which, however, was not statistically significant, $r = -.062$, $p > .05$. As a result, Hypothesis 4 was not supported.

The fifth hypothesis stated that reading self-concept has a negative relationship with reading anxiety (Hypothesis 5). Reading anxiety and reading self-concept were found to have indeed a negative relationship which was also statistically significant, $r = -.519$, $p > .001$. As a result, Hypothesis 5 was supported.

The sixth hypothesis stated that positive reading attitude has a negative relationship with reading anxiety (Hypothesis 6). Reading anxiety and positive reading attitudes were indeed significantly correlated, $r = -.338$, $p > 0.01$. As a result, Hypothesis 6 was supported.

In sum, the results of the present research project imply that reading self-concept (Hypothesis 5) and positive reading attitude (Hypothesis 6) play an important direct role to reduce reading anxiety. To capture the fact that the previous analyses treated the relationships between the predictor variables and reading anxiety as bivariate, the researcher computed multiple regression analyses which do not only control for the shared variance in the independent variables but also allows the identification of the independent variables that best explain variation in reading anxiety as the dependent variable. Three regression models were conducted using the stepwise approach. The first model included the psychological factors reading time/frequency, reading at home, reading self-concept, and reading attitude (Model 1). In a second step the ecological factor of school climate was added to the model (Model 2). In the third model, age, home language and gender were added (Model 3). Home language and gender were included as dummy variables; that is girls were coded as 1 (one) and boys as 0 (zero), whereas English as home language groups was coded 1 (one) and Nguni and Sotho-Tswana as home languages were coded 0 (zero).

The results of the multiple regression analysis implied that Model 1 was statistically significant, $F(4,42) = 5.79$, $p = .001$, indicating that the model fit the data well. The psychological factors of Model 1 explained 29.4% of the variance of reading anxiety. Model 2, which added the ecological factor of school climate, was also statistically significant, $F(5,41) = 5.10$, $p = .001$, and explained 30.8% of variance of reading anxiety Model 3, which included the demographic factors of age, home language and gender, was also statistically significant, $F(3,38) = 3.34$, $p = .005$, and explained 28.9% of variance of reading anxiety.

The results of the three models are reported in Table 8**.** As the explained variances of the three models indicate, neither the adding of school climate as ecological factor nor the demographic factors contributed extensively to explain variance in reading anxiety. This observation is supported by the change statistics of Model 2*,* $F(1,41) = 1.87$, $p = .179$, and Model 3, $F(3,38) = 0.64$, $p = .596$. These results imply that adding school climate as

ecological factor and the demographic factors did not improve the explained variance in reading anxiety. Thus, it is not surprising that only psychological factors such as reading self-concept, *Beta* = -.50, *p* = .004, and reading frequency, *Beta* = .34, *p* = .064, statistically significantly and marginally significantly predicted reading anxiety, respectively.

Table 8

Regression coefficients of Reading Self-Concept and Reading-Attitude on Reading Anxiety

Variable	Model 1			Model 2			Model 3		
	B	β	*SE*	*B*	β	*SE*	*B*	β	*SE*
Constant	2.65		.38	3.00		.46	3.47		1.26
Reading Self-Concept	-0.34	-.47**	.11	-0.32	-.44**	.11	-0.37	-.50**	.12
Reading Time Frequency	0.24	.30 †	.13	0.25	.32 †	.13	0.27	.34†	.14
Reading Attitude	-0.16	-.26	.10	-0.16	-.26	.09	-0.16	-.26	.10
Reading at Home	-0.03	-.04	.11	-0.02	-.03	.11	0.01	.01	.12
School Climate				-0.15	-.17	.11	-0.16	-.19	.12
Age							-0.05	-.06	.10
Gender							-.05	-.05	.14
Home Language							.16	.17	.14
R^2	.36			.38			.41		
ΔR^2	.29			.31			.29		

Note. † $p < .10$**$p < .01$.

In summary, the results of this research project, which was based on the selected sample, demonstrated that there is no evidence to support the research project's overall assumption that both ecological and psychological factors impact reading anxiety. In fact, the results indicated that it is only psychological factors that are related to reading anxiety. More specifically, the results from bivariate analyses indicated that reading self-concept and reading attitude were negatively related to reading anxiety. These results indicate that learners who have a strong belief in their ability to read, experience less reading anxiety. Likewise, learners who have positive attitudes towards reading have less reading anxiety. This result support findings by Chiu and colleagues (2011) in their international study that learners who reported high levels or positive of reading attitudes had higher levels of reading achievement. Similarly, results from the multiple regression showed that reading self-concept and reading time/ frequency significantly explained variance in reading anxiety. These results imply that while controlling for all inter-correlations between the independent variables, reading self-concept remained an important factor to reduce reading anxiety, and that reading time/ frequency is – although weak – a factor to reduce reading anxiety. Overall, these results highlight the important role of psychological factors to reduce reading anxiety and thereby increase reading comprehension.

Even though the results demonstrated that reading self-concept was the strongest and most consistent predictor of reading anxiety, it might the case that reading self-concept is not only directly related to reading anxiety, but also that it functions as an intervening variable that mediates the relationship between reading time/ frequency as well as reading attitude and reading anxiety. To test these indirect effects, we conducted sequential mediation analysis, which is a regression-based approach, using *Process* (Hayes, 2017). *Process* is an add-on programme for mediation, moderation, and conditional process analyses for SPSS (Hayes, 2017).

Additional Analysis

In the first model, we entered reading time/ frequency as independent variable, reading attitude, and reading self-concept as mediator variables in series, and reading anxiety as dependent variable (Model #6 in Hayes, 2017, see Figure 4). In the second model, we added home language as moderator variable to establish whether the indirect effects of Model 1 are conditional on which participants' home language (Model #92 in Hayes, 2017, see Figure 5). Lastly, we conducted a third model which controlled for gender as moderator variable to establish whether the indirect effects of Model 1 are conditional on participants' gender (Model #92 in Hayes, 2017, see Figure 6). Before conducting the Model 2 and 3, researcher tested whether home language and gender as nominal variables were statistically related using Chi-Square test. The results of the Chi-Square test revealed no relationship between home language groups and gender groups, χ^2 (1) = 1.168, p = .280, which confirmed that we can treat these two moderators, independently.

Figure 2

Conceptual Model of the indirect effects of reading time on reading anxiety through reading attitude and reading self-concept.

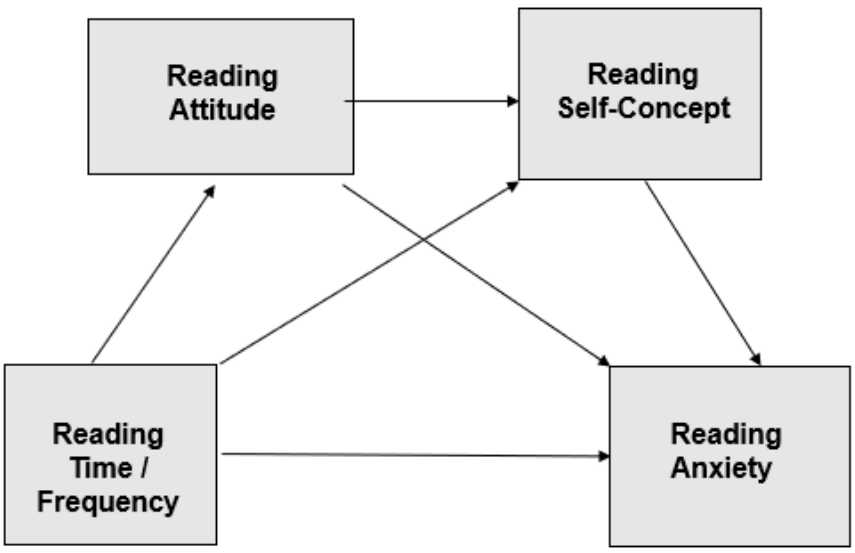


Figure 3

Conceptual Model of the conditional indirect effects of reading time/ frequency on reading anxiety through reading attitude and reading self-concept upon home language

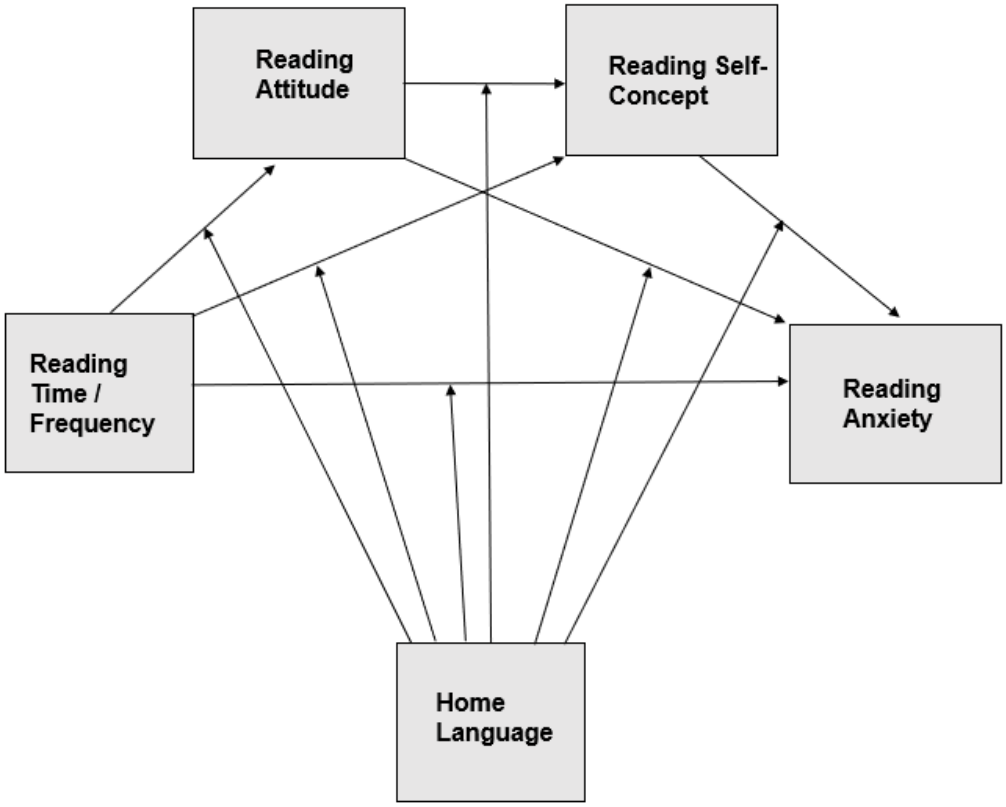
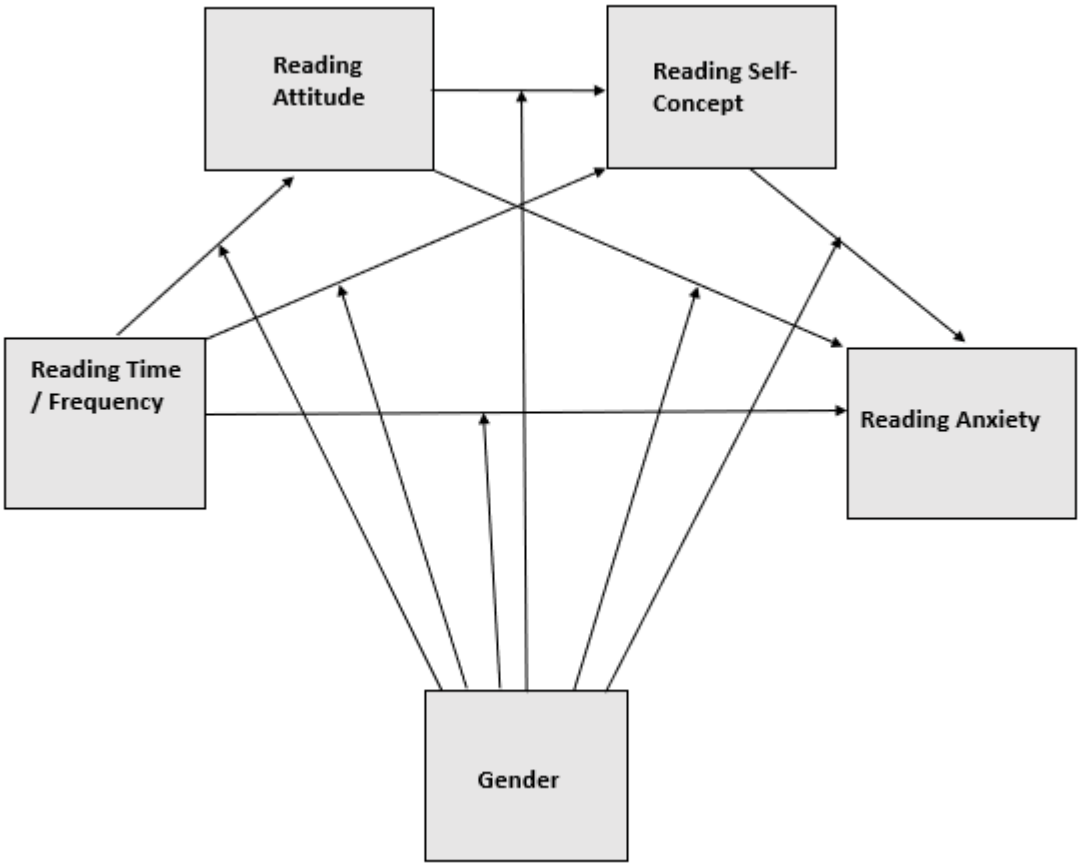


Figure 4

Conceptual Model of the conditional indirect effects of reading time/ frequency on reading anxiety through reading attitude and reading self-concept upon gender.



Model 1 was statistically significant, $F(3,70) = 11.08$, $p < .001$, and explained 32.19% variance of the dependent variable reading anxiety. The only significant predictor was reading self-concept, $\beta = -.3315$, $SE = 0.0733$, $t = -4.5227$, $p < .001$. Both reading time/frequency, $\beta = .1504$, $SE = 0.0942$, $t = 1.5956$, $p = .1151$, and reading attitude, $\beta = -.1264$, $SE = 0.0707$, $t = -1.7869$, $p = .0783$, did not have a significant direct effect on reading anxiety. Most importantly, however, the indirect effect from reading time/ frequency on reading anxiety through reading attitude and reading self-concept in series was statistically significant, Effect =-.0643, BootSE = 0.0322, BootCI [-.1395, -.0147]. The indirect effects from reading time/ frequency on reading anxiety through reading attitude only, Effect =-

.0748, BootSE = 0.0448, BootCI [-.1654, .0130], and through reading self-concept only, Effect =-.0575, BootSE = 0.0479, BootCI [-.1715, .0184], were not statistically significant. These results imply that the effect of reading time/frequency on reading anxiety is mediated by both reading attitude and reading self-concept. More specifically, the results imply that the more frequently leaners read the more positive is their attitude towards reading, which increases their reading self-concept, and which in turn reduces their reading anxiety.

In the second model, we controlled whether home language influences the indirect effect from reading time/ frequency on reading anxiety through both reading attitude and reading self-concept. The model was statistically significant, $F(7,65) = 4.936$, $p = .0002$, and explained 34.71% variance of the dependent variable reading anxiety. Like in the previous analysis (Model 1), reading self-concept, $\beta = -.2816$, $SE = 0.1043$, $t = -2.6991$, $p = .0089$, was the only significant predictor. Neither reading time/frequency, $\beta = -.2399$, $SE = 0.1335$, $t = 1.7972$, $p = .0770$, reading attitude, $\beta = -.1621$, $SE = 0.1086$, $t = -1.4934$, $p = .1402$, nor the interactions between reading time/ frequency and language groups, $\beta = -.1271$, $SE = 0.1959$, $t = -.6491$, $p = .5186$, between reading attitude and language groups, $\beta = .0511$, $SE = 0.1471$, $t = .3474$, $p = .7294$, and between reading self-concept and language groups, $\beta = -.1220$, $SE = 0.1495$, $t = -.8162$, $p = .4174$, were statistically significant. Yet, the results of the moderation of the indirect effect from reading time/ frequency on reading anxiety through both reading attitude and reading self-concept implied that this indirect effect is statistically significant for learners who indicated English as home language, Effect =-.0870, BootSE = 0.0615, BootCI [-.2414, -.0008], but not for learners who indicated Nguni and Sotho-Tswana as home languages, Effect =-.0316, BootSE = 0.0438, BootCI [-.1351, .0393]. The difference between these two indirect effects was, however, not statistically significant, Index = -.0554, BootSE = 0.0751, BootCI [-.2175, .0831]. The latter result implies that the found indirect effect from reading time/frequency on reading anxiety through both reading attitude and reading self-concept is equally applicable to the two different home language groups.

In the third model, we controlled whether gender influences the indirect effect from reading time/ frequency on reading anxiety through both reading attitude and reading self-concept. The model was statistically significant, $F(7,64) = 4.852$, $p = .0002$, and explained 34.67% variance of reading anxiety as dependent variable. Reading self-concept, $\beta = -.3502$, $SE = 0.1105$, $t = -3.1708$, $p = .0023$, was the only significant predictor. Neither reading time/frequency, $\beta = .1998$, $SE = 0.1539$, $t = 1.2979$, $p = .1990$, reading attitude, $\beta = -.0227$, $SE = 0.0991$, $t = -.2294$, $p = .8193$, nor the interactions between reading time/ frequency and gender groups, $\beta = -.0224$, $SE = 0.2006$, $t = -.1214$, $p = .9037$, between reading attitude and gender groups, $\beta = -.2020$, $SE = 0.1421$, $t = -1.4215$, $p = .1600$, and between reading self-concept and gender groups, $\beta = .0638$, $SE = 0.1486$, $t = .4293$, $p = .6692$, were statistically significant. Moreover, the results of the moderation of the indirect effect from reading time/ frequency on reading anxiety through both reading attitude and reading self-concept implied that this indirect effect is statistically significant for learners who indicated to be female, Effect =-.0870, BootSE = 0.0615, BootCI [-.2414, -.0008], but is not statistically significant for learners who indicated to be male, Effect =-.0316, BootSE = 0.0438, BootCI [-.1351, .0393]. The difference between these two indirect effects were not statistically significant, Index = -.0554, BootSE = 0.0751, BootCI [-.2175, .0831], which again implies that the found indirect effect from reading time/frequency on reading anxiety through both reading attitude and reading self-concept is equally applicable to male and female learners.

In sum, the additional analysis which tested the relationship between reading time/frequency, reading attitude, reading self-concept, and reading anxiety revealed not only its complexity but also its interdependency. More specifically, the current results suggest that any intervention to reduce reading anxiety as a proxy of reading comprehension requires not only the consideration of various psychological factors but also their relatedness. However, none of the reviewed literature addresses the specifics of both the nature as well as the direction of this relationship in the way that is presented by the current results.

Further, the exploration of the role of ecological and psychological factors in reading anxiety, six hypotheses were used. The ethical protocols were followed, which included obtaining appropriate documentation from the relevant authorities, obtaining participants' assent and data integrity commitments were made and adhered to. Seventy-six grade four learners between nine and eleven years old, from three language groups participated in the cross-sectional survey-style research project. All participants were in three English-medium, quintile level five schools in Gauteng. Six measurements were used, five of which were adopted from the original study by Chiu and colleagues (2011), and one, RAS, is appropriate for use in multilingual samples.

The preliminary analysis established that reading anxiety correlated significantly and negatively with both reading self-concept and reading attitude. In non-statistical terms, reading self-concept and reading attitude are the variables that have a strong impact on reading anxiety. Further, hypothesis testing results showed that hypotheses one to hypotheses five could not be supported, and only five and six, were. Thereafter, multiple regression analysis revealed that reading self-concept and reading time/ frequency significantly explained the variance in reading anxiety. Multiple regression results emphasised the significance of self-concept in reading anxiety.

To test the indirect effects that were found on previous analyses, an additional analysis was conducted, a sequential mediation analysis. This analysis tested the relationship between reading time/frequency, reading attitude, reading self-concept, and reading anxiety and it revealed the complexity and the interdependency among these variables. Practical implications are that efforts to reduce reading anxiety as a proxy to reading comprehension, will require the presence of all the psychological variables that were found to have a strong impact on reading anxiety, as well as their relatedness.

Chapter 5: Discussion

The aim of the present research project was to establish whether ecological and psychological factors, as independent variables, play a role on reading anxiety, a dependant variable. A second aim was to establish whether there is an interplay between the two independent variables. To achieve this, the researcher employed a cross-sectional survey and data was analysed using IBM's Statistical Package for Social Sciences - Version 27 and Models of Mediation and Moderation (Hayes, 2017). Seventy-six (76) grade four learners from three language groups, namely, English, Nguni, and Sotho-Tswana, participated. The groups consisted of boys and girls, which was meant to address the third and the fourth aims, 'the differences in reading anxiety between boys and girls', as well as 'establishing the potential moderating effect between the IVs and the DV', respectively. This section will unpack the findings of the research project, discuss the salient points that arose, highlight the limitations of the project, consider its implications, and make recommendations for future research. Findings will be addressed in terms of the research questions.

RQ# 1: Do ecological and psychological factors have an impact on reading anxiety?

For the purposes of the research project ecological factors consisted of socioeconomic status (SES) and the school climate. The socioeconomic status (SES) of learners was inferred from the school's quintile level, namely, level five. However, because the data collected was from schools on the same quintile level, SES could not be used in any of the hypothesis testing and as a result, a comparison of SES levels relative to reading anxiety could not be made. The second ecological factor, positive school climate, was found to have a negative relationship with reading anxiety, as was demonstrated in the outcome of the first hypothesis. Even though a negative relationship was established, as hypothesised, this relationship was not significant. The implications of this finding are that, for this group of learners, school climate does not have a sufficient level of significance to impact these learners' reading anxiety. This finding did not support the finding by Chiu and colleagues (2011), which indicated that school climate and school resources accounted for 30% of the

variance in reading outcomes. A plausible explanation for not finding a significant effect, could be that the schools were on the same quintile, level five. Had the present research project been conducted in schools with a lower quintile level, (in a less affluent environment), the results might have been statistically significant. This is because, as Maistry and Africa (2020) observed, schools in more affluent neighbourhoods are well resourced and to this extent, are not prominent sources of discord among learners. Future research could explore the effects of ecological factors in lower quintile schools. The results of the current research project support the findings of Moolman and colleagues (2020) and Gizi (2019), that a positive school climate has a negative relationship with reading outcomes. Overall, the results demonstrated that it is psychological factors that have a significant impact on reading anxiety, and not ecological factors.

This finding does not directly support the CELM, but does so, indirectly. The direct support is lacking in so far as the CELM emphacises the significance of the external environment, the ecological factors, in learners' literacy outcomes. However, the current research project found that in this sample, it was in fact, psychological factors that were significant in determining learners' reading anxiety. The indirect support is provided by the schools' quintile level five, characterised as highly affluent, a combination of government and a larger percentage private funding model, is indicative of relatively wealthier households. As such, such schools are more likely to produce better reading outcomes, as previously indicated in chapter three, in the form of higher reading comprehension levels. Within the context of the current research project, households' economic status is categorised as an ecological factor. Therefore, it was this ecological factor that indirectly contributed towards low reading anxiety. Even though Piaget argued for both the children's mental development, psychological, and their environmental, ecological, interactions for their cognitive development, these result suggest that, for this sample, it is only children's mental development that plays a role in reading anxiety.

RQ# 2: If an impact exists, which independent variables (IVs) have the strongest effect on the dependent variable (DV), reading anxiety?

Psychological factors encompassed gender, students' reading activities at home, students' reading time or frequency, reading self-concept, and reading attitude. Multiple regression was the most appropriate analysis because it controls the shared variance in the independent variables. In addition, multiple regression identifies the independent variable(s) that best explain(s) the variation in the dependent variable. Gender was excluded because multiple regression is not an appropriate tool for gender analyses. Gender will be addressed in 'RQ# 4'. The multiple regression results demonstrated that reading time/frequency, reading at home, reading self-concept, and reading attitude accounted for 29.4% of the variance in reading anxiety. Reading self-concept was found to be the strongest predictor of reading anxiety. However, this revelation did not specify whether reading self-concept had a direct relationship with reading anxiety. Additional analysis further confirmed the significance of reading self-concept on reading anxiety.

The results highlighted the significance of students' reading activities at home. Students' reading time/ frequency, reading self-concept, and reading attitude were such that the relationship between reading time/ frequency and reading anxiety was mediated: first by reading attitude; secondly, by reading self-concept, which explains the strength of reading self-concept as a predictor of reading anxiety. This finding indicates that learners have a strong belief in their reading abilities – enough to reduce reading anxiety. In line with the argument by Jalongo and Hirsch (2010) that strong self-concept requires engagement of affective and cognitive factors, these findings suggest that participants in the present research project engaged both affective and cognitive factors to achieve a strong self-concept. The learners' strong self-concept is indicative of a learning environment that they perceive to be non-threatening. This may be due to adequate resources, which are reflected in high levels of safety resulting from being in affluent neighbourhoods. The learning environment that is safe, supportive, and protective, is conducive to effective learning, as

argued by Cohen and Horowitz (2002) and Dörnyei (2008). In addition, findings of the present research project partly support findings by Retelsdorf and colleagues (2014), regarding the negative nature of the relationship between reading anxiety and reading self-concept. The outcome of this research question cannot be said to either support or fail to support the CELM. The theoretical foundation engages with concepts relating to the present research project at a higher levels, such as the ecological and psychological factors, whereas this question investigates the same concepts, however, at a lower level. The same applies to both developmental theories as none of them examine the developmental issues at the level of the identification of either ecological or psychological underlying factors as influential on young children's cognitive development.

RQ# 3: Is there a difference in the reading anxiety between girls and boys?

In relation to the psychological conceptualisation of gender, postulated by Quadlin (2018), the inherence of gender in the way learners perceive their own abilities, gender differences detected in the sample reflect a difference in the way learners perceived their own abilities. However, the results from the independent samples t-test showed that even though there is a difference between the mean of boys and the mean of girls, these differences were not statistically significant. The lack of significance in the results illustrates the idea that this difference could very well have happened by chance and was interpreted as non-existent. The results from the present research project do not support the findings of Tabrizi and Yaacob (2011), Ginsburg (2015) and Euler and colleagues (2015), of the significant likelihood of females experiencing higher anxiety, relative to their male counterparts. In fact, although the difference was not statistically significant, it was male learners who had slightly higher reading anxiety, relative to female learners.

The outcome of this research question can be aligned with Pekrun's EVTA. The expectancy value theory of anxiety argues that the level of anxiety experienced by an individual is primarily determined by the individual's own mental appraisal of a situation, as either threatening or not. As such, the results from this research question suggest that boys,

more than girls, appraised their reading tasks as threatening, essentially, anxiety inducing. However, none of the developmental theories address the question of gender in their arguments, as such, their relevance on addressing the outcome of this research question cannot be determined.

RQ# 4: Does gender have a moderating effect between ecological and psychological factors on the one hand, and reading anxiety on the other?

When it was established that ecological factors did not have an impact on reading anxiety, they were not included in further analysis. Therefore, the moderating effects of gender were analysed only on the psychological factors that had been established to have an impact on reading anxiety, reading time/ frequency, reading attitude and reading self-concept. The moderating effect of gender was tested on the effect of reading time/ frequency on reading anxiety, mediated through reading attitude and reading self-concept. Even though there was an effect on female learners, none was found for male learners, but the difference between the effects was not statistically significant. The absence of significance implies that the indirect effect of reading time/frequency, on reading anxiety through reading attitude and reading self-concept effects are equally applicable to male and female learners. These results do not support findings by Tabrizi and Yaacob (2011) as well as those by Euler and colleagues (2015), of the greater likelihood for female learners to experience higher levels of anxiety. More specifically, in the current research project's results, boys reported slightly higher levels of reading anxiety, partly support findings by Ramirez and colleagues (2011), in their demonstration that boys experience high levels of reading anxiety. In fact, current results support findings by Capan and Karaca (2013), that there are no significant reading anxiety differences between the two genders. The results of this research question cannot be understood within the context of neither the CELM nor the EVTA. The research question's investigation of the moderating effects of gender is not catered for by either of the theories. The same applies to developmental theories, neither Chomsky nor Piaget addressed the question of gender's moderating effect. To this extent,

their contributing to the outcome of this research question cannot be determined.

RQ# 5: Does home language have a moderating effect on reading anxiety?

Language was moderated on psychological factors that were found to have a significant impact on reading anxiety, reading time/ frequency, reading attitude, and reading self-concept. Again, the moderation of home language was measured and computed on the effect of reading time/ frequency on reading anxiety, mediated through reading attitude and reading self-concept. The home language moderation findings mirrored those of gender moderation, in that a difference was found in the indirect effects of reading time/frequency, on reading anxiety mediated through reading attitude and reading self-concept, of learners who indicated English was their home languages. However, such indirect effects were not found among learners who indicated Nguni and Sotho-Tswana were their home languages. These differences were found not to be significant. The lack of significance in the effects is indicative of the impact of reading time/frequency on reading anxiety, mediated through reading attitude and reading self-concept, on reading anxiety, being equally applicable to all the language groups that participated in the research project. This outcome addresses the fifth aim, 'the role of home language on reading anxiety'. Even though English is home language to less than ten percent of the national population, this was not reflected in sample for the current research project. This non-representation was to be expected in convenient sampling method. 52.7% of learners spoke English as home language, followed by 27% of Nguni speakers and 20.3% were Sotho-Tswana speaking.

While the CELM proposes the 'development of language' as one of its elements, the present research project investigated whether home language plays a role in reading anxiety. One of the ways in which the concept of language could be understood is on a continuum, progressing from left to right hand side. At the very beginning, left hand side, we find the formation of neurological structures upon which language would later be enabled and supported, as highlighted in Table 2, '*A Simple View of Cognitive Foundation and Cognitive Functioning'*, followed by a language development phases immediately after birth,

as highlighted in the ‘language overview’ section in chapter two, and progressing through to language, literacy and comprehension acquisition, as depicted in Figure 2, *‘Simplified View of Language, Literacy, Comprehension Progression'.* Therefore, using this understanding it could be argued that the development of language, as an element of the CELM, is the precursor to the home language that was investigated in the current research project. To this extent, a determination cannot be made regarding whether the outcome of the fifth question supported CELM or it did not. The contribution of Chomsky’s and Piaget’s developmental theories on the investigation of role of language on reading anxiety could not be determined. This is because these developmental theories do not explicitly focus on highlight language as an integral element of cognitive development, other than to state that language is part of necessary development milestones in cognitive development.

Overall, it remains difficult to assess Chomsky’s theory of cognitive development in relation to the current research project’s research aims, because it points to cognition being an aspect of nature, relative to nurture. Whilst the contribution of ‘nature’ cannot be ruled out, probing this account further was beyond the scope of the current research project. To this extent, it remains unclear whether and to what extent learners’ ‘nature’, played a role in their self-report measures, and subsequent results. Piaget’s developmental theory on the other hand, addresses the first and the second aims, relating to the 'impact of ecological and psychological factors on reading anxiety’. Neither one of these developmental theories addressed the third and fourth research questions, relating to the role of gender on reading anxiety.

The current research’s main finding and contribution is the nature and the direction of the specific variables that impact reading anxiety. The significant finding was the specific and quantifiable influence of reading time/frequency on reading attitude, of the influence of both reading time/frequency and reading attitude on reading self-concept and lastly, the influence of all the three variables on reading anxiety. The implication is that efforts to reduce reading anxiety and thus improve reading comprehension, require the application of

all three, precisely in this order. None of the reviewed literature addressed the influence of the combination of reading time/frequency, reading attitude and reading self-concept on reading anxiety. However, individually, reading time/frequency, reading attitude, and reading self-concept were all found to have a negative relationship with low reading achievement (Chiu et al., 2011). Low reading achievement is strongly associated with low reading comprehension, which in turn is strongly associated with reading anxiety, as was argued in earlier sections of this report (Chiu et al., 2011; Ramirez et al., 2019).

In response to the current research project's first overall argument that both ecological and psychological factors have a statistically significant impact on reading anxiety, the results showed that only psychological factors played a significant role in reading anxiety. The less significant role played by ecological factors could be explained as follows. First, ecological factors do not have an impact on reading, as presented in the results. Second, one ecological factor, school climate, was not on its own sufficient to be measured against four psychological factors, reading at home, reading time frequency, reading attitude, and reading self-concept.

The outcome of the present research suggests that school administrators and teachers on the one hand, and parents on the other, have a significant role to play regarding reconciling the two opposing views relating to the overall responsibility for academic outcomes and especially reading outcomes. The significance of reading time/frequency suggests that learners can be encouraged and given space to be frequent readers both at school and at home. The significance of reading attitude suggests that learners can improve and develop a positive reading attitude by receiving positive reading cues and internalising such cues from both their school and home environments. Positive reading cues can include encouraging and allowing learners time to read and making a variety of reading materials available to them. Lastly, the significance of reading self-concept offers an opportunity for both teachers and parents to encourage learners to read a variety of reading materials and to do so frequently. The benefits of frequently reading a variety of reading materials are

independent of language, as demonstrated by Chuang (2014). Chuang (2014) found that frequent reading of one language, Chinese, resulted in the decreased reding anxiety of a different language, English. The practical implications are that encouragement of teachers and parents may improve and build learners' positive reading attitude, which in turn is more likely to increase a learner's belief in his or her own reading abilities and reading self-concept. Therefore, the outcome of the current research project indicates a merging of the two positions highlighted in earlier chapters. The one position that argues for the exclusive role of teachers and schools on the one hand, and the other arguing for the role of parents, regarding learners' reading outcomes.

To address the question of the significance of other South African [official] languages relative to academic pursuits, the results of the present research project have demonstrated that home language does not play a role in levels of reading anxiety, when reading in English. Further, the results support the outcomes of both academic examinations as well as PIRLS by showing low levels of reading anxiety, which is indicative of high reading comprehension among learners in highly affluent schools. To this extent, a research project conducted among learners in less affluent schools is likely to produce different results, potentially results which reflect high reading anxiety, indicative of low reading comprehension.

Addressing the question of determining the factors that contribute to reading anxiety and whether these factors do affect EFLs and ESLs differently, the results have illustrated that psychological factors have the strongest contribution and that there was no difference between EFLs and ESLs. The absence of the difference between EFLs and ESLs refutes the second overall hypothesis of the current research project, that ESLs would report higher levels of reading anxiety. The current results support Chiu and colleagues' original study's findings, in which the countries that demonstrated low levels of self-concepts also reported poor levels of reading outcomes (PRILS, 2006; PIRLS, 2011; Chiu et al., 2011). Similarly, learners who reported high levels of reading attitudes had higher levels of reading

achievement (Chiu et al., 2011; Martin & Mullis, 2013).

Conclusion

The present research project has demonstrated the extent of the problem of children lacking in reading skills, globally and locally, and the associated consequences. In the findings/ results section, preliminary results illustrated the variables that were correlated with reading anxiety, as well as with each other. Hypotheses testing presented findings indicating that reading self-concept (Hypothesis 5) and positive reading attitude (Hypothesis 6) play an important direct role to reduce reading anxiety. Further analyses included multiple regression and additional analysis (Models). Multiple regression analysis further confirmed reading self-concept, reading attitude, and reading time/ frequency and reading at home, as the variables that strongly predicted reading anxiety. The multiple regression analysis addressed RQ# 1, relating to the ecological and psychological factors that impact reading anxiety, and RQ# 2, relating to the IV with a strongest effect on DV.

The additional analysis, using Models, further probed the nature of the relationships discovered in the multiple regression results. The outcome of Models analysis revealed both the nature and the direction of these identified relationships. It demonstrated that the effect of reading time/ frequency on reading anxiety, is strongly mediated by reading attitude and reading self-concept. Further, the relationship between reading time/ frequency and reading anxiety, as mediated by reading attitude and reading self-concept, was not moderated by either language or gender. The implication is that regardless of learners' gender or home language, the relationship remained unchanged. This outcome addressed RQ# 3, RQ# 4 as well as RQ# 5. The overall implication for the research project's argument that both ecological and psychological factors impact learners' reading anxiety, was not supported. The findings clearly indicated that, for this sample, it is only psychological factors that play a role in reading anxiety and are thus likely to impact reading comprehension, which is the core purpose of reading.

Strengths

The current research project had four main strengths. First, conducting the research project on participants whose home language represent almost 80% of the South African languages. The implication of this strength is that the findings can be used, at least in part, to understand reading dynamics that relate to the majority, almost 80%, of the South African languages. Second, the use of the measurements that have excellent reliability, greater than .80, is an indication that the outcomes were the product of rigorously scientific process. Third, the use of measurements that have been validated by international reading experts and which have been repeatedly used for the diverse South African learner population offers additional scientific validation. Lastly, the discussion explored the dynamics and structural linguistic challenges faced by ESLs, learning English, learning in English, achieving adequate English proficiency, and mastering the reading outcomes, relative to their EFLs counterpart, whose task is to master reading outcomes.

Limitations

Due to COVID-19 restrictions, the researcher did not conduct measurements in person. The implications of this include non-standardised environments in which learners completed their surveys. As a result, it remains unclear whether learners received help in interpreting the questionnaires, the time taken to complete the questionnaire and level of difficulty experienced by learners. To mitigate this uncertainty, the researcher gave the following instruction through teachers, to give learners one example, by using one of the statements of the questionnaires, to illustrate how to respond. The second instruction was for learners to ask their teachers if they were unsure what was expected of them. To mitigate this risk, consistency of instructions to the teacher was maintained.

Secondly, SES could not be measured because data was collected from schools with the same quintile level, level five. The implications of this were that the hypothesis about SES was eliminated, and this elimination potentially weakened the richness of the research project's overall outcome. However, the findings contribute to an understanding of South

African grade four learners.

Third, the small sample. The small sample in the present research project reduced the power of the research project. There is a probability that differences might have been found in a relatively bigger sample. At the start of the research project and again at the data collection stage, efforts were taken to obtain a larger sample, by requesting ten schools to participate, with a combined population more than 1000 learners. However, there was a high non-response rate. Due to the research project's time constraints, the project continued with a small sample. Additionally, the research project was also conducted during the height of unprecedented circumstances around the COVID-19 pandemic. Even though the results cannot be generalised, the findings contribute to our understanding of the dynamics that South African learners face. More specifically, the factors that impact their reading anxiety, and invariably, their reading comprehension.

Cognitive implications

None of the psychological factors, reading time/ frequency, reading attitude, and reading self-concept, that have a strong relationship with reading anxiety, have a direct relationship with cognition. However, an indirect relationship is implied. This implication is by virtue of their impact on reading anxiety, where reading anxiety is a proxy for reading comprehension, and reading comprehension being an aspect of reading, which in turn, is an aspect of cognition. Neurological evidence has demonstrated that the neurological structures that support and enable cognition are initially formed in utero and continue to develop postnatally. Developmental and cognition research has further demonstrated that for children to thrive, the environment in which they live must create conditions that encourage and nurture their cognitive skills to emerge. Once the cognitive skills emerge, they should be nurtured. One way to nurture learner's cognitive skills is to guide learners to achieve adequate reading comprehension.

Theories and formalities aside, every parent wants their child to learn, thrive and succeed. Reading comprehension, as argued in earlier chapters, is inherent in the process

that leads to academic success. The results of the present research project offer parents insights into the aspects of their children's cognition. As such, parents can use these insights to guide their children as they consciously participate in growing, strengthening, and nurturing their children's cognition. For teachers, they deal with learners' cognitive aspects regularly and as such, are better positioned to understand both benefits of cognitive strengths and perils of cognitive failures. The dynamics explored in the current research project can be used as a tool in their daily armour as they impart foundational literacy skills that will help their leaners achieve reading comprehension.

Recommendations for future research

Future research could explore different possibilities. Firstly, the definition of ecological factors could be extended to include leaners' SES, such as parental level of education, learners' school quintile level, availability of books in the households and availability of reading resources in the neighbourhood. Thereafter, ecological factors could be assessed together with psychological factors to determine whether either of the two would have a stronger impact on reading comprehension. This could be done for all quintile levels. Second, findings of the current research project could be applied to all school quintile levels. Such an application could stablish whether reading anxiety differences exist among learners from different quintile levels or whether reading anxiety is strongly associated with certain quintile levels. Further, findings of the present research project could be tested in a group of learners who experience poor reading outcomes, to establish whether the model would improve their reading outcomes. The testing would comprise of a reading project that encourages additional reading time/ frequency, which is aimed at instilling and increasing positive attitude towards reading as well as developing and improving of learners' reading skills, which in turn should improve learners' belief in their own reading skills and abilities and their reading self-concept. The approach and the methodology to be applied to each of these recommendations would be determined by the researcher.

Researcher's reflections on the research project

My fascination with human behaviour started long before I was aware of the concept of psychology. As a result, a decision to formally study psychology felt as natural as my circadian rhythm. The eight-year journey has been filled with perpetual fascination with various aspects of the discipline and the highs were as exhilarating as the lows were excruciating. My journey can be characterised and summarised as follows, undergraduate studies were exciting and interactive, honours was daunting and overwhelming, postgraduate statistics was exciting, and Master's a game changer. All of these were obtained while working full time.

The appropriate excitement that I had anticipated in the event of my acceptance into the master's program was diminished by my recent grief. As I progressed, I hoped that I would be able to give my best and produce an outstanding research report, which I hope I have achieved with my supervisor's guidance. Conducting research during an unprecedented COVID-19 pandemic was met with unprecedented challenges, which resulted in high levels of anxiety on my part, as I questioned research's practicality, engagements with schools, learners, parents, and academic and support staff. The non-response from the nine schools appeared at times to be the realisation of my worst fears, failure to find participants and conduct the research. The assurances of adherence to COVID-19 regulations seemed to have had little effect on school administrators and the prospects of completion in the two-year period seemed unattainable at the best of times. To calm myself, I remembered to manage the dynamics within my control, send regular update requests, respond to all communication, provide all the relevant and requested documentation and information, continue with other aspects of the research, and seek guidance from my supervisor.

The support I received from the three participating schools was a welcome and an uplifting surprise, for which I remain eternally grateful. This support infused the much-needed hope and the renewed momentum into the research project. As I reflect on the past two

years, I do so with humility, grace, and am filled with appreciation and gratitude for all I have learned and been exposed to. As I conclude my academic journey, I hope I have achieved my personal aim to produce a research project that is insightful, informative, relevant, exciting, engaging, value-adding, and applicable.

To summarise my hope for my research project, a quotation by a former US president, Abraham Lincoln, seems appropriate. Abraham made a plea to his congress in 1862, when US was facing unprecedented political challenges, to adopt a new way of thinking. I share his sentiments for the South African psychology, education, and academic disciplines, to adopt a new way of thinking, to address new challenges, such as the unacceptably low levels of reading comprehension among learners.

> *"The dogmas of the quite past are inadequate to the stormy present. The occasion is piled high with difficulty, and we must ride with the occasion. As our case is new so we must think anew, and act anew. We must disenthrall ourselves and then we shall save our country."*

I hope that the findings of my research project can contribute towards a new way of thinking.

References

"6 Motivation to Learn." National Academies of Sciences, Engineering, and Medicine. 2018. *How People Learn II: Learners, Contexts, and Cultures*. Washington, DC: The National Academies Press. https://doi:10.17226/24783

Abbott, R. D., Berninger, V. W., & Fayol, M. (2010). Longitudinal relationships of levels of language in writing and between writing and reading in grades 1 to 7. *Journal of educational psychology*, *102*(2), 281. https://www.researchgate.net/profile/Fayol-Michel/publication/232431092_Longitudinal_Relationships_of_Levels_of_Language_in_Writing_and_Between_Writing_and_Reading_in_Grades_1_to_7/links/0c96052c6c680da61d000000/Longitudinal-Relationships-of-Levels-of-Language-in-Writing-and-Between-Writing-and-Reading-in-Grades-1-to-7.pdf

AbdulJaleel, N., & Larkey, L. S. (2003, November). Statistical transliteration for English-Arabic cross language information retrieval. In *Proceedings of the twelfth international conference on Information and knowledge management* (pp. 139-146). https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.92.4572&rep=rep1&type=pdf

Acevedo, B., Aron, E., Pospos, S., & Jessen, D. (2018). The functional highly sensitive brain: a review of the brain circuits underlying sensory processing sensitivity and seemingly related disorders. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *373*(1744), 20170161. https://doi.org/10.1098/rstb.2017.1061

Al-Dersi, Z. E. M. (2013). The use of short-stories for developing vocabulary of EFL learners. *International Journal of English Language & Translation Studies*, *1*(1), 72-86. https://d1wqtxts1xzle7.cloudfront.net/45461345/The-Use-of-Short-Stories-for-Developing-Vocabulary-of-EFL-Learners-Full-Paper-with-cover-page-v2.pdf?Expires=1645887726&Signature=ZJupJK9~uswnadJJ5xbAGB1-eThT4knRqx0wYm1VCmEcrqLkgaCdkEdaKRsLB89KXMDwzby6O3hZY6Nn5SpKbvNKb9pZz-Vxatg7xBFesOzEd1bmzznKibST0er~Esf2mi5DXDN5BXoJrdcUUqUVHb4qDDUYIS3Ajcn8IOpRQ-wwSUyo6XTbqe1rw5qS--KH2H3LN-WKLNHzudYkGvsoGVwu3sgNw83KWM65tfrCQ5MhrOSPJcZ78eyxCxFHcpjVjwZ7FV1ZZ7c~-BoTlOXHuQIIuEnHyWmz3lU2zFT5MJkOD65whKZw89JCLXuwlufmRcX6yzPxYDX0f3SryjMb3g__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA

Alderman, H., Hoogeveen, H., & Rossi, M. (2009). Preschool nutrition and subsequent schooling attainment: longitudinal evidence from Tanzania. *Economic Development and Cultural Change*, *57*(2), 239-260. https://www.cerp.carloalberto.org/wp-content/uploads/2008/12/wp_75.pdf

Altemeier, L. E., Abbott, R. D., & Berninger, V. W. (2008). Executive functions for reading and writing in typical literacy development and dyslexia. *Journal of clinical and experimental neuropsychology*, *30*(5), 588-606. DOI: 10.1080/13803390701562818

Antón-Bolaños, N., Espinosa, A., & López-Bendito, G. (2018). Developmental interactions between thalamus and cortex: a true love reciprocal story. *Current opinion in*

neurobiology, *52*, 33-41.

Anyiendah, M. S., Odundo, P. A., & Kibui, A. (2019). Aspects of the Interactive Approach that Affect Learners' Achievement in Reading Comprehension in Vihiga County, Kenya: A Focus on Background Knowledge. *American Journal of Social Sciences and Humanities*, *4*(2), 269-287. DOI: 10.20448/801.42.269.287

Araújo, L., & Costa, P. (2015). Home book reading and reading achievement in EU countries: the Progress in International Reading Literacy Study 2011 (PIRLS). *Educational Research and Evaluation*, *21*(5-6), 422-438. https://doi.org/10.1080/13803611.2015.1111803

Ardington, C., Wills, G., Pretorius, E., Deghaye, N., Mohohlwane, N., Menendez, A., ... & van der Berg, S. (2020). Benchmarking early grade reading skills in Nguni languages. https://resep.sun.ac.za/wp-content/uploads/2020/11/Nguni-Languages-Technical-Report-V06-1-1.pdf

Artishcheva, L. V. (2019). Forecasting in the Environment of Personal and Situational Anxiety of Orphan Children. *Studies in Humanities and Social Sciences*, 31. https://doi.org/10.32591/coas.e-conf.03.01001s

Ayieko, M. A. (2003). *From single parents to child-headed households: The case of children orphaned by AIDS in Kisumu and Siaya districts*. UNDP. http://www.undp.org/hiv/publications/study/english/sp7e.htm

Azeng, T. F., & Yogo, T. U. (2013). *Youth unemployment and political instability in selected developing countries*. Tunis, Tunisia: African Development Bank. https://www.researchgate.net/profile/Therese-Azeng-2/publication/343112057_YOUTH_UNEMPLOYMENT_AND_POLITICAL_INSTABILITY_IN_SELECTED_DEVELOPING_COUNTRIES/links/5f17585e92851cd5fa3a8196/YOUTH-UNEMPLOYMENT-AND-POLITICAL-INSTABILITY-IN-SELECTED-DEVELOPING-COUNTRIES.pdf

Babakr, Z. H., Mohamedamin, P., & Kakamad, K. (2019). Piaget's Cognitive Developmental Theory: Critical Review. *Education Quarterly Reviews*, *2*(3), 517-524.

Babayig˘it, S. (2014). The role of oral language skills in reading and listening comprehension of text: A comparison of monolingual (L1) and bilingual (L2) speakers of English language. Journal of Research in Reading, 37, S22–S47. http://dx.doi.org/10.1111/j.1467-9817.2012 .01538.x

Babbie, E. R. (2020). *The practice of social research*. Cengage learning. https://www.researchgate.net/profile/Allen-Rubin/publication/237131811_Research_Methods_for_Social_Work/links/55de3b0908ae79830bb5871f/Research-Methods-for-Social-Work.pdf

Badara, A., Hanafi, H., Kamaluddin, K., Nurlaela, N., & Sari, I. M. (2019, March). The Relationship between anxiety level and foreign language learners' reading comprehension. In *International Symposium on Social Sciences, Education, and*

Humanities (ISSEH 2018), Atlantis Press. http://creativecommons.org/licenses/by-nc/4.0/

Baghaei, P., & Ravand, H. (2015). A cognitive processing model of reading comprehension in English as a foreign language using the linear logistic test model. *Learning and Individual Differences*, *43*, 100-105. http://dx.doi.org/10.1016/j.lindif.2015.09.001

Bahn, S., & Barratt-Pugh, L. (2013). Getting reticent young male participants to talk: Using artefact-mediated interviews to promote discursive interaction. *Qualitative Social Work*, *12*(2), 186-199. https://ro.ecu.edu.au/ecuworks2011/249

Baki, Y. (2017). The Effect of Anxiety and Attitudes of Secondary School Students towards Reading on their Reading Habits: A Structural Equation Modeling. *Education & Science/Egitim ve Bilim*, *42*(191). http://doi.10.15390/EB.2017.7223

Bamiou, D. E., & Murphy, C. F. (2018). Neurological brain damage and its impact on auditory processing. *Auditory processing disorders: assessment, management, and treatment. 3rd ed. San Diego: Plural Publishing*, 269-87.

Barratt-Pugh, C. H., & Anderson, K. L. (2013). Positive partnerships: The role of child health nurses in an early childhood family literacy program. *DOI*: https://doi.org/10.18848/2327-011X/CGP/v07i03/53247

Baroncelli, L., Braschi, C., Spolidoro, M., Begenisic, T., Sale, A., & Maffei, L. (2010). Nurturing brain plasticity: impact of environmental enrichment. *Cell Death & Differentiation*, *17*(7), 1092-1103. doi:10.1038/cdd.2009

Beckers, T., & Craske, M. G. (2017). Avoidance and decision making in anxiety: An introduction to the special issue. *Behaviour research and therapy*, *96*, 1. doi: 10.1016/j.brat.2017.05.009

Beckett, C., & Taylor, H. (2010). Who am I going to be? Adolescence, identity and change. *Human Growth and Development*, 92-108.

Beckmann, J., Lang, C., du Randt, R., Gresse, A., Long, K. Z., Ludyga, S., ... & Gerber, M. (2021). Prevalence of Stunting and Relationship between Stunting and Associated Risk Factors with Academic Achievement and Cognitive Function: A Cross-Sectional Study with South African Primary School Children. *International Journal of Environmental Research and Public Health*, *18*(8), 4218. https://doi.org/10.3390/ijerph18084218

Beitchman, J., & Brownlie, E. (2005). Language development and its impact on children's psychosocial and emotional development. *Encyclopedia on early childhood development*, 1-7. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.487.9948&rep=rep1&type=pdf

Bendix, S. (2010). *Industrial relations in South Africa*. Juta and Company Ltd.

Berninger, V. W. (2004). The reading brain in children and youth: A systems approach. In *Learning about learning disabilities* (pp. 197-248). Academic Press. http://www.help-curriculum.com/wp-content/uploads/2018/06/LEARNING-abut-Learning-Disabilties.pdf#page=220

Berninger, V. W. (2008). Defining and differentiating dysgraphia, dyslexia, and language learning disability within a working memory model. In Mody, M., Silliman, R. (2008). *Brain, behavior, and learning in language and reading disorders*, 103-134. Guilford Press: New York.

Bharuthram, S. (2012). Making a case for the teaching of reading across the curriculum in higher education. *South African Journal of Education*, *32*(2), 205-214. http://www.scielo.org.za/pdf/saje/v32n2/07.pdf

Biancone, T. L., Farquharson, K., Justice, L. M., Schmitt, M. B., & Logan, J. A. (2014). Quality of language intervention provided to primary-grade students with language impairment. *Journal of Communication Disorders*, *49*, 13-24. http://dx.doi.org/10.1016/j.jcomdis.2014.03.001

Black, S. E., Devereux, P. J., & Salvanes, K. G. (2011). Too young to leave the nest? The effects of school starting age. *The review of economics and statistics*, *93*(2), 455-467.

http://www.nber.org/papers/w13969

Blank, J. (2012). Fostering Language and Literacy Learning: Strategies to Support the Many Ways Children Communicate. *Dimensions of Early Childhood*, *40*(1), 3-12. https://eric.ed.gov/?id=EJ968643

Bornstein, M. H., Hahn, C. S., Bell, C., Haynes, O. M., Slater, A., Golding, J., ... & ALSPAC Study Team. (2006). Stability in cognition across early childhood: A developmental cascade. *Psychological Science*, *17*(2), 151-158. DOI: 10.1111/j.1467-9280.2006.01678.x

Bradley, R. (2016). Socioeconomic status. In *Encyclopedia of Mental Health: Second Edition* (pp. 196-210). Elsevier Inc. https://doi.org/10.1016/B978-0-12-397045-9.00223-8

Braine, G. (2012). Non-native-speaker English teachers. *The encyclopedia of applied linguistics*, 1-5.

Brainerd, C. J. (1978). The stage question in cognitive-developmental theory. *Behavioral and Brain Sciences*, *1*(2), 173-182. https://doi.org/10.1017/S0140525X00073921

Brantmeier, C. (2005). Anxiety about L2 or L2 reading tasks? A study with advanced

language learners. *The Reading Matrix, 5*(2). http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.572.1824&rep=rep1&type=pdf

Branum-Martin, L., Foorman, B. R., Francis, D. J., & Mehta, P. D. (2010). Contextual effects of bilingual programs on beginning reading. *Journal of Educational Psychology*, *102*(2), 341. https://doi.org/10.1037/a0019053

Brown, M. I., Wang, C., & McLeod, S. (2022). Reading with 1–2 year olds impacts academic achievement at 8–11 years. *Early Childhood Research Quarterly*, *58*, 198-207. https://doi.org/10.1016/j.ecresq.2021.09.008

Bryan, M. A. (2017). *The Bantu Languages of Africa: Handbook of African Languages*. Routledge. https://doi.org/10.4324/9781315104959

Brito, N. H., & Noble, K. G. (2014). Socioeconomic status and structural brain development. *Frontiers in neuroscience*, *8*, 276. https://doi.org/10.3389/fnins.2014.00276

Bruchhage, M. M., Ngo, G. C., Schneider, N., D'Sa, V., & Deoni, S. C. (2020). Functional connectivity correlates of infant and early childhood cognitive development. *Brain Structure and Function*, *225*(2), 669-681. https://doi.org/10.1007/s00429-020-02027-4

Buckingham, J., Wheldall, K., & Beaman-Wheldall, R. (2013). Why poor children are more likely to become poor readers: The school years. *Australian Journal of Education*, *57*(3), 190-213. https://doi.org/10.1080/00131911.2013.795129

Buqa, W. (2015). Storying Ubuntu as a rainbow nation. Verbum et Ecclesia, 36(2), 1-8. http://dx.doi.org/10.4102/VE.V36I2.1434

Cantlon, J. F., Pinel, P., Dehaene, S., & Pelphrey, K. A. (2011). Cortical representations of symbols, objects, and faces are pruned back during early childhood. *Cerebral cortex*, *21*(1), 191-199. https://doi.org/10.1093/cercor/bhq078

Capan, S. A., & Karaca, M. (2013). A comparative study of listening anxiety and reading anxiety. *Procedia-Social and Behavioral Sciences*, *70*, 1360-1373. doi: 10.1016/j.sbspro.2013.01.198

Carter, A. S., Godoy, L., Wagmiller, R. L., Veliz, P., Marakovitz, S., & Briggs-Gowan, M. J. (2010). Internalizing trajectories in young boys and girls: The whole is not a simple sum of its parts. *Journal of Abnormal Child Psychology*, *38*(1), 19-31. DOI 10.1007/s10802-009-9342-0

Celeste, R. K., Nadanovsky, P., & Fritzell, J. (2011). Trends in socioeconomic disparities in

the utilization of dental care in Brazil and Sweden. *Scandinavian journal of public health*, *39*(6), 640-648. DOI: 10.1177/1403494811414246

Chen, D. (2018). *Neural reading comprehension and beyond*. Stanford University. https://www.proquest.com/docview/2432898095?pq-origsite=gscholar&fromopenview=true

[Cherevichko] Дакал, Н. А., Черевичку, О. Г., Смірнов, К. М., & Зубко, В. (2021). Peculiarities of situational anxiety of zvo students. *Науковий часопис Національного педагогічного університету імені МП Драгоманова. Серія 15. Науково-педагогічні проблеми фізичної культури (фізична культура і спорт)*, *6*(137), 50-53. DOI 10.31392/NPU-nc.series15.2021.6(137).12

Chi, M. T. (1976). Short-term memory limitations in children: Capacity or processing deficits?. *Memory & Cognition*, *4*(5), 559-572. https://link.springer.com/content/pdf/10.3758/BF03213219.pdf

Chow, B. W. Y., Chui, B. H. T., Lai, M. W. C., & Kwok, S. Y. (2017). Differential influences of parental home literacy practices and anxiety in English as a foreign language on Chinese children's English development. *International Journal of Bilingual Education and Bilingualism*, *20*(6), 625-637.

Chiu, M.M., McBride-Chang, C. & Lin, D. (2012). Ecological, Psychological, and Cognitive

Components of Reading Difficulties: Testing the Component Model of Reading in Fourth Graders Across 38 Countries, *Learning Disabilities, 45(*5), 391– 405. http://doi.10.1177/0022219411431241

Cho, S., Crenshaw, K. W., & McCall, L. (2013). Toward a field of intersectionality studies: Theory, applications, and praxis. *Signs: Journal of women in culture and society*, *38*(4), 785-810. https://www.jstor.org/stable/10.1086/669608

Cho, K. S., & Krashen, S. (2019). Pleasure reading in a foreign language and competence in speaking, listening, reading and writing. *TEFLIN Journal*, *30*(2), 231-236. http://dx.doi.org/10/15639/teflingjournal.v30i2/231-236

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Chow, B. W. Y., Chui, B. H. T., Lai, M. W. C., & Kwok, S. Y. (2017). Differential influences of parental home literacy practices and anxiety in English as a foreign language on Chinese children's English development. *International Journal of Bilingual Education and Bilingualism*, *20*(6), 625-637. https://doi.org/10.1080/13670050.2015.1062468

Chik, A., & Ho, J. (2017). Learn a language for free: Recreational learning among adults. *System*, *69*, 162-171. https://doi.org/10.1016/j.system.2017.07.017

Chow, B. W. Y., Mo, J., & Dong, Y. (2021). Roles of reading anxiety and working Memorybin reading comprehension in English as a second language. *Learning and*

Individual Differences, *92*, 102092. https://doi.org/10.1016/j.lindif.2021.102092

Christie, P. (2021). Colonial palimpsests in schooling: tracing continuity and change in South Africa. https://www.um.edu.mt/library/oar/bitstream/123456789/78310/1/PDE10_1_A3.pdf

Chuang, M. H. M. (2014). The relationships of reading anxiety and reading performance in Chinese people learning English as a second language. http://hdl.handle.net/2031/7522

Ciullo, S., Lo, Y. L. S., Wanzek, J., & Reed, D. K. (2016). A synthesis of research on informational text reading interventions for elementary students with learning disabilities. *Journal of Learning Disabilities*, *49*(3), 257-271. https:///doi.org/10.1177/002221941453966

Cockcroft, K. (2015). The role of working memory in childhood education: Five questions and answers. *South African Journal of Childhood Education*, *5*(1), 01-20. http://www.scielo.org.za/pdf/sajce/v5n1/03.pdf

Cohen, J. (2006). Social, emotional, ethical, and academic education: Creating a climate for learning, participation in democracy, and well-being. *Harvard educational review*, *76*(2), 201-237. https://www.isbe.net/Documents/sel-cohen.pdf

Cohen, A. D., & Horowitz, R. (2002). What should teachers know about bilingual learners and the reading process. *Literacy and the second language learner*, 29-54. https://www.isbe.net/Documents/sel-cohen.pdf

Coles, G. (2004). Danger in the classroom: 'Brain glitch 'research and learning to read. *Phi Delta Kappan*, *85*(5), 344-351. http://www.msuedtechsandbox.com/hybridphd/wp-content/uploads/2010/06/Controversy5CON.pdf

Coltheart, M., & Adelman, J. S. (2012). Dual-route theories of reading aloud. *Visual word recognition: Models and methods, orthography and phonology*, *1*, 3-27. https://books.google.co.za/books?hl=en&lr=&id=uco5lasTR2oC&oi=fnd&pg=PA3&dq=SDual-route+theories+of+reading+aloud.+Visual+word++recognition&ots=aBQ2UZOtg7&sig=oRrlKINTVxj1LFwfAw78fUKAm-s&redir_esc=y#v=onepage&q=SDual-route%20theories%20of%20reading%20aloud.%20Visual%20word%20%20recognition&f=false

Conkbayir, M. (2021). *Early childhood and neuroscience: Theory, research and implications for practice*. Bloomsbury Publishing.

Conlon, E. G., Zimmer-Gembeck, M. J., Creed, P. A., & Tucker, M. (2006). Family history, self-perceptions, attitudes and cognitive abilities are associated with early adolescent reading skills. *Journal of research in reading*, *29*(1), 11-32.

http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.840.2283&rep=rep1&type=pdf

Cook, C. (2016). A 'toolkit 'for clinical educators to foster learners' clinical reasoning and skills acquisition. *Nursing Praxis in New Zealand*, *32*(1). https://eds.p.ebscohost.com/eds/pdfviewer/pdfviewer?vid=2&sid=f3784dd7-d3a3-4223-830d-4d747e4dfa42%40redis

Cowan, C. D., Hauser, R. M., Kominski, R. A., Levin, H. M., Lucas, S. R., Morgan, S. L., & Chapman, C. (2012). Improving the measurement of socioeconomic status for the national assessment of educational progress: A theoretical foundation. *National Center for Education Statistics*.

Costley, K. C., & Nelson, J. (2013). Avram Noam Chomsky and His Cognitive Development Theory. *Online Submission*. https://files.eric.ed.gov/fulltext/ED543301.pdf

Crane, T. M., & Persohn, B. (2021). Notes on actionality in two Nguni languages of South Africa. *Studies in African Linguistics*, *50*(2), 227-284. https://helda.helsinki.fi/bitstream/handle/10138/334583/3._actionality_final_20210916.pdf?sequence=1

Creissels, D. (1996). Conjunctive and disjunctive verb forms in Setswana. *South African Journal of African Languages*, *16*(4), 109-115.

https://doi.org/10.1080/02572117.1996.10587127

Cresswell, J., & Teucher, U. (2011). The body and language: MM Bakhtin on ontogenetic development. *New Ideas in Psychology*, *29*(2), 106-118. https://doi.org/10.1016/j.newideapsych.2010.05.001

Cross Jr, W. E. (2017). Ecological factors in human development. *Child development*, *88*(3), 767-769. https://doi.org/10.1111/cdev.12784

Cummings, K. D., Kaminski, R. A., Good III, R. H., & O'Neil, M. (2011). Assessing phonemic awareness in preschool and kindergarten: Development and initial validation of first sound fluency. *Assessment for Effective Intervention*, *36*(2), 94-106. DOI: 10.1177/1534508410392209

Csizér, K., & Magid, M. (Eds.). (2014). *The impact of self-concept on language learning* (Vol. 79). Multilingual Matters.

Das, T., Bapi, R. S., Padakannaya, P., & Singh, N. C. (2011). Cortical network for reading linear words in an alphasyllabary. *Reading and Writing*, *24*(6), 697-707. DOI 10.1007/s11145-010-9241-3

Dasen, P. R., & Mishra, R. C. (2013). Cultural differences in cognitive styles. In Kar, B. R. E.

(2013). *Cognition and brain development: Converging evidence from various methodologies* (pp. xiii-328). American Psychological Association. https://doi.org/10.1037/14043-012

Deák, G. O. (2014). Interrelationship of language and cognitive development (Overview). DOI 10.4135/9781483346441.n91

Delgoshaei, Y., & Delavari, N. (2012). Applying multiple-intelligence approach to education and analyzing its impact on cognitive development of pre-school children. *Procedia-Social and Behavioral Sciences*, *32*, 361-366. doi:10.1016/j.sbspro.2012.01.054

DelliCarpini, M. (2003). Developmental stages in the semantic acquisition of quantification by adult L2 learners of English: A pilot study. In *Proceedings of the 6th Generative Approaches to Second Language Acquisition Conference* (pp. 55-63). Somerville, MA: Cascadilla Proceedings Project.

Delius, P. (2021). Chiefly succession and democracy in South Africa: Why history matters. *Journal of Southern African Studies*, *47*(2), 209-227. https://doi.org/10.1080/03057070.2021.1855042

Department of Basic Education. 1997. Language in Education Policy. Retrieved from

https://www.education.gov.za/Portals/0/Documents/Policies/GET/LanguageEducationPolicy1997.pdf?ver=2007-08-22-083918-000

Department of Basic Education. 1998. Admission Policy For Ordinary Public Schools. https://www.education.gov.za/Portals/0/Admission%20Policy%20for%20ordinary%20public%20schools%20(Notice%202432%20of%201998).pdf?ver=2009-10-13-135307-413

Department of Basic Education. 2006. Amended National Norms and Standards for School Funding. https://static.pmg.org.za/docs/110222gazette_0.pdf

Department of Basic Education. 2019. Teaching Children to Read. https://www.education.gov.za/Programmes/Read2Lead/Readingtochildren.aspx

De Wet. (2014). *Wage gap threatens political stability.* https://mg.co.za/article/2014-05-15-wage-gap-threatens-political-stability/

Dewey, D. P., Clifford, R., & Cox, T. (2015). L1, L2, and cognitive development: Exploring relationships. *To advanced proficiency and beyond: Theory and methods for developing superior second language ability [Hacia la proficiencia avanzada y más allá: Teoría y métodos para desarrollar habilidad superior en el segundo idioma]*, 23-41. https://www.researchgate.net/profile/Dan-Dewey/publication/275020178_Dewey_D_P_Clifford_R_T_Cox_T_2014_L1_L2_and

_cognitive_development_Exploring_relationships_In_N_A_Brown_J_Bown_Eds_To_advanced_proficiency_and_beyond_Theory_and_methods_for_developing_superior_second_l/links/552e7ba50cf2d49507187a70/Dewey-D-P-Clifford-R-T-Cox-T-2014-L1-L2-and-cognitive-development-Exploring-relationships-In-N-A-Brown-J-Bown-Eds-To-advanced-proficiency-and-beyond-Theory-and-methods-for-developing-superi.pdf

Diamond, A., & Whitington, V. (2015). Studying early brain development: Educators' reports about their learning and its applications to early childhood policies and practices. *Australasian Journal of Early Childhood*, *40*(3), 11-19. https://doi.org/10.1177/183693911504000303

Dickinson, D. K., McCabe, A., Anastasopoulos, L., Peisner-Feinberg, E. S., & Poe, M. D. (2003). The comprehensive language approach to early literacy: The interrelationships among vocabulary, phonological sensitivity, and print knowledge among preschool-aged children. *Journal of Educational psychology*, *95*(3), 465. DOI: 10.1037/0022-0663.95.3.465

Dillard, J. L. (Ed.). (2010). *Perspectives on black English* (Vol. 4). Walter de Gruyter.

Donohue, D., & Bornman, J. (2014). The challenges of realising inclusive education in South Africa. *South African journal of education*, *34*(2).

Dörnyei, Z. (2008). New ways of motivating foreign language learners: Generating

vision. *Links*, *38*(1), 3-4. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.682.6764&rep=rep1&type=pdf

Doyle, G. (2014, April). Mapping dialectal variation by querying social media. In *Proceedings of the 14th Conference of the European Chapter of the Association for Computational Linguistics* (pp. 98-106). https://aclanthology.org/E14-1011.pdf

Downing, L. J., & Rialland, A. (Eds.). (2016). *Intonation in African tone languages* (Vol. 24). Walter de Gruyter GmbH & Co KG.

Dunn, J. (2016). Language and cognition.

Edmondson, A. (2019). *The Effects of English as a Second Language on Oral Reading Fluency* (Doctoral dissertation, Indiana University of Pennsylvania). file:///C:/Users/zmakanya/Downloads/The_Effects_of_English_as_a_Se.pdf

Euler, F., Jenkel, N., Stadler, C., Schmeck, K., Fegert, J. M., Kölch, M., & Schmid, M. (2015). Variants of girls and boys with conduct disorder: Anxiety symptoms and callous-unemotional traits. *Journal of Abnormal Child Psychology*, *43*(4), 773-785. DOI 10.1007/s10802-014-9946-x

Eysenck, M. W., & Keane, M. T. (2020). *Cognitive psychology: A student's handbook*.

Psychology press.

Fadiji, A. W., & Reddy, V. (2020). Learners' educational aspirations in South Africa: The role of the home and the school. *South African Journal of Education*, *40*(2). https://doi.10.15700/saje.v40n2a1712

Fakka, B., Asrifan, A., Syahrir, L., Hermansyah, S., & Amran, N. A. R. (2022). Correlation Between Self-Concept and Anxiety of Communicative Competence in English Foreign Language Learner. *La Ogi: English Language Journal*, *8*(1), 25-34.

Farah, M. J. (2018). Socioeconomic status and the brain: prospects for neuroscience-informed policy. *Nature Reviews Neuroscience*, *19*(7), 428-438. http://dx.doi.org/10.1038/s41583-018-0023-2

Farrall, M. L. (2012). *Reading assessment: Linking language, literacy, and cognition*. John Wiley & Sons.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. sage.

Feng, X., Shaw, D. S., & Silk, J. S. (2008). Developmental trajectories of anxiety symptoms among boys across early and middle childhood. *Journal of abnormal psychology*, *117*(1), 32. doi: 10.1037/0021-843X.117.1.32

Finlayson, R., & Madiba, M. (2002). The intellectualisation of the indigenous languages of South Africa: Challenges and prospects. *Current issues in language planning*, *3*(1), 40-61. https://doi.org/10.1080/14664200208668036

Flanagan, N. (2020, June). How schools should respond to COVID-19 [Video]. TED conferences. https://www.ted.com/talks/nora_flanagan_how_schools_should_respond_to_covid_19

Fletcher, J. M., Foorman, B. R., Boudousquie, A., Barnes, M. A., Schatschneider, C., & Francis, D. J. (2002). Assessment of reading and learning disabilities a research-based intervention-oriented approach. *Journal of School Psychology*, *40*(1), 27-63. https://www.researchgate.net/profile/Jack-Fletcher-3/publication/222400798_Assessment_of_Reading_and_Learning_Disabilities_A_Research-Based_Intervention-Oriented_Approach/links/5c11ea1792851c39ebe92cdf/Assessment-of-Reading-and-Learning-Disabilities-A-Research-Based-Intervention-Oriented-Approach.pdf

Fleurbaey, M., Salles, M., & Weymark, J. A. (Eds.). (2008). *Justice, political liberalism, and utilitarianism: themes from Harsanyi and Rawls*. Cambridge: Cambridge University Press.

Foorman, B. R., Anthony, J., Seals, L., & Mouzaki, A. (2002, September). Language

development and emergent literacy in preschool. In *Seminars in pediatric neurology* (Vol. 9, No. 3, pp. 173-184). WB Saunders. doi: 10.1053/spen.2002.35497

Fosnot, C. T., & Perry, R. S. (1996). Constructivism: A psychological theory of learning. *Constructivism: Theory, perspectives, and practice*, *2*(1), 8-33. http://beyondbitsandatoms.org/readings/fosnot_constructivism_1996.pdf

Fosnot, C. T. (2013). *Constructivism: Theory, perspectives, and practice*. Teachers College Press.

Furnes, B., Elwér, Å., Samuelsson, S., Olson, R. K., & Byrne, B. (2019). Investigating the double-deficit hypothesis in more and less transparent orthographies: A longitudinal study from preschool to grade 2. *Scientific Studies of Reading*, *23*(6), 478-493. DOI: 10.1080/10888438.2019.1610410

Friedman, A. (2018). To “read” and “write” pictures in early childhood: multimodal visual literacy through Israeli children’s digital photography. *Journal of children and Media*, *12*(3), 312-328. https://doi.org/10.1080/17482798.2018.1443147

Fromkin, V., Krashen, S., Curtiss, S., Rigler, D., & Rigler, M. (1974). The development of language in Genie: a case of language acquisition beyond the “critical period”. *Brain and language*, *1*(1), 81-107. https://doi.org/10.1016/0093-934X(74)90027-3

Fromkin, V., Rodman, R., & Hyams, N. (2013). *An introduction to language*. Cengage

Learning.

Fromkin, V., Rodman, R., & Hyams, N. (2018). *An introduction to language*. Cengage Learning.

Gathercole, S. E., & Baddeley, A. D. (2014). *Working memory and language*. Psychology Press.

Galante, A. (2018). Drama for L2 speaking and language anxiety: Evidence from Brazilian EFL learners. *RELC Journal*, *49*(3), 273-289. https://doi.org/10.1177/0033688217746205

Gascón, S., Murenu, E., Masserdotti, G., Ortega, F., Russo, G. L., Petrik, D., ... & Götz, M. (2016). Identification and successful negotiation of a metabolic checkpoint in direct neuronal reprogramming. *Cell stem cell*, *18*(3), 396-409. https://doi.org/10.1016/j.stem.2015.12.003

Gathercole, S. E., & Baddeley, A. D. (2014). *Working memory and language*. Psychology Press.

Georgiou, G. P. (2021). How Do Speakers of a Language with a Transparent Orthographic System Perceive the L2 Vowels of a Language with an Opaque

Orthographic System? An Analysis through a Battery of Behavioral Tests. *Languages*, *6*(3), 118. https://doi.org/10.3390/languages6030118

Ghelani, K., Sidhu, R., Jain, U., & Tannock, R. (2004). Reading comprehension and reading related abilities in adolescents with reading disabilities and attention-deficit/hyperactivity disorder. *Dyslexia*, *10*(4), 364-384. https://doi.org/10.1002/dys.285

Ghonsooly, B.; Elahi, M. (2010). Learners' Self-efficacy in Reading and its relation to Foreign Language Reading Anxiety and Reading Achievement. *Amirkabir, 53*(217), 45 – 67. https://www.sid.ir/en/Journal/ViewPaper.aspx?ID=191068

Gilmore, J. H., Knickmeyer, R. C., & Gao, W. (2018). Imaging structural and functional brain development in early childhood. *Nature Reviews Neuroscience*, *19*(3), 123-137. https://www.nature.com/articles/nrn.2018.1.

Ginsberg, D. L. (2004). Women and anxiety disorders: implications for diagnosis and treatment. *CNS Spectrums*, *9*(9), 1-3. https://doi.org/10.1017/S1092852900001978

Gipe, J. P. (2014). Multiple paths to literacy: Assessment and differentiated instruction for diverse learners, K-12 (8th edition). Boston, MA. Pearson.

Gizi, M.A.E. (2019). *The influence of positive psychological climate on formation of teenagers' values in the school* [Unpublished doctoral dissertation]. University Dilemas Contemporaneos: Educacion, Politica y Valores file:///C:/Users/zmakanya/Downloads/1943-Texto%20del%20art%C3%ADculo-1403-1-10-20200414.pdf

Glynn, T. (2017). *Remedial reading at home* (pp. 181-188). Routledge.

Goodrich, J. M., & Lonigan, C. J. (2016). Lexical characteristics of Spanish and English words and the development of phonological awareness skills in Spanish-speaking language-minority children. *Reading and Writing*, *29*(4), 683-704. https://doi.org/10.1007/s11145-016-9622-3

Goswami, U. (2001). Early phonological development and the acquisition of literacy. *Handbook of early literacy research*, 111-125. https://www.researchgate.net/profile/Usha-Goswami/publication/239955523_Early_phonological_development_and_the_acquisition_of_literacy/links/55e86fae08ae65b638998106/Early-phonological-development-and-the-acquisition-of-literacy.pdf

Grandjean, P. (2015). *Only one chance: how environmental pollution impairs brain development--and how to protect the brains of the next generation*. Oxford University Press, USA.

Grossberg, S., & Seitz, A. (2003). Laminar development of receptive fields, maps and columns in visual cortex: the coordinating role of the subplate. *Cerebral cortex*, *13*(8), 852-863. https://doi.org/10.1093/cercor/13.8.852

Gruenenfelder, T. M., & Pisoni, D. B. (2009). The lexical restructuring hypothesis and graph theoretic analyses of networks based on random lexicons. https://doi.org/10.1044/1092-4388(2009/08-0004)

Hackman, D. A., & Farah, M. J. (2009). Socioeconomic status and the developing brain. *Trends in cognitive sciences*, *13*(2), 65-73. https://doi.org/10.1016/j.tics.2008.11.003

Hackman, D. A., & Kraemer, D. J. (2020). Socioeconomic disparities in achievement: insights on neurocognitive development and educational interventions. In *Educational Neuroscience* (pp. 88-119). Routledge. [No DOI]

Haggblade, S., Duodu, K. G., Kabasa, J. D., Minnaar, A., Ojijo, N. K., & Taylor, J. R. (2016). Emerging early actions to bend the curve in sub-Saharan Africa's nutrition transition. *Food and nutrition bulletin*, *37*(2), 219-241. https://doi.org/10.1177/0379572116637723

Hancock, A. M. (2016). *Intersectionality: An intellectual history*. Oxford University Press.

Hanemann, U. (2019). Examining the application of the lifelong learning principle to the literacy target in the fourth Sustainable Development Goal (SDG 4). *International Review of Education*, *65*(2), 251-275. https://link.springer.com/article/10.1007/s11159-019-09771-8

Hanfstingl, B., Benke, G., & Zhang, Y. (2019). Comparing variation theory with Piaget's theory of cognitive development: more similarities than differences?. *Educational Action Research*, *27*(4), 511-526.

Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experience of young American children*. Paul H Brookes Publishing.

Hartley, R. (2014). *Ragged glory: The rainbow nation in black and white*. Jonathan Ball Publishers.

Harvey, P. D. (2019). Domains of cognition and their assessment. *Dialogues in clinical neuroscience*, *21*(3), 227. doi: 10.31887/DCNS.2019.21.3/pharvey

Hayes, J. R. (2011). Kinds of knowledge-telling: Modeling early writing development. *Journal of Writing Research*, *3*(2), 73-92.

http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.681.2525&rep=rep1&type=pdf

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford publications.

Hoff, E. (2013). *Language development*. Cengage Learning

Horwitz, E. K. (1986). Preliminary evidence for the reliability and validity of a foreign language anxiety scale. *Tesol Quarterly*, *20*(3), 559-562. https://doi.org/10.2307/3586302

Houle, C. (2019). Social mobility and political instability. *Journal of Conflict Resolution*, *63*(1), 85-111. https://doi.org/10.1177/0022002717723434

Howell, A. S. (2020). *Alternative semantics across languages: case studies on disjunctive questions and free choice items in Samoan and Yoruba* (Doctoral dissertation, Universität Tübingen). https://core.ac.uk/download/pdf/344677958.pdf

Howley, I., & Rosé, C. (2018). Empirical evidence for evaluation anxiety and expectancy-

value theory for help sources. International Society of the Learning Sciences, Inc. [ISLS]. https://doi.dx.org/10.22318/cscl2018.472

Howie, S.J., Combrinck, C., Roux, K., Tshele, M., Mokoena, G.M., & McLeod Palane, N. (2017). *PIRLS LITERACY 2016: South African Highlights Report*. Pretoria: Centre for Evaluation and Assessment. https://doi:10.13140/RG.2.2.11110.73282

Huang, Q. (2012). Study on Correlation of Foreign Language Anxiety and English Reading Anxiety. *Theory & Practice in Language Studies*, *2*(7). doi:10.4304/tpls.2.7.1520-1525

Huffman, T. N. (2020). Ceramic datums and history: Sotho-Tswana pottery in southern Africa. *Southern African Humanities*, *33*. https://eds.p.ebscohost.com/eds/pdfviewer/pdfviewer?vid=2&sid=0912c9ae-4077-4da7-9602-8cecd24d39df%40redis

Ip, P., Ho, F. K. W., Rao, N., Sun, J., Young, M. E., Chow, C. B., ... & Hon, K. L. (2017). Impact of nutritional supplements on cognitive development of children in developing countries: A meta-analysis. *Scientific reports*, *7*(1), 1-9. https://doi.org/10.1038/s41598-017-11023-4

Ismail, S. A. A. (2015). Secondary School Students' Reading Anxiety in a Second

Language. *English Language Teaching*, *8*(11), 28-41. http://dx.doi.org/10.5539/elt.v8n11p28

Jacobson, M. D. (2013). Afraid of looking dumb. *Educational Leadership*, *71*(1), 40-43. http://www.ascd.org/publications/educational-leadership/sept13/vol71/num01/Afraid-of-Looking-Dumb

Jacobson, S. W., Carter, R. C., & Jacobson, J. L. (2014). Breastfeeding as a proxy for benefits of parenting skills for later reading readiness and cognitive competence. *The Journal of pediatrics*, *164*(3), 440. https://doi.org/10.1016/jpeds.2013.11.041

Jalongo, M. R., & Hirsh, R. A. (2010). Understanding reading anxiety: New insights from neuroscience. *Early Childhood Education Journal*, *37*(6), 431-435. https://doi.10.1007/s10643-010-0381-5

Jee, M.J. (2014) Affective factors in Korean as a Foreign Language: anxiety and beliefs, *Language, Culture and Curriculum, 27*(2), 182-195, DOI: 10.1080/07908318.2014.918626

Jiménez, J. E., & Venegas, E. (2004). Defining Phonological Awareness and Its Relationship to Reading Skills in Low-Literacy Adults. *Journal of educational psychology*, *96*(4), 798.

https://doi.org/10.1037/0022-0663.96.4.798

Johnson, J. G., Cohen, P., Kasen, S., & Brook, J. S. (2007). Extensive television viewing and the development of attention and learning difficulties during adolescence. *Archives of pediatrics & adolescent medicine*, *161*(5), 480-486. doi:10.1001/archpedi.161.5.480

Joinson, C., Sullivan, S., von Gontard, A., & Heron, J. (2016). Early childhood psychological factors and risk for bedwetting at school age in a UK cohort. *European child & adolescent psychiatry*, *25*(5), 519-528.

Justice, L. M., & Pullen, P. C. (2003). Promising interventions for promoting emergent literacy skills: Three evidence-based approaches. *Topics in early childhood special education*, *23*(3), 99-113. https://doi.org/10.1177/02711214030230030101

Kalat, J. (2017). *Biological Psychology (13th ed.).* Cengage Learning: 'place of publishing'

Krampen, M. (2013). *Meaning in the urban environment*. Routledge.

Katrancı, M., & Kuşdemir, Y. (2016). Anxiety and Comprehension in Reading: I Can not Find the Main Idea, My Teacher!. *Egitim ve Bilim*, *41*(183). DOI: 10.15390/EB.2016.4951

Katzir, T., Kim, Y. S. G., & Dotan, S. (2018). Reading self-concept and reading anxiety in second grade children: the roles of word reading, emergent literacy skills, working memory and gender. *Frontiers in Psychology*, *9*, 1180. https://doi.org/10.3389/fpsyg.2018.01180

Kathard, H., Ramma, L., Pascoe, M., Jordaan, H., Moonsamy, S., Wium, A. M., ... & Khan, N. B. (2011). How can Speech Language Therapists and Audiologists enhance language and literacy outcomes in South Africa?(And why we urgently need to). http://hdl.handle.net/11427/20310

Keung, Y. C., & Ho, C. S. H. (2009). Transfer of reading-related cognitive skills in learning to read Chinese (L1) and English (L2) among Chinese elementary school children. *Contemporary Educational Psychology*, *34*(2), 103-112.] https://doi.org/10.1016/j.cedpsych.2008.11.001

Khoso, A. R., Pathan, H., & Shah, S. W. A. (2018). Identifying the Grammatical Errors Committed By Efl Learners: A Study of Public Sector Universities in Sindh, Pakistan. *Grassroots*, *52*(1), 272-282. https://sujo2.usindh.edu.pk/cgi-sys/suspendedpage.cgi

Kim, H. (2016). The relationships between Korean university students' reading attitude,

reading strategy use and reading proficiency. *Reading Psychology*, *37*(8), 1162-1195. https://doi.org/10.1080/02702711.2016.1193581

Kim, Y-S.G. & Piper, B. (2019). Component skills of reading and their structural relations: evidence from three sub-Saharan African languages with transparent orthographies. *Journal of Research in Reading,* 1–23. https://doi.org/10.1111/1467-9817.12271

Ko, J. Y., Lee, H. S., Park, C. H., Koh, H. C., Lee, Y. S., & Lee, S. H. (2009). Conditions for Tumor-free and Dopamine Neuron–enriched Grafts After Transplanting Human ES Cell–derived Neural Precursor Cells. *Molecular Therapy*, *17*(10), 1761-1770. https://doi.org/10.1038/mt.2009.148

Kočiský, T., Schwarz, J., Blunsom, P., Dyer, C., Hermann, K. M., Melis, G., & Grefenstette, E. (2018). The narrativeqa reading comprehension challenge. *Transactions of the Association for Computational Linguistics*, *6*, 317-328. https://doi.org/10.1162/tacl_a_00023

Kong, R., Li, J., Orban, C., Sabuncu, M. R., Liu, H., Schaefer, A., ... & Yeo, B. T. (2019). Spatial topography of individual-specific cortical networks predicts human cognition, personality, and emotion. *Cerebral cortex*, *29*(6), 2533-2551. https://doi.org/10.1093/cercor/bhy123

Korous, K.M, Causadias, J.M., Robert H. Bradley, R.H., and Luthar, S.S. (2018). Unpacking the link between socioeconomic status and behavior problems: A second-order meta-analysis. *Development Psychology. 30(*5), 1889-1906. https://doi.org/10.1017/S0954579418001141

Kotz, S. A. (2009). A critical review of ERP and fMRI evidence on L2 syntactic processing. *Brain and language*, *109*(2-3), 68-74.

Krägeloh-Mann, I., Lidzba, K., Pavlova, M. A., Wilke, M., & Staudt, M. (2017). Plasticity during early brain development is determined by ontogenetic potential. *Neuropediatrics*, *48*(02), 066-071. DOI: 10.1055/s-0037-1599234

Krause, R. D., & Snyman, L. G. (2014). *Rehabilitation and mine closure liability: An assessment of the accountability of the system to communities*. Johannesburg: Centre for Applied Legal Studies, University of Witwatersrand.

Kubera, B., Bosy-Westphal, A., Peters, A., Braun, W., Langemann, D., Neugebohren, S., ... & Müller, M. J. (2013). Energy allocation between brain and body during ontogenetic development. *American Journal of Human Biology*, *25*(6), 725-732. https://doi.org/10.1002/ajhb.22439

Kulo, S. A., Odundo, P. A., & Kibui, A. (2020). Readers' Theatre Technique; Relevance Of Class For Enhancug Reading Skills In Secondary Schools In Kisimu County, Kenya. *European Journal of English Language Teaching*.

Kulo, S. A., Kibui, A., & Odundo, P. A. (2020). Utilization of Interpretive Reading for achievement in Reading Skills in Secondary Schools in Kenya. *International Journal of Linguistics, Literature and Translation (IJLLT)*. https://ssrn.com/abstract=3528381

Kumar, S., Ochoa, M., & Edwards, M. (2012). Considering information literacy skills and needs: Designing library instruction for the online learner. *Communications in Information Literacy*, *6*(1), 8. DOI 10.15760/comminfolit.2012.6.1.120

Lamont, M., & Small, M. L. (2010). Cultural diversity and anti-poverty policy. *International social science journal*, *61*(199), 169-180. https://doi.org/10.1111/j.1468-2451.2010.01754.x

Landau, L.B. (2018). *Xenophobia in South Africa: why it's time to unsettle narratives about migrants*. https://www.wits.ac.za/news/latest-news/in-their-own-words/2018/2018-09/xenophobia-in-south-africa-why-its-time-to-unsettle-narratives-about-migrants.html

Lee, J. F. (2019). In the pursuit of a gender-equal society: Do Japanese EFL textbooks play a role?. *Journal of Gender Studies*, *28*(2), 204-217.

https://doi.org/10.1080/09589236.2018.1423956

Lekgotlo, M. W. (Ed.). (2014). *Challenges and issues facing the education system in South Africa*. Africa Institute of South Africa (AISA).

Levy, J., Pernet, C., Treserras, S., Boulanouar, K., Aubry, F., Démonet, J. F., & Celsis, P. (2009). Testing for the dual-route cascade reading model in the brain: an fMRI effective connectivity account of an efficient reading style. *PloS one*, *4*(8), e6675. doi:10.1371/journal.pone.0006675

Levy, R. (2016). A historical reflection on literacy, gender and opportunity: implications for The teaching of literacy in early childhood education. *International Journal of Early Years Education*, *24*(3), 279-293. https://doi.org/10.1080/09669760.2016.1165652

Lien, H. Y. (2011). EFL Learners' reading strategy use in relation to reading anxiety. *Language Education in Asia*, *2*(2), 199-212. http://dx.doi.org/10.5746/LEiA/11/V2/I2/A03/Lien

Lobi, T., & Kheswa, J. G. (2017). Exploring challenges of adolescent females in child-headed households in South Africa. *Journal of Human Ecology*, *58*(1-2), 98-107. https://doi.org/10.1080/09709274.2017.1305606

Lourenço, O. M. (2016). Developmental stages, Piagetian stages in particular: A critical review. *New Ideas in Psychology*, *40*, 123-137.

Lubinda, J. M. (2011). Packaging phonetic information in dictionaries of languages of the Sotho-Tswana cluster. *AFRILEX 2011 African Association for Lexicography*, 31. https://www.afrilex.africanlanguages.com/afrilex2011/afrilex2011unam.webs.com/AFRILEX_2011_Conference_Booklet-1.pdf#page=33v

Luby, J., Belden, A., Botteron, K., Marrus, N., Harms, M. P., Babb, C., ... & Barch, D. (2013). The effects of poverty on childhood brain development: the mediating effect of caregiving and stressful life events. *JAMA pediatrics*, *167*(12), 1135-1142. doi:10.1001/jamapediatrics.2013.3139

MacIntyre, P. D., & Gardner, R. C. (1991). Language anxiety: Its relationship to other anxieties and to processing in native and second languages. *Language learning*, *41*(4), 513-534. https://doi.org/10.1111/j.1467-1770.1991.tb00691.x

Mabovula, N. N. (2011). The erosion of African communal values: A reappraisal of the African Ubuntu philosophy. *Inkanyiso: Journal of Humanities and Social Sciences*, *3*(1), 38-47. **DOI:** 10.4314/ijhss.v3i1.69506

Maistry, S. M., & Africa, I. E. (2020). Neoliberal stratification: The confounding effect of the

school poverty quintile ranking system in South Africa. *South African Journal of Education*, *40*(4). **DOI:** 10.15700/saje.v40n4a1872

Makin, L., Jones-Diaz, C., & McLachlan, C. (Eds.). (2007). *Literacies in childhood: Changing views, challenging practice*. Elsevier Australia.

Malaquias, R. F., de Oliveira Malaquias, F. F., & Hwang, Y. (2017). The role of information and communication technology for development in Brazil. *Information Technology for Development*, *23*(1), 179-193. https://doi.org/10.1080/02681102.2016.1233854

Maloney, E. A., Sattizahn, J. R., & Beilock, S. L. (2014). Anxiety and cognition. *Wiley Interdisciplinary Reviews: Cognitive Science*, *5*(4), 403-411. https://doi.org/10.1002/wcs.1299

Manten, A., le Roux, M., Geertsema, S., & Graham, M. (2020). An investigation into the early literacy skills of English second language learners in South Africa. *Australasian Journal of Early Childhood*, *45*(2), 142-154. https://doi.org/10.1177/1836939120918504

Mardiyan, M., Mkrtchyan, S., Shukuryan, A., Chopikyan, A., Dunamalyan, R., & Danielyan, L. (2017). Peculiarities of situational and personal anxiety degree in the

schoolchildren with ENT chronic diseases. *Health and quality of life outcomes*, *15*(1), 1-8. https://doi.org/10.1177/1836939120918504

Marjorie, L. (1982). Language policy and oppression in South Africa. *Cultural Survival Quarterly Magazine*. http://culturalsurvival.org/publicationa/cultural-survival-quartely/south-africa/language-policy-and-oppression-south-africa

Martin, O., & Mullis, I. V. S. (2013). Relationships among reading, mathematics and science achievement at the fourth grade—implications for early learning. *Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Lynch School of Education, Boston College*.

Matusevych, Y., Dehaghi, A. A. K., & Stevenson, S. (2018, January). Modeling bilingual word associations as connected monolingual networks. In *Proceedings of the 8th Workshop on Cognitive Modeling and Computational Linguistics (CMCL 2018)* (pp. 46-56). https://aclanthology.org/W18-0106.pdf

Mayeza, E. (2017). 'Girls don't play soccer': Children policing gender on the playground in a township primary school in South Africa. *Gender and education*, *29*(4), 476-494. https://doi.org/10.1080/09540253.2016.1187262

Mesthrie, R., & Rajend, M. (Eds.). (2002). *Language in South Africa*. Cambridge University Press.

Mather, N. (2010). Mastering the Alphabetic Principle.

Mboweni, O. (2021). *Sona 21: Malnutrition, Mr. President, should be a 'foremost, overriding priority.* https://mg.co.za/opinion/2021-02-12-sona-21-malnutrition-mr-president-should-be-a-foremost-overriding-priority/

McBride, S. 2019. Why are South African children struggling to read properly? https://africasacountry.com/2019/04/why-are-south-african-children-struggling-to-read-properly

McLean, C. P., & Anderson, E. R. (2009). Brave men and timid women? A review of the gender differences in fear and anxiety. *Clinical psychology review*, *29*(6), 496-505. http://doi:10.1016/j.cpr.2009.05.003

McLeod, S. (2018). Piaget's Theory and Stages of Cognitive Development. *Developmental Psychology, Simply Psychology*. [No DOI]

Meintjes, H., Hall, K., Marera, D. H., & Boulle, A. (2010). Orphans of the AIDS epidemic?

The extent, nature and circumstances of child-headed households in South Africa. *AIDS care*, *22*(1), 40-49. https://doi.org/10.1080/09540120903033029

Mercer, S. (2011). Language learner self-concept: Complexity, continuity and change. *System*, *39*(3), 335-346. https://doi.org/10.1016/j.system.2011.07.006

Merriam-Webster. (n.d.). Wright. In *Merriam-Webster.com dictionary*. Retrieved December 27, 2021, from https://www.merriam-webster.com/dictionary/

Mikami, H. (2019). Reading anxiety scales: Do they measure the same construct? *Reading in a Foreign Language, 31*(2), 249–268. https://doi.10125/66932

Miley, S. K., & Farmer, A. (2017). English Language Proficiency and Content Assessment Performance: A Comparison of English Learners and Native English Speakers Achievement. *English Language Teaching*, *10*(9), 198-207.

Moeng, K. (2019). Community perceptions on the health risks of acid mine drainage: the environmental justice struggles of communities near mining fields. *Environment, Development and Sustainability*, *21*(6), 2619-2640.

https://doi.org/10.1007/s10668-018-0149-4

Mohammadpur, B., & Ghafournia, N. (2015). An elaboration on the effect of reading anxiety on reading achievement. *English Language Teaching*, *8*(7), 206-215. http://dx.doi.org/10.5539/elt.v8n7p206

Montague, M., Enders, C., & Castro, M. (2005). Academic and behavioral outcomes for students at risk for emotional and behavioral disorders. *Behavioral Disorders*, *31*(1), 84-94. https://doi.org/10.1177/019874290503100106

Moolman, B., Essop, R., Makoae, M., Swartz, S., & Solomon, J. P. (2020). School climate, an enabling factor in an effective peer education environment: Lessons from schools in South Africa. *South African Journal of Education*, *40*(1), 1-10. https://hdl.handle.net/10520/EJC-1c02af3f5a

Moonsamy, S., & Barnes, N. (2021). Written narratives of Grade 5 learners with developmental language difficulties: A group discussion intervention study. *Per Linguam*, *37*(1), 45-67. http://orcid.org/0000-0003-3706-0077

Moonsamy, S., & Carolus, S. (2019). Emergent literacy support for children from

marginalised populations. *Folia Phoniatrica et Logopaedica*, *71*(2-3), 83-93. https://doi.org/10.1159/000493893

Moonsamy, S., Mupawose, A., Seedat, J., Mophosho, M., & Pillay, D. (2017). Speech-language pathology and audiology in South Africa: Reflections on transformation in professional training and practice since the end of apartheid. *Perspectives of the ASHA Special Interest Groups*, *2*(17), 30-41. https://doi.org/10.1044/persp2.SIG17.30

Morrow, L. M. (2015). *Literacy development in the early years: Helping children read and write* (8th ed.). Boston: Pearson.

Mughal, B. B., Fini, J. B., & Demeneix, B. A. (2018). Thyroid-disrupting chemicals and brain development: an update. *Endocrine connections*, *7*(4), R160-R186. https://doi.org/10.1530/EC-18-0029

Mugumbate, J., & Chereni, A. (2019). Using African Ubuntu theory in social work with children in Zimbabwe. *African Journal of Social Work*, *9*(1). file:///C:/Users/zmakanya/Downloads/184222-Article%20Text-468847-1-10-20190306.pdf

Munro, N. (2017). Cognition: Thinking, intelligence and language. In E.M. Schutte (Ed.), *Psychology – An exploration. Global and Southern African Perspectives* (pp.

291-333). Cape Town, South Africa: Pearson.

Muris, P. (2006). Maladaptive schemas in non-clinical adolescents: Relations to perceived parental rearing behaviours, big five personality factors and psychopathological symptoms. *Clinical Psychology & Psychotherapy: An International Journal of Theory & Practice*, *13*(6), 405-413. https://doi.org/10.1002/cpp.506

Mzimane, N. C., & Mantlana, C. D. (2017). Reading strategies in the Foundation Phase (Grades R-3): Case studies of two schools in the Libode District, South Africa. *International Journal of Educational Sciences*, *16*(1-3), 106-113.

Naidoo, R., Coopoo, Y., Lambert, E. V., & Draper, C. (2009). Impact of a primary school-based nutrition and physical activity intervention on learners in KwaZulu-Natal, South Africa: a pilot study. *South African Journal of Sports Medicine*, *21*(1). file:///C:/Users/zmakanya/Downloads/44479-Article%20Text-44233-1-10-20090721.pdf

Nakamoto, J., Lindsey, K. A., & Manis, F. R. (2007). A longitudinal analysis of English language learners' word decoding and reading comprehension. *Reading and Writing*, *20*(7), 691-719. https://doi.org/10.1007/s11145-006-9045-7

Naumova, O. Y., Rychkov, S. Y., Kornilov, S. A., Odintsova, V. V., Anikina, V. O., Solodunova, M. Y., ... & Grigorenko, E. L. (2019). Effects of early social deprivation on epigenetic statuses and adaptive behavior of young children: A study based on a cohort of institutionalized infants and toddlers. *PLoS One*, *14*(3), e0214285. https://doi.org/10.1371/journal.pone.0214285

Nazarinasab, F., Nemati, A., & Mortahan, M. M. (2014). The impact of foreign language reading anxiety and text feature awareness on university students' reading comprehension ESP texts. *International Journal of Language and Linguistics*, *2*(6), 1-7. doi: 10.11648/j.ijll.s.2014020601.11b

Ncube, L. B. (2010). Ubuntu: A transformative leadership philosophy. *Journal of Leadership Studies*, *4*(3), 77-82. https://doi.org/10.1002/jls.20182

Nejad, S. G., & Keshavarzi, A. (2015). The effect of cooperative learning on reading comprehension and reading anxiety of pre-university students. *Journal of Applied Linguistics and Language Research*, *2*(8), 169-180. file:///C:/Users/zmakanya/Downloads/203-492-1-PB.pdf

Nevills, P., & Wolfe, P. (Eds.). (2009). *Building the reading brain, PreK-3*. Corwin Press.

Noble, K. G., Houston, S. M., Brito, N. H., Bartsch, H., Kan, E., Kuperman, J. M., ... &

Sowell, E. R. (2015). Family income, parental education and brain structure in children and adolescents. *Nature neuroscience*, *18*(5), 773-778. https://doi.org/10.1038/nn.3983

Ofan, R. H., Rubin, N., & Amodio, D. M. (2014). Situation-based social anxiety enhances the neural processing of faces: evidence from an intergroup context. *Social cognitive and affective neuroscience*, *9*(8), 1055-1061. https://doi.org/10.1093/scan/nst087

Ogbonnaya, U. I., & Awuah, F. K. (2019). Quintile ranking of schools in South Africa and learners' achievement in probability. http://hdl.handle.net/226/72837

Ogundokun, M. O. (2011). Learning style, school environment and test anxiety as correlates of learning outcomes among secondary school students. *IFE Psychology: An International Journal*, *19*(2), 321-336. https://hdl.handle.net/10520/EJC38876

Olson, L. A., Evans, J. R., & Keckler, W. T. (2006). Precocious readers: Past, present, and future. *Journal for the Education of the Gifted*, *30*(2), 205-235. https://doi.org/10.4219/jeg-2006-260

Ortlieb, E., & Schatz, S. (2020). Student's Self-Efficacy in Reading–Connecting Theory to

Practice. *Reading Psychology*, *41*(7), 735-751. https://doi.org/10.1080/02702711.2020.1783146

Ossokina, I. V., & Swank, O. H. (2003). Polarization, political instability and active learning. *Scandinavian Journal of Economics*, *105*(1), 1-14. https://doi.org/10.1111/1467-9442.00001

Oxford Dictionaries. 2021. https://www.oxfordlearnersdictionaries.com/

Pappamihiel, N. E. (2002). English as a second language students and English language anxiety: Issues in the mainstream classroom. *Research in the Teaching of English*, 327-355. [No DOI]

Park, G. P., & French, B. F. (2013). Gender differences in the Foreign Language Classroom Anxiety Scale. *System, 41*(2), 462-471. https://doi.org/10.1016/j.system.2013.04.001

Parijat, P., & Bagga, S. (2014). Victor Vroom's expectancy theory of motivation–An evaluation. *International Research Journal of Business and Management*, *7*(9), 1-8. http://irjbm.org/irjbm2013/Sep2014/Paper1.pdf

Pekrun, R. (1992). The impact of emotions on learning and achievement: Towards a theory

of cognitive/motivational mediators. *Applied psychology*, *41*(4), 359-376. https://doi.org/10.1111/j.1464-0597.1992.tb00712.x

Pekrun, R. (2019). *Anxiety: Recent developments in cognitive, psychophysiological, and health research*, 23-42. Taylor & Francis: New York.

Perfetti, C. A., Liu, Y., Fiez, J., Nelson, J., Bolger, D. J., & Tan, L. H. (2007). Reading in two writing systems: Accommodation and assimilation of the brain's reading network. *Bilingualism: Language and Cognition*, *10*(2), 131-146. https://doi.org/10.1017/S1366728907002891

Peters, M. A. (1974). *The contribution of the (Carnegie) Non-European Library Service, Transvaal, to the development of library services for Africans in South Africa: an historical and evaluative study* (Master's thesis, University of Cape Town). http://hdl.handle.net/11427/14799

Phillips-Veeze, C. (2011). *Child-headed households: a feasible way forward, or an infringement of children's right to alternative care?*. Leiden University.

Piaget, J. (1976). Piaget's theory. In *Piaget and his school* (pp. 11-23). Springer, Berlin, Heidelberg.

Pierce, K., Carter, C., Weinfeld, M., Desmond, J., Hazin, R., Bjork, R., & Gallagher, N. (2011). Detecting, studying, and treating autism early: the one-year well-baby check-up approach. *The Journal of pediatrics*, *159*(3), 458-465. https://doi.org/10.1016/j.jpeds.2011.02.036

Pillay, D., Moonsamy, S., & Khoza-Shangase, K. (2010). Bridging the gap between early identification and intervention in the paediatric population with hearing impairments: hot topics. *South African Journal of Child Health*, *4*(4), 92-94. https://hdl.handle.net/10520/EJC64794

Pinker, S. (2003). Language as an adaptation to the cognitive niche. In Kirby, S., & Christiansen, M. H. (2003). *Language evolution (pp.* 16-37). Oxford University Press.

Pinker, S. (2020). The Cognitive Revolution. *Harvard Gazette*.

Pirozzolo, F. J., & Wittrock, M. C. (Eds.). (2013). *Neuropsychological and cognitive processes in reading*. Academic Press.

Pistell, P. J., Morrison, C. D., Gupta, S., Knight, A. G., Keller, J. N., Ingram, D. K., & Bruce-Keller, A. J. (2010). Cognitive impairment following high fat diet consumption is associated with brain inflammation. *Journal of neuroimmunology*, *219*(1-2), 25-32.

https://doi.org/10.1016/j.jneuroim.2009.11.010

Piper, B., Schroeder, L., & Trudell, B. (2016). Oral reading fluency and comprehension in Kenya: Reading acquisition in a multilingual environment. *Journal of Research in Reading*, *39*(2), 133-152. https://doi.org/10.1111/1467-9817.12052

PIRLS (2006). International Press Release. https://timssandpirls.bc.edu/pirls2006/p06_release.html

PIRLS (2011). Mullis, I. V., Martin, M. O., Foy, P., & Drucker, K. T. (2012). TIMSS & PIRLS International Study Center. *Chestnut Hill, MA: Boston College*. https://files.eric.ed.gov/fulltext/ED544362.pdf

PIRLS (2016). International Results. *http://timssandpirls.bc.edu/pirls2016/international-_results/wp-content/uploads/structure/PIRLS/1.-student-achievement/1_1_pirls-achievement-results.pdf*

PIRLS (2016). Mullis, I. V. S., Martin, M. O., Foy, P., & Hooper, M. (2017). *PIRLS 2016 International Results in Reading* Retrieved from Boston College, TIMSS & PIRLS International Study Center. http://timssandpirls.bc.edu/pirls2016/international-results/

Pretorius, E., & Naudé, H. (2002). A culture in transition: Poor reading and writing ability among children in South African townships. *Early child development and care*, *172*(5), 439-449. https://doi.org/10.1080/03004430214552

Pretorius, E. J., & Spaull, N. (2016). Exploring relationships between oral reading fluency and reading comprehension amongst English second language readers in South Africa. *Reading and Writing*, *29*(7), 1449-1471. https://doi.org/10.1007/s11145-016-9645-9

Pretorius, E., Mohohlwane, N., & Spaull, N. (2020). Investigating the comprehension iceberg: Developing empirical benchmarks for early-grade reading in agglutinating African languages. *South African Journal of Childhood Education*, *10*(1), 1-14. https://hdl.handle.net/10520/EJC-1f9739611e

Price, C. J. (2000). The anatomy of language: contributions from functional neuroimaging. *The Journal of Anatomy*, *197*(3), 335-359. https://doi.org/10.1046/j.1469-7580.2000.19730335.x

Pufpaff, L. A. (2009). A developmental continuum of phonological sensitivity skills. *Psychology in the Schools*, *46*(7), 679-691. https://doi.org/10.1002/pits.20407

Pungello, E. P., Iruka, I. U., Dotterer, A. M., Mills-Koonce, R., & Reznick, J. S. (2009). The effects of socioeconomic status, race, and parenting on language development in early childhood. *Developmental psychology*, *45*(2), 544. https://doi.org/10.1037/a0013917

Purcell, J. J., Jiang, X., & Eden, G. F. (2017). Shared orthographic neuronal representations for spelling and reading. *NeuroImage*, *147*, 554-567. https://doi.org/10.1016/j.neuroimage.2016.12.054

Quadlin, N. (2018). The Mark of a Woman's Record: Gender and Academic Performance in Hiring. *American Sociological Review, 83*(2), 331– 360. https://doi:10.1177/0003122418762291

Rastogi, S. and E., R. (2018), "Financial inclusion and socioeconomic development: gaps and solution", *International Journal of Social Economics*, Vol. 45 No. 7, pp. 1122-1140. https://doi.org/10.1108/IJSE-08-2017-0324

Racine, J. P. (2018). Lexical approach. *The TESOL encyclopedia of English language Teaching*. John I. Liontas (Eds). John Wiley & Sons, Inc. https://doi.org/10.1002/9781118784235.eelt0169

Raikes, A., Yoshikawa, H., Britto, P. R., & Iruka, I. (2017). Children, Youth and Developmental Science in the 2015-2030 Global Sustainable Development Goals. *Social Policy Report*. Volume 30, Number 3. *Society for Research in Child Development*. https://eric.ed.gov/?id=ED581660

Rajab, A., Zakaria, W. Z. W., Rahman, H. A., Hosni, A. D., & Hassani, S. (2012). Reading anxiety among second language learners. *Procedia-Social and Behavioral Sciences*, *66*, 362-369. https://doi.org/10.1016/j.sbspro.2012.11.279

Ramaphosa, C. (2018). State of the Nation Address 2019. *URL: https://www.gov. za/speeches/2SONA2019*

Ramashala, M. S. (2012). *Perceptions on poor matric results*. University of Johannesburg (South Africa). https://www.proquest.com/openview/c18659b13404d5e365f310809e346f74/1?pq-origsite=gscholar&cbl=2026366&diss=y

Ramirez, G., Fries, L., Gunderson, E., Schaeffer, M. W., Maloney, E. A., Beilock, S. L., & Levine, S. C. (2019). Reading anxiety: An early affective impediment to children's success in reading. *Journal of Cognition and Development*, *20*(1), 15-34. https://doi.org/10.1080/15248372.2018.1526175

Rante, S. V. N., Wijaya, H., & Tulak, H. (2020). Far from Expectation: A Systematic Literature Review of Inclusive Education in Indonesia. https://doi.org/10.13189/ujer.2020.082273

Raselekoane, N. R., Morwe, K. G., & Mulaudzi, T. P. (2017). Re-engineering of the socialisation process for gender mainstreaming in South Africa. *Gender and Behaviour*, *15*(4), 10512-10523. https://hdl.handle.net/10520/EJC-c1f12f6cd

Rastle, K. (2016). Visual word recognition. In *Neurobiology of language* (pp. 255-264). Academic Press. https://doi.org/10.1016/B978-0-12-407794-2.00021-3

Ravid, D., & Tolchinsky, L. (2002). Developing linguistic literacy: A comprehensive model. *Journal of child language*, *29*(2), 417-447. https://doi.org/10.1017/S0305000902005111

Reilly, D., Neumann, D. L., & Andrews, G. (2019). Gender differences in reading and writing achievement: Evidence from the National Assessment of Educational Progress (NAEP). *American Psychologist*, *74*(4), 445. https://doi.org/10.1037/amp0000356

Reiter, J. P., & Kinney, S. K. (2011). Commentary: Sharing confidential data for research purposes: a primer. *Epidemiology*, *22*(5), 632-635. https://doi.org/10.1097/EDE.0b013e318225c44b

Retelsdorf, J., Köller, O., & Möller, J. (2014). Reading achievement and reading self-concept–Testing the reciprocal effects model. *Learning and Instruction*, *29*, 21-30. https://doi.org/10.1016/j.learninstruc.2013.07.004

Reyes, I., & Ervin-Tripp, S. (2010). Language choice and competence: Code switching and issues of social identity in young bilingual children. *The education of English language learners*, 67-86.

Reyes, A. T., Constantino, R. E., Cross, C. L., Tan, R. A., & Bombard, J. N. (2020). Resilience, Trauma, and Cultural Norms Regarding Disclosure of Mental Health Problems among Foreign-Born and US-Born Filipino American Women. *Behavioral Medicine*, *46*(3-4), 217-230. https://doi.org/10.1080/08964289.2020.1725413

Roberts, G. J., Solis, M., Ciullo, S., McKenna, J. W., & Vaughn, S. (2015). Reading interventions with behavioral and social skill outcomes: A synthesis of research. *Behavior modification*, *39*(1), 8-42.

https://doi.org/10.1177/0145445514561318

Rhode, L. (2015). The comprehensive emergent literacy model: Early literacy in context. SAGE publications.

https://doi.org/10.1177/2158244015577664

Robinson. K. (2009, June). Do schools kill creativity?

https://www.ted.com/talks/sir_ken_robinson_do_schools_kill_creativity

Sarama, J., & Clements, D. H. (2009). Building blocks and cognitive building blocks: Playing to know the world mathematically. *American Journal of Play*, *1*(3), 313-337.

Romeo, R. R., Leonard, J. A., Robinson, S. T., West, M. R., Mackey, A. P., Rowe, M. L., & Gabrieli, J. D. (2018). Beyond the 30-million-word gap: Children's conversational exposure is associated with language-related brain function. *Psychological science*, *29*(5), 700-710.

https://doi.org/10.1177/0956797617742725

Ruch, H. (2018). The role of acoustic distance and sociolinguistic knowledge in dialect identification. *Frontiers in psychology*, *9*, 818.

https://doi.org/10.3389/fpsyg.2018.00818

Rule, P. (2017, December 8). South Africa has a reading crisis: Why and What Can Be Done about It? *The Conversation*. http://theconversation.com/south-africa-has-a-reading-crisis-why-and-what-can-be-done-about-it-88711

Samsuddin, S. F., Shaffril, H. A. M., Bolong, J., & Mohamed, N. A. (2019). Understanding the reading habit and attitudes among the rural community in low literacy rate areas in Malaysia: Rural library perspectives. *Library Management*. Vol. 41 No. 1, pp. 39-52. https://doi.org/10.1108/LM-06-2019-0037

Schneider, N., & Garcia-Rodenas, C. L. (2017). Early nutritional interventions for brain and cognitive development in preterm infants: a review of the literature. *Nutrients*, *9*(3), https://doi.org/10.3390/nu9030187

Schady, N., Behrman, J., Araujo, M. C., Azuero, R., Bernal, R., Bravo, D., ... & Vakis, R. (2014). *Wealth gradients in early childhood cognitive development in five Latin American countries*. The World Bank. https://doi.org/10.3368/jhr.50.2.446

Schlegel, A. A., Rudelson, J. J., & Tse, P. U. (2012). White matter structure changes as adults learn a second language. *Journal of cognitive neuroscience*, *24*(8), 1664-1670. https://doi.org/10.1162/jocn_a_00240

Seabi, J., Cockcroft, K., Goldschagg, P., & Greyling, M. (2012). The impact of aircraft noise exposure on South African children's reading comprehension: the moderating effect of home language. *Noise and Health*, *14*(60), 244. https://www.noiseandhealth.org/text.asp?2012/14/60/244/102963

Seery, E., & Caistor Arendar, A. (2014). *Even it up: Time to end extreme inequality*. Oxfam International.

Shaw, E. E., Schultz, A. P., Sperling, R. A., & Hedden, T. (2015). Functional connectivity in multiple cortical networks is associated with performance across cognitive domains in older adults. *Brain Connectivity*, *5*(8), 505-516. https://doi.org/10.1089/brain.2014.0327

Shaywitz, S. E., & Shaywitz, B. A. (2016). Reading disability and the brain. *On developing readers: Readings from educational leadership (EL Essentials)*, *146*.

Shi, Y. Z., & Liu, Z. Q. (2006). Foreign language reading anxiety and its relationship to English achievement and gender. *Journal of PLA University of Foreign Languages*, *29*(2), 59-64. http://en.cnki.com.cn/Article_en/CJFDTOTAL-JFJW200602013.htm

Silverman, R. D., Johnson, E., Keane, K., & Khanna, S. (2020). Beyond decoding: A meta-analysis of the effects of language comprehension interventions on K–5 students' language and literacy outcomes. *Reading Research Quarterly*, *55*, S207-S233. https://doi.org/10.1002/rrq.346

Simmons, D. C., Kame'enui, E. J., Good, R. H., Harn, B. A., Cole, C., & Braun, D. (2002). Building, implementing, and sustaining a beginning reading improvement model: Lessons learned school by school. *Interventions for academic and behavior problems II: Preventive and remedial approaches*, 537-570. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.475.825&rep=rep1&type=pdf

Slee, R. (2018). Defining the scope of inclusive education. http://repositorio.minedu.gob.pe/handle/MINEDU/5977

Sorbie, A. (2020). Sharing confidential health data for research purposes in the UK: where are 'publics' in the public interest?. *Evidence & Policy: A Journal of Research, Debate and Practice*, *16*(2), 249-265. https://doi.org/10.1332/174426419X15578209726839

Sparks, R. L., Patton, J., & Luebbers, J. (2018). L2 anxiety and the foreign language reading anxiety scale: Listening to the evidence. *Foreign Language Annals*, *51*(4), 738-762. https://doi.org/10.1111/flan.12361

Southall, R. (2020). *Events in Lesotho point to poor prospects for political stability.* https://mg.co.za/article/2020-01-28-events-in-lesotho-point-to-poor-prospects-for-political-stability/

Sriganesh, R., & Ponniah, R. J. (2018). Genetics of language and its implications on language interventions. *Journal of genetics*, *97*(5), 1485-1491. https://doi.org/10.1007/s12041-018-1006-9

Statistics South Africa. 2019. https://www.statista.com/statistics/1114302/distribution-of-languages-spoken-inside-and-outside-of-households-in-south-africa/

Steacy, L. M., Kearns, D. M., Gilbert, J. K., Compton, D. L., Cho, E., Lindstrom, E. R., & Collins, A. A. (2017). Exploring individual differences in irregular word recognition among children with early-emerging and late-emerging word reading difficulty. *Journal of Educational Psychology*, *109*(1), 51. https://doi.org/10.1037/edu0000113

Stoltz. E. (2021). South African children suffer the ‘slow violence of malnutrition’. https://mg.co.za/news/2021-02-18-south-african-children-suffer-the-slow-violence-of-malnutrition/

Strauss, A. M., & Bipath, K. (2020). Exploring the influence of parents' home reading practices on emergent literacy. *Journal for Language Teaching= Ijenali Yekufundzisa Lulwimi= Tydskrif vir Taalonderrig*, *54*(1), 195-213. https://hdl.handle.net/10520/ejc-langt-v54-n1-a10

Studer, B., & Knecht, S. (2016). Motivation: What have we learned and what is still missing?. *Progress in brain research*, *229*, 441-450. https://doi.org/10.1016/bs.pbr.2016.07.001

Swart, O., & Becker, A. I. (2014). Matric results in mathematics and languages: A predictor of undergraduate and postgraduate success. *Progressio*, *36*(1), 157-182. https://hdl.handle.net/10520/EJC158118

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in science education*, *48*(6), 1273-1296. https://doi.org/10.1007/s11165-016-9602-2

Tabrizi, E. A., & Yaacob, S. N. (2011). Relationship between creative thinking and anxiety among adolescent boys and girls in Tehran, Iran. *International Journal of Humanities and Social Science*, *1*(19), 60-66. http://www.ijhssnet.com/journals/Vol_1_No_19_December_2011/8.pdf

Tagarelli, K. M., Mota, M. B., & Rebuschat, P. (2011). The role of working memory in implicit

and explicit language learning. In *Proceedings of the Annual Meeting of the Cognitive Science Society* (Vol. 33, No. 33). https://escholarship.org/uc/item/0r55c3fk

Tagarelli, K. M., Ruiz, S., Vega, J. L. M., & Rebuschat, P. (2016). Variability in second language learning: The roles of individual differences, learning conditions, and linguistic complexity. *Studies in Second Language Acquisition*, *38*(2), 293-316. https://doi.org/10.1017/S0272263116000036

Taylor, N. A., Greenberg, D., & Terry, N. P. (2016). The relationship between parents' literacy skills and their preschool children's emergent literacy skills. *COABE Journal*, *5*(2), 5. https://coabe.org/wp-content/uploads/2019/09/Journal-summer-2016.pdf#page=7

Tayob, F., & Moonsamy, S. (2018). Caregivers' reading practices to promote literacy in a South African children's home: Experiences and perceptions. *South African Journal of Communication Disorders*, *65*(1), 1-9. http://dx.doi.org/10.4102/sajcd.v65i1.559

Tennant, J. E., Demaray, M. K., Malecki, C. K., Terry, M. N., Clary, M., & Elzinga, N. (2015). Students' ratings of teacher support and academic and social–emotional well-being. *School psychology quarterly*, *30*(4), 494. https://doi.org/10.1037/spq0000106

Thompson, A.S., & Khawaja, A.J. (2016) Foreign language anxiety in Turkey: the role of multilingualism. *Journal of Multilingual and Multicultural Development, (37)*2, 115-130, https://doi.org /10.1080/01434632.2015.1031136

Trainin, G., Wessels, S., Nelson, R. and Vadasy, P. (2016). A study of home emergent literacy experiences of young latino english learners. *Early Childhood Education Journal, 45*(5), 651-658. https://doi.org/10.1007/s10643-016-0809-7

Tsang, Y. K., & Chen, H. C. (2014). Activation of morphemic meanings in processing opaque words. *Psychonomic bulletin & review*, *21*(5), 1281-1286. https://doi.org/10.3758/s13423-014-0589-2

Tsai, Y. C., & Li, Y. C. (2012). Test anxiety and foreign language reading anxiety in a reading-proficiency test. *Journal of Social Sciences*, *8*(1), 95. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.682.8718&rep=rep1&type=pdf

Tugendhat, E. (2018). *Egocentricity and Mysticism*. Columbia University Press.

Tyler, A., Mueller, C. M., & Ho, V. (2010). Applying cognitive linguistics to instructed L2 learning: The English modals. *AILA Review*, *23*(1), 30-49.

Uauy, R., & Dangour, A. D. (2006). Nutrition in brain development and aging: role of essential fatty acids. *Nutrition reviews*, *64*(suppl_2), S24-S33. https://doi.org/10.1111/j.1753-4887.2006.tb00242.x

Tunmer, W. E., & Hoover, W. A. (2017). Cognitive and linguistic factors in learning to read. In *Reading acquisition* (pp. 175-214). Routledge.

Ueki, M., & Takeuchi, O. (2012). Validating the L2 motivational self-system in a Japanese EFL context: The interplay of L2 motivation, L2 anxiety, self-efficacy, and the perceived amount of information. *Language Education & Technology*, *49*, 1-22. https://doi.org/10.24539/let.49.0_1

United Nations General Assembly. (2015). Transforming our world: the 2030 Agenda for Sustainable Development, A/RES/70/1. https://www.refworld.org/docid/57b6e3e44.html

United Nations (UN). 2019. Sustainable Development Goals. https://www.un.org/sustainabledevelopment/education/

UNESCO Institute for Statistics. (2019). SDG 4 data book. Global education indicators 2019. http://hdl.voced.edu.au/10707/511092

United Nations Educational, Scientific and Cultural Organisation (UNESCO). 2019. Meeting Commitments: Are countries on track to meet SDG 4?. *Global Education Monitoring Report.* http://uis.unesco.org/sites/default/files/documents/meeting-commitments-are-countries-on-track-achieve-sdg4.pdf

Van Breda, A. D. (2010). The phenomenon and concerns of child-headed households in Africa. In M. Liebel & R. Lutz (Eds.), *Sozialarbeit des Südens, Band III: Kindheiten*. *3*, 259-279. Oldenburg. https://www.academia.edu/download/30858547/46_CHH_in_Africa.pdf

Van der Fels, I. M., Te Wierike, S. C., Hartman, E., Elferink-Gemser, M. T., Smith, J., & Visscher, C. (2015). The relationship between motor skills and cognitive skills in 4–16-year-old typically developing children: A systematic review. *Journal of science and medicine in sport*, *18*(6), 697-703. https://doi.org/10.1016/j.jsams.2014.09.007

Vandenplas, Y., Rakhecha, A., Edris, A., Shaaban, B., Tawfik, E., Bashiri, F. A., ... & Alsaad, S. (2019). Physicians' Understanding of Nutritional Factors Determining Brain Development and Cognition in the Middle East and Africa. *Pediatric gastroenterology,hepatology & nutrition*, *22*(6), 536-544. https://synapse.koreamed.org/articles/1136660

Vehabovic, N., & Paul, C. M. (2018). Striving toward biliteracy in mainstream, English as a second language, and bilingual classrooms. In *Optimizing elementary education for English language learners* (pp. 41-57). IGI Global. https://doi.org/10.4018/978-1-5225-3123-4.ch003

Van Rooy, B., & Pretorius, E. J. (2013). Is reading in an agglutinating language different from an analytic language? An analysis of isiZulu and English reading based on eye movements. *Southern African Linguistics and Applied Language Studies*, *31*(3), 281-297. https://doi.org/10.2989/16073614.2013.837603

Von Tetzchner, S., Brekke, K. M., Sjøthun, B., & Grindheim, E. (2005). Constructing preschool communities of learners that afford alternative language development. *Augmentative and alternative communication*, *21*(2), 82-100. https://doi.org/10.1080/07434610500103541

Ward, J. (2015). *The student's guide to cognitive neuroscience (3rd Ed*.). Psychology Press: Taylor & Francis Group: London.

Watts, J., Cockcroft, K. and Duncan, N. 2013. Developmental Psychology. Cape Town: Juta

Welsh, J. A., Nix, R. L., Blair, C., Bierman, K. L., & Nelson, K. E. (2010). The development of

cognitive skills and gains in academic school readiness for children from low-income families. *Journal of educational psychology*, *102*(1), 43. https://doi.org/10.1037/a0016738

Wei, H. L., Chen, J., Chen, Y. C., Yu, Y. S., Zhou, G. P., Qu, L. J., ... & Zhang, H. (2020). Impaired functional connectivity of limbic system in migraine without aura. *Brain imaging and behavior*, *14*(5), 1805-1814. https://doi.org/10.1007/s11682-019-00116-5

Weisberg, R. W., & Reeves, L. M. (2013). *Cognition: from memory to creativity*. John Wiley & Sons.

Weismer, S. E., & Edwards, J. (2006). The role of phonological storage deficits in specific language impairment: A reconsideration. *Applied Psycholinguistics*, *27*(4), 556-562. https://doi.org/10.1017/S0142716406240396

Westwood, P. (2012). *Reading and learning difficulties*. David Fulton Publishers.

Wharton, S. (2005). Invisible Females, Incapable Males: Gender Construction in a Children's Reading Scheme, *Language and Education, (19)*3, 238-251. https://doi.org/10.1080/09500780508668677

Wittenburg, P., Peters, W., & Drude, S. (2002, May). Analysis of lexical structures from field linguistics and language engineering. In *The 3rd International Conference on Language Resources and Evaluation (LREC 2002)* (pp. 682-686). European Language Resources Association. http://hdl.handle.net/11858/00-001M-0000-0013-1CE1-5

Wigfield, A. and Cambria, J. (2010), "Expectancy-value theory: retrospective and prospective", Urdan, T.C. and Karabenick, S.A. (Ed.) The Decade Ahead: Theoretical Perspectives on Motivation and Achievement (Advances in Motivation and Achievement, Vol. 16 Part A), Emerald Group Publishing Limited, Bingley, pp. 35-70. https://doi.org/10.1108/S0749-7423(2010)000016A005

Wijnands, A., Rijt, J. V., & Coppen, P. A. (2021). Learning to think about language step by step: a pedagogical template for the development of cognitive and reflective thinking skills in L1 grammar education. *Language Awareness*, 1-19. https://doi.org/10.1080/09658416.2021.1871911

Wittenburg, P., Peters, W., & Drude, S. (2002, May). Analysis of lexical structures from field linguistics and language engineering. In *The 3rd International Conference on Language Resources and Evaluation (LREC 2002)* (pp. 682-686). European Language Resources Association. http://hdl.handle.net/11858/00-001M-0000-0013-1CE1-5

Worden, N. (2011). *The making of modern South Africa: Conquest, apartheid, democracy*. John Wiley & Sons.

World Health Organization. Regional Office for South-East Asia. (2015). Dissemination of WHO guidelines and recommendations on micronutrients: policy, practice and service delivery issues. World Health Organization. https://apps.who.int/iris/handle/10665/160764

Wolf, J. B., & Wade, M. J. (2009). What are maternal effects (and what are they not)?. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *364*(1520), 1107-1115. https://doi.org/10.1098/rstb.2008.0238

Wolfe, P., & Nevills, P. (2004). *Building the reading brain, PreK-3*. Corwin Press.

Wu, H. J. (2011). Anxiety and reading comprehension performance in English as a foreign language. *Asian EFL Journal*, *13*(2), 273-307. https://www.asian-efl-journal.com/main-editions-new/anxiety-and-reading-comprehension-performance-in-english-as-a-foreign-language/index.htm

Xu, K., Liu, F., Xu, W., Liu, J., Chen, S., & Wu, G. (2019). Transplanting GABAergic neurons differentiated from neural stem cells into Hippocampus inhibits seizures and

epileptiform discharges in pilocarpine-induced temporal lobe epilepsy model. *World neurosurgery*, *128*, e1-e11. https://doi.org/10.1016/j.wneu.2019.01.245

Yamamoto, Y., & Sonnenschein, S. (2016) Family Contexts of Academic Socialization: The Role of Culture, Ethnicity, and Socioeconomic Status. *Research in Human Development*, 13:3, 183-190. https://doi.org/10.1080/15427609.2016.1194711

Yussof, Y. M., Jamian, A. R., Hamzah, Z. A. Z., & Roslan, S. (2013). Students' Reading Comprehension Performance with Emotional Literacy-Based Strategy Intervention. *International Journal of Education and Literacy Studies*, *1*(1), 82-88. https://eric.ed.gov/?id=ej1149879

Zali, M. (2021). *Inside the life of South African who cannot afford a nutritious meal for children*. https://mg.co.za/news/2021-03-19-inside-the-life-of-south-africans-who-cannot-afford-a-nutritious-meal-for-children/

Zerbian, S. (2009). A contrastive analysis of the sound structure of Sotho-Tswana for second-language acquisition. *Journal for Language Teaching = Ijenali Yekufundzisa Lulwimi = Tydskrif vir Taalonderrig*, *43*(2), 131-152.

https://hdl.handle.net/10520/EJC59955

Zhao, A., Guo, Y., & Dynia, J. (2013). Foreign language reading anxiety: Chinese as a foreign language in the United States. *The Modern Language Journal*, *97*(3), 764-778. https://doi.org/10.1111/j.1540-4781.2013.12032.x

Ziarek, K. (2015). Silent Words. *Heidegger Circle Proceedings*, *49*, 335-344. https://doi.org/10.5840/heideggercircle20154928

Ziegler, J. C., Castel, C., Pech-Georgel, C., George, F., Alario, F. X., & Perry, C. (2008). Developmental dyslexia and the dual route model of reading: Simulating individual differences and subtypes. *Cognition*, *107*(1), 151-178. https://doi.org/10.1016/j.cognition.2007.09.004

Zimmerman, L. (2014). Lessons learnt: Observation of Grade 4 reading comprehension teaching in South African schools across the Progress in International Reading Literacy Study (PIRLS) 2006 achievement spectrum. *Reading & Writing-Journal of the Reading Association of South Africa*, *5*(1), 1-9. https://hdl.handle.net/10520/EJC163889

Zin, Z. M., & Rafik-Galea, S. (2010). Anxiety and academic reading performance among

Malay ESL learners. *Pan-Pacific Association of Applied Linguistic*, 14(2), 41-58. https://eric.ed.gov/?id=EJ920517

Zoghi, M., & Alivandivafa, M. (2014). EFL Reading Anxiety Inventory (EFLRAI) factorial validity and reliability. *Journal of Psychoeducational Assessment*, *32*(4), 318-329. https://doi.org/10.1177/0734282913513686

Zuilkowski, S. S., Piper, B., Kwayumba, D., & Dubeck, M. (2019). Examining options for reading comprehension assessment in international contexts. *Journal of Research in Reading*, *42*(3-4), 583-599. https://doi.org/10.1111/1467-9817.12285

Appendix List

Appendix A: Apartheid Government's Academic Spent

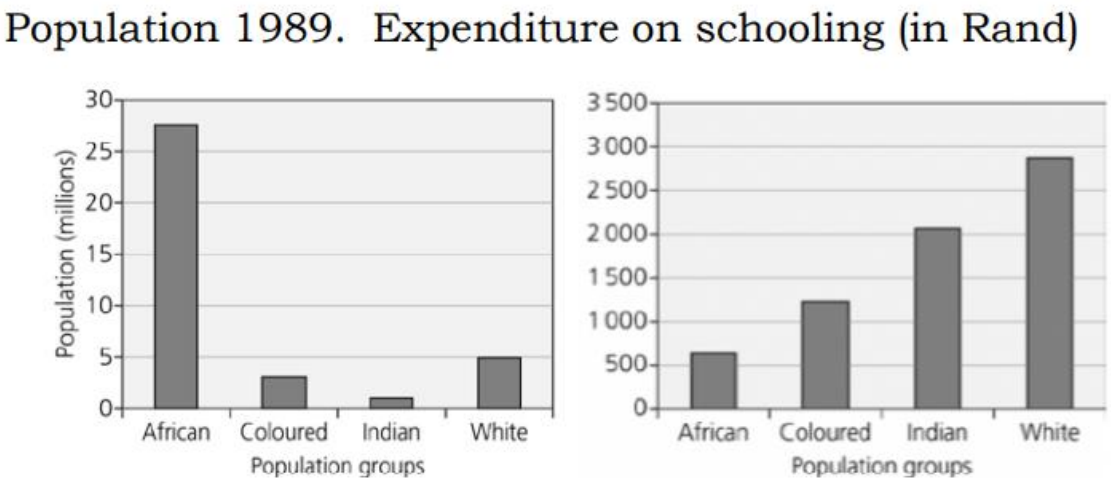
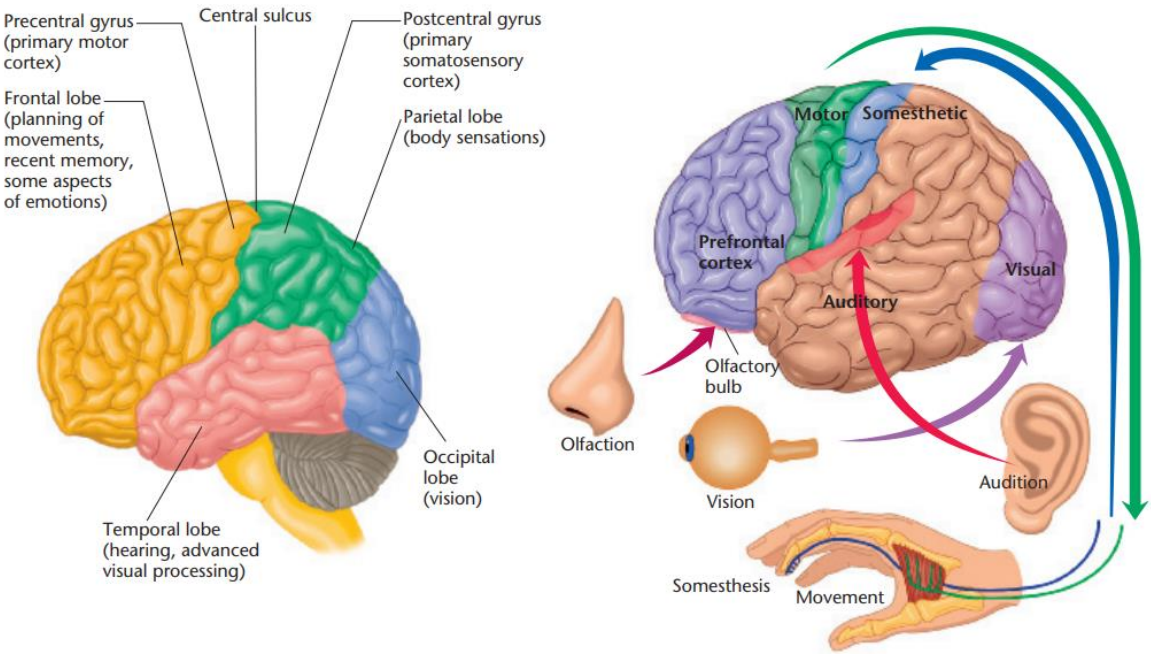


Figure 1: Education expenditure on different population groups, 1989, illustrating the distorted allocation of funding

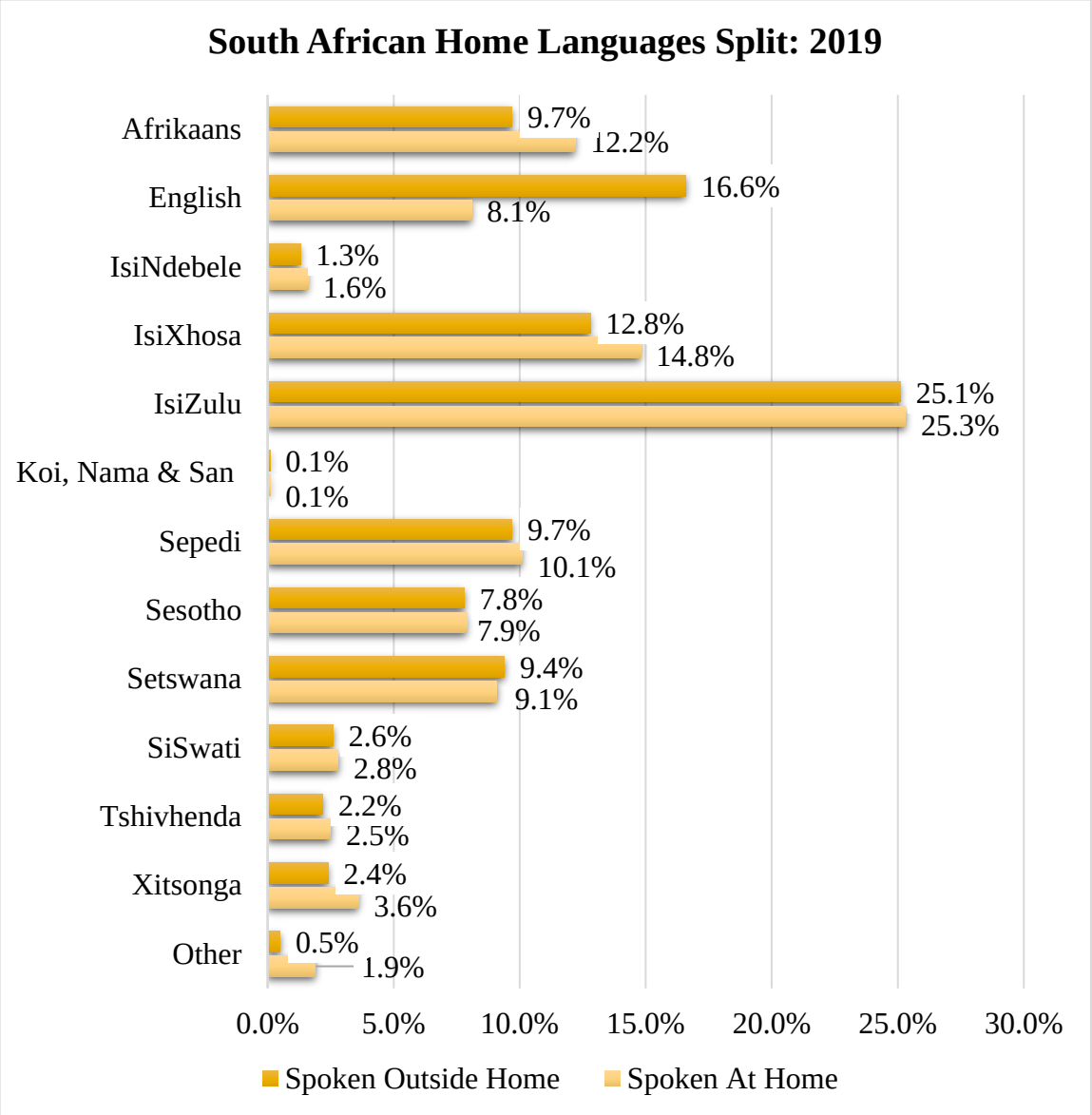
Source: Christie, 2021

Appendix B: Temporal, Frontal Lobe & Occipital Lobes



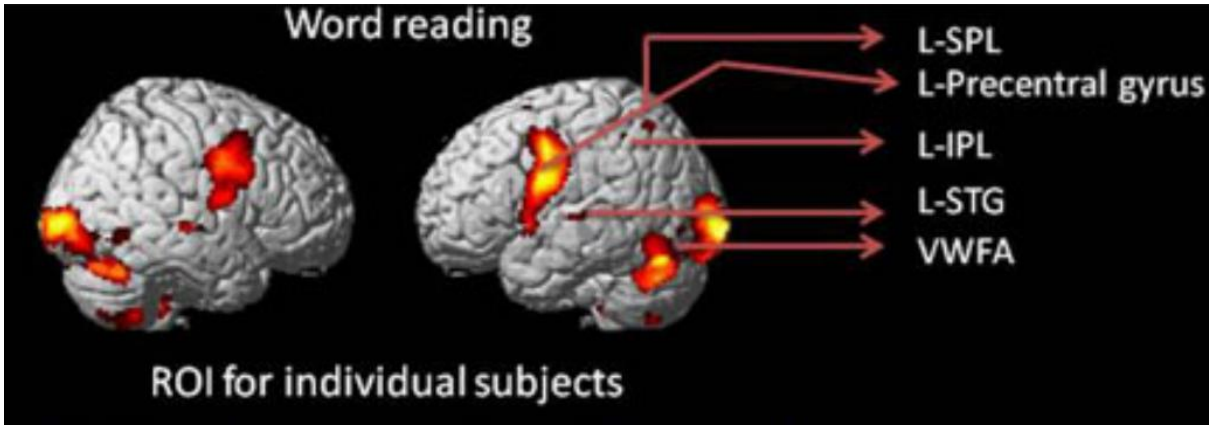
Source: Kalat, 2017

Appendix C: South African Languages



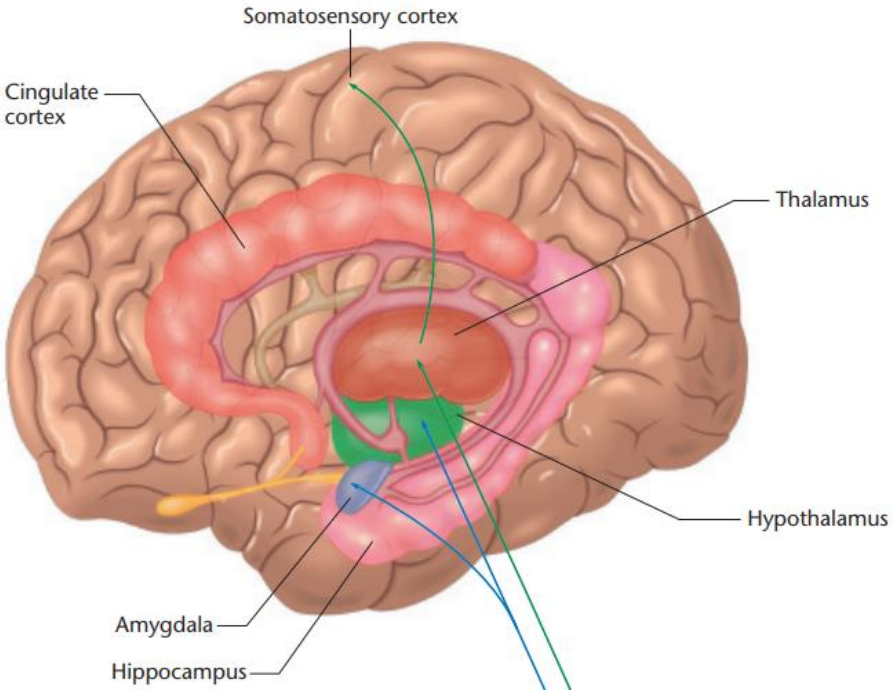
Source: Graph created with data from Statistics SA, 2019

Appendix D: Cortical Reading Networks



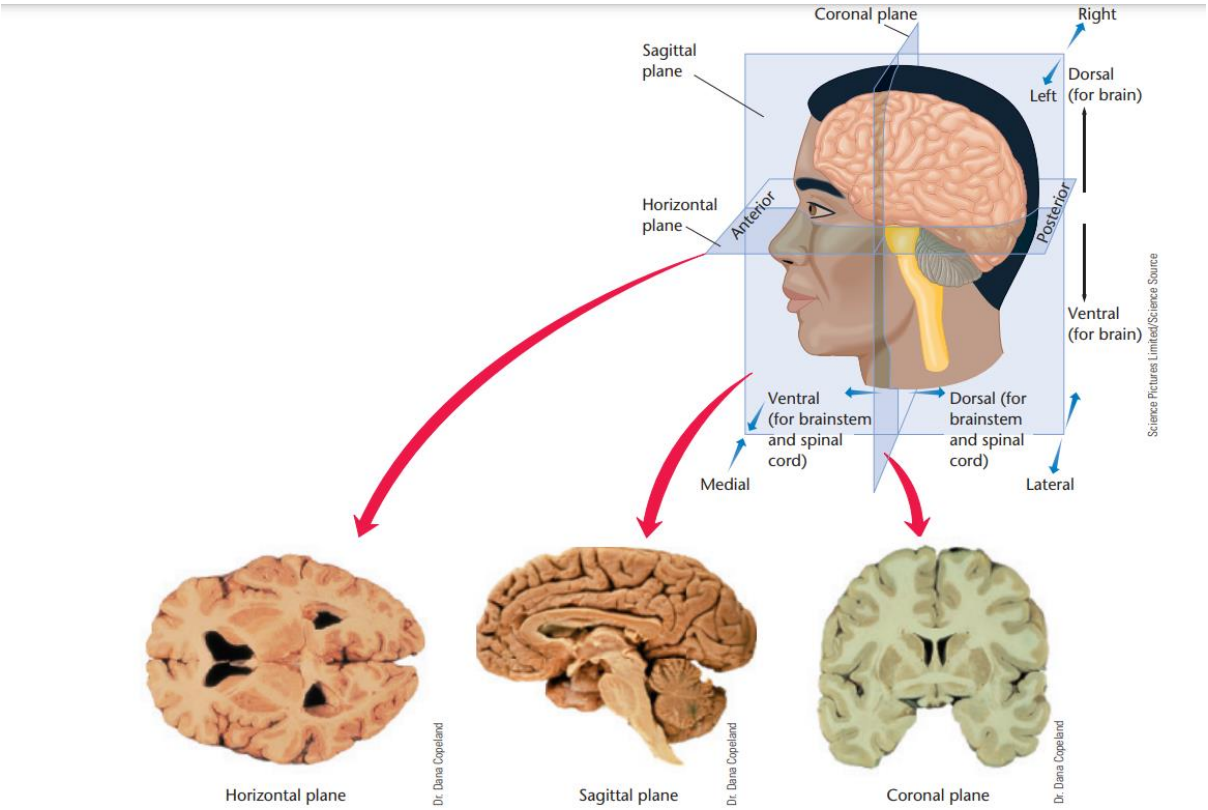
Source: Das et al., 2022

Appendix E: Amygdala and Hippocampus



Source: Kalat, 2017

Appendix F: Sagittal Position [Plane]



Source: Kalat, 2017

Appendix G: Psychology Department Approval

UNISA university of south africa
Define tomorrow.

1 MHR

MAKANYA Z Z MISS
POSTNET SUITE 130
PRIVATE BAG X1
JUKSKEI PARK
2153

STUDENT NUMBER : 3403-327-0

ENQUIRIES NAME : MASTERS & DOCTORAL QUAL
ENQUIRIES TEL : 012 448740

DATE : 2021-09-16

Dear Student

I wish to inform you that the following amendment(s) have been approved in respect of your projected research output:

DEGREE : ( )

TITLE : Get Set, Get Ready....Get Reading!: A study of ecological and psychological factors explaining low reading comprehension of English as a second language

SUPERVISOR : Prof S MOONSAMY (Sharon.moonsamy@wits.ac.za)

ACADEMIC YEAR : 2022

Registrations are closed for the current academic year, but you may continue with your studies until the next registration period. You will receive supervision and have access to the library for the remainder of the academic year.

Please visit the Unisa website in November for more information on the next registration period when you will have to register and pay for the research component of your qualification.

Yours faithfully,

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

Appendix H: Ethical Clearance Certificate

UNISA university of south africa

COLLEGE OF HUMAN SCIENCES RESEARCH ETHICS REVIEW COMMITTEE

23 April 2021

Dear Zabanguni Zama Makanya

Decision:
Ethics Approval from 23 April 2021 to 23 April 2024

NHREC Registration # :
Rec-240816-052
CREC Reference # :
34033270_CREC_CHS_2021

Researcher(s): Name: Zabanguni Zama Makanya
Contact details: 34033270@mylife.unisa.ac.za

Supervisor(s): S. Moonsamy
Contact details: Sharon.Moonsamy@wits.ac.za

The ***Low risk application*** *was* ***reviewed on the 23 April 2021*** by College of Human Sciences Research Ethics Committee, in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.

The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the College Ethics Review Committee.
3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the

confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.

5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data require additional ethics clearance.
7. No fieldwork activities may continue after the expiry date **(23 April 2024).** Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

*The reference number **34033270_CREC_CHS_2021** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,

Signature : pp

Prof. KB Khan
CHS Ethics Chairperson
Email: khankb@unisa.ac.za
Tel: (012) 429 8210

Signature : PP

Prof K. Masemola
Exécutive Dean : CHS
E-mail: masemk@unisa.ac.za
Tel: (012) 429 2298

Appendix I: Gauteng Department of Basic Education Approval

GAUTENG PROVINCE
Department: Education
REPUBLIC OF SOUTH AFRICA

8/4/4/1/2

GDE RESEARCH APPROVAL LETTER

Date:	**03 May 2021**
Validity of Research Approval:	**08 February 2021– 30 September 2021** **2021/117**
Name of Researcher:	**Makanya ZZ**
Address of Researcher:	[redacted]
	North riding
	Randburg
Telephone Number:	[redacted]
Email address:	**34033270@mylife.unisa.ac.za**
Research Topic:	**A study of ecological and psychological factors explaining low reading comprehension of English as a second language**
Type of qualification	**Masters Psychology**
Number and type of schools:	**2 Primary Schools**
District/s/HO	**Johannesburg North**

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

03/05/2021

The following conditions apply to GDE research. The researcher may proceed with the above study subject to the conditions listed below being met. Approval may be withdrawn should any of the conditions listed below be flouted:

1. *Letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.*

Office of the Director: Education Research and Knowledge Management
7th Floor, 17 Simmonds Street, Johannesburg, 2001
Tel: (011) 355 0488
Email: Faith.Tshabalala@gauteng.gov.za
Website: www.education.gpg.gov.za

Appendix J: Parent Information Handout & Consent Forms

Parent Information Handout and Consent Form

TITLE OF THE RESEARCH PROJECT: Get Set, Get Ready…. Get Reading!: A study of ecological and psychological factors explaining low reading comprehension of English as a second language.

Who is doing the project?

My name is Zabanguni Makanya, and I am a Masters student in Psychology at the University of the South Africa, in Gauteng. As part of my studies, I must do a research project.

What is research?

Research is something that is done to find new knowledge about the way things and people work. We do research to help us find out more about children, teenagers and adults and the things that affect their lives and the places they work in, live in, or go to school in. We do this to try and find out what does not work and then find things that do work.

What is the research project all about?

The aim of this project is to find out if young learners experience anxiety when they read. We are doing this so that we can find other ways to teach young learners to read in ways that do not produce reading anxiety. We are concerned about reading anxiety because it makes young learners remember less of what you have read. The project also aims to understand the role that parents/ caregivers play in the young learners' reading skills and ultimately, reading outcomes.

What will happen to you and your parent/caregiver in this research project?

As part of this project, I would ask your child to complete the questionnaires that will be given out by the teacher. There are six topics that will be investigated on this project. Each of these will be on its own page and has about 9 questions. Because we are very interested in what your child thinks about the questions that are asked, it is important that they answer ***all*** the questions. They are encouraged to ask the teacher to clarify if they do not understand what they are asked to do. The answering of questionnaires is expected to last about 20 minutes.

Can anything bad happen to you?

Nothing bad can happen to you. This is meant to find out what your child thinks and whether they report symptoms of reading anxiety. If you want your child to stop taking part in the research project at any time, they can. You can tell me that that you want your child to stop, at any time you / they want to. Nobody will be angry or upset with your decision and you will not be in trouble for it.

Will anyone know that you are in the research project?

No. Nobody except me, my supervisor, your child, and some of the staff at school will know that your child participated in the **research project**. I will not use your child's name or yours in the final report of the project. All identifying details will be kept safe and not reported on.

Who can you talk to about the research project?

You can talk to me, Zabanguni. My cellphone number is (073) xxx xxxx. You can also talk to my supervisors Professor Sharon Moonsamy (011) 717 xxxx.

Will you get money for participating in the research project?

No, you will not be earning any money for participating in the research project.

What if you do not want to do this?

You can choose to take part in this research project, or you can choose not to take part in this research project. If you agree to take part, please complete the form below and return it to the school, by no later than 30th September 2021.

I ……, caregiver/parent of ……

…… agree that I will participate in this research project. The research has been explained to me and I understand what my/our participation will involve.

	YES	NO
I agree that my participation will remain anonymous.		
I agree that the researcher may send me SMS/WhatsApp reminders of my next session 1 day before my next session.		
I agree that the researcher may use anonymous quotes in her research report.		

Printed name of participant: ……...

Signature: ……

Date: ……

Place: …….....

Appendix K: Learner Information Handout and Assent Form

TITLE OF THE RESEARCH PROJECT: 'Get Set, Get Ready…. Get Reading!: A study of ecological and psychological factors explaining low reading comprehension of English as a second language'.

Who is doing the project?

My name is Zabanguni Makanya, and I am a Masters student in Psychology at the University of the South Africa, in Gauteng. As part of my studies, I must do a research project.

What is research?

Research is something that is done to find new knowledge about the way things and people work. We do research to help us find out more about children, teenagers and adults and the things that affect their lives and the places they work in, live in, or go to school in. We do this to try and find out what does not work and then find things that do work.

What is this research project all about?

The aim of this project is to find out if young learners experience anxiety when they read. We are doing this so that we can find other ways to teach you to read that do not produce reading anxiety. We are concerned about reading anxiety because it makes you remember less of what you have read.

What will happen to you in this research project?

As part of this project, I would ask you to complete the questionnaires that will be given out by the teacher. There are six topics that will be investigated on this project. Each of these will be on its own page and has about 9 questions. Because we are very interested in what you think about the questions that are asked, it is important that you answer ***all*** the questions. You must ask the teacher to clarify if you do not understand what you are asked to do.

Can anything bad happen to you?

Nothing bad can happen to you. This is meant to find out what you think. If you want to stop taking part in the research project at any time, you can. You can tell your parent/caregiver or me that you would like to stop, at any time you want to. Nobody will be angry or upset with you and you will not be in any trouble if you want to stop.

Will anyone know that you are in the research project?

No. Nobody except me, my supervisor, your classmates, your parent/caregiver, and some of the staff at school will know that you are in the research project. I will not use your name or your parent/caregivers name in my research project and will keep any information that you do not want me to share, safe.

Who can you talk to about the research project?

You can talk to me, Zabanguni. My cell phone number is (073) xxx xxxx. You can also talk to my supervisor Professor. Sharon Moonsamy (011) 717 xxxx.

What if you do not want to do this?

You can choose to take part in this research project or you can choose not to take part in this research project. You can tell me or your parent/caregiver if you do not want to take part.

You will not get into any trouble if you do not want to take part in the research project.

Do you understand this research project?

YES	NO

Has Zabanguni answered all your questions?

YES	NO

Do you want to take part in the research project?

YES	NO

Do you understand that you can STOP taking part in the research project at ANY time?

YES	NO

_____ _____

Your (Child's) Name **Parent/Caregiver Printed Name**

_____ _____

Parent/Caregiver Signature

(Witness)

.....

Ethics approval reference number: ***34033270_CREC_CHS_2021***

Appendix L: Demographic Information Form

UNISA university of south africa
Define tomorrow.

GRADE 4

Name											
Sex/ Gender:	Girl/ Female					Boy/ Male					
Age:											
Home Language	Afrikaans	English	IsiNdebele	IsiXhosa	IsiZulu	Sepedi	Sesotho	Setswana	SiSwati	Tshivhenda	Xitsonga

Appendix M: Reading Anxiety Scale

Learner Questionnaire 1

Instruction: PLEASE ANSWER ALL THE STATEMENTS

UNISA university of south africa
Define tomorrow.

Please indicate your home language with 'X'	Afrikaans	English	S.African ethnic

S. African ethnic Languages
IsiNdebele
IsiXhosa
IsiZulu
Sepedi
Sesotho
SiSwati
Setswana
Tsetsonga
Tshivhenda

READING ANXIETY SCALE

Please make your choice by marking your response with a 'X'

I become anxious when I have to read in English when doing my homework		
1 = never or almost never	2 = sometimes or regularly	3 = frequently/ all the time

I become anxious when I have to read English out loud in class		
1 = never or almost never	2 = sometimes or regularly	3 = frequently/ all the time

I fear having to read lengthy texts in English as homework when I am in upper/ higher grades in school		
1 = never or almost never	2 = sometimes or regularly	3 = frequently/ all the time

I fear having to read lengthy texts in English as homework		
1 = never or almost never	2 = sometimes or regularly	3 = frequently/ all the time

I fear having to read lengthy texts in English in class		
1 = never or almost never	2 = sometimes or regularly	3 = frequently/ all the time

I fear not understanding the lengthy texts when I have to read		
1 = never or almost never	2 = sometimes or regularly	3 = frequently/ all the time

I become anxious when I have to answer the multiple choice questions about what I have read in English		
1 = never or almost never	2 = sometimes or regularly	3 = frequently/ all the time

I become anxious when I have to answer questions orally in class about what I have read in English		
1= never or almost never	2 = sometimes or regularly	3 = frequently/ all the time

I become anxious when I am asked to write compositions in English about what I have read		
1 = never or almost never	2 = sometimes or regularly	3 = frequently/ all the time

THANK YOU FOR TAKING THE TIME TO COMPLETE THE SURVEY !

Ethics approval reference number 34033270_CREC_CHS_2021

Appendix N: School Climate Scale

Learner Questionnaire 2

Instruction: PLEASE ANSWER ALL THE STATEMENTS

SCHOOL CLIMATE SCALE			
Please make your choice by marking your response with a 'X'			
I like being in school			
1 = I disagree a lot	2 = I disagree a little	3 = I agree a little	4 = I agree a lot
I think that teachers in my school care about me			
1 = I disagree a lot	2 = I disagree a little	3 = I agree a little	4 = I agree a lot
I feel safe when I am at school			
1 = I disagree a lot	2 = I disagree a little	3 = I agree a little	4 = I agree a lot
Students in my school show respect to each other			
1 = I disagree a lot	2 = I disagree a little	3 = I agree a little	4 = I agree a lot
Students in my school care about each other			
1 = I disagree a lot	2 = I disagree a little	3 = I agree a little	4 = I agree a lot
Students in my school help each other with their work			
1 = I disagree a lot	2 = I disagree a little	3 = I agree a little	4 = I agree a lot

Ethics approval reference number 34033270_CREC_CHS_2021

Appendix O: Parental Support Scale/ Reading Activities At Home

Learner Questionnaire 3

Instruction: PLEASE ANSWER ALL THE STATEMENTS

STUDENTS' READING ACTIVITIES AT HOME/ PERCEIVED PARENTAL READING SUPPORT AT HOME SCALE

Please make your choice by marking your response with a 'X'

My parent(s) listen to me read aloud			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

My parent(s) talk with me about things we have done/ read about at school			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

My parent(s) talk with me about what I am reading on my own			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

My parent(s) go to the library with me			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

My parent(s) go to the bookstore with me			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

My parent(s) help me with reading for school			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

Ethics approval reference number 34033270_CREC_CHS_2021

Appendix P: Reading Time/ Frequency Scale

Learner Questionnaire 4

Instruction: PLEASE ANSWER ALL THE STATEMENTS

UNISA university of south africa
Define tomorrow.

STUDENTS' READING TIME/ FREQUENCY SCALE

Please make your choice by marking your response with a 'X'

I read aloud to someone at home			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I listen to someone at home read aloud to me			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I talk with my friends about what I am reading			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I talk with my family about what I am reading			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I read for fun outside of school			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I read to find out about things I want to learn			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I read comic books			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I read stories or novels			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I read books that explain things			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I read magazines			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I read newspapers			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I read directions or instructions			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I read brochures and catalogs			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

My teacher reads aloud to the class			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I read aloud to the whole class			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I read aloud to a small group			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I answer questions in a workbook or on a worksheet about what I have read			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I write something about what I have read			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I answer questions aloud about what I have read			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

I talk with other students about what I have read			
1 = never or almost never	2 = once or twice a month	3 = once or twice a week	4 = every day or almost every day

*** Please turn the page over to complete the questionnaire*

TIME SPENT READING THE FOLLOWING...

Stories				
1 = no time	2 = up to 1 hour	3 = 1 – 3 hours	4 = 3 – 5 hours	5 = 5 hours or more

Articles on the internet				
1 = no time	2 = up to 1 hour	3 = 1 – 3 hours	4 = 3 – 5 hours	5 = 5 hours or more

Books or magazines				
1 = no time	2 = up to 1 hour	3 = 1 – 3 hours	4 = 3 – 5 hours	5 = 5 hours or more

Ethics approval reference number 34033270_CREC_CHS_2021

Appendix Q: Reading Self-Concept Scale

Learner Questionnaire 5

UNISA university of south africa
Define tomorrow.

Instruction: PLEASE ANSWER ALL THE STATEMENTS

STUDENTS' READING SELF-CONCEPT SCALE

Please make your choice by marking your response with a 'X'

Reading is very easy for me			
1 = I disagree a lot	2 = I disagree a little	3 = I agree a little	4 = I agree a lot

I do not read as well as other students in my class			
1 = I disagree a lot	2 = I disagree a little	3 = I agree a little	4 = I agree a lot

When I am reading by myself, I understand almost everything I read			
1 = I disagree a lot	2 = I disagree a little	3 = I agree a little	4 = I agree a lot

I read slower than other students in my class			
1 = I disagree a lot	2 = I disagree a little	3 = I agree a little	4 = I agree a lot

Appendix R: Reading Attitudes Scale

Learner Questionnaire 6

UNISA university of south africa
Define tomorrow.

Instruction: PLEASE ANSWER ALL THE STATEMENTS

STUDENTS' READING ATTITUDES SCALE

Please make your choice by marking your response with a 'X'

I read only if I have to			
1 = I disagree a lot	2 = I disagree a little	3 = I agree a little	4 = I agree a lot

I like talking about books with other people			
1 = I disagree a lot	2 = I disagree a little	3 = I agree a little	4 = I agree a lot

I would be happy if someone gave me a book as a present			
1 = I disagree a lot	2 = I disagree a little	3 = I agree a little	4 = I agree a lot

I think reading is boring			
1 = I disagree a lot	2 = I disagree a little	3 = I agree a little	4 = I agree a lot

I enjoy reading			
1 = I disagree a lot	2 = I disagree a little	3 = I agree a little	4 = I agree a lot

THANK YOU FOR TAKING THE TIME TO COMPLETE THE SURVEY !

Ethics approval reference number 34033270_CREC_CHS_2021