Reading and Writing Ability in Relation to Home Environment: A Study in Primary Education in Rural Tanzania

eTale 2022

This study examines how the home environment related to the reading and writing ability of 300 Kiswahili-speaking children in grade 3 living in a rural area in eastern Tanzania. Results showed that reading and writing skills correlated moderately or highly with home environment variables, especially, fathers' education, house wall material, number of books for school subjects, and parental involvement in the child's school learning.

Author: Damaris Ngorosho

Source: Ngorosho, D. (2011). Reading and writing ability in relation to home environment: A study in primary education in rural Tanzania. *Child Indicators Research, 4*, 369–388. DOI: 10.1007/s12187-010-9089-8

This study examines how the home environment relates to the reading and writing ability of 300 Kiswahili-speaking children

in grade 3 living in a rural area in eastern Tanzania. Three hundred grade 3 children were assessed for letter, word, and sentence reading and word-writing abilities. Mothers responded to a questionnaire-based interview about the home environment. Results showed that reading and writing skills correlated moderately or highly with home environment variables, especially, fathers' education, house wall material, number of books for school subjects, and parental involvement in the child's school learning, all of which predicted reading and writing ability.

- The home environment is known to play an important role in the development of reading and writing ability.
- The home environment is a social context in which children live with people who contribute to their development in reading and writing ability.
- Home environment, family, the neighbourhood, peers, and other settings such as school, are the immediate contexts or settings for children's learning.
- Bronfenbrenner (1977) emphasised that a person's development occurs through processes of shared interactions and activities that occur within microsystems.
- Parents with a higher level of education talk to and use more complex and varied language with their children, which in turn predicts better reading skills.
- In addition to educational materials, interactions between parents and children while they engage in literacy-related activities are likely to be relevant for the development of reading and writing skills.

The study

This study examined the relationship between home environment and reading and writing ability among Kiswahili-speaking children from a rural, low-income area in Tanzania.

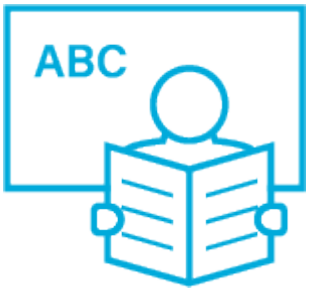
Participants were 300 randomly sampled grade 3 children aged between 9 and 12 years. Children were assessed on letter, word, and sentence reading and word-writing abilities. Mothers responded to a questionnaire-based interview about the home environment.

Findings

- More than half of parents had attained education at primary level or lower.
- More than half of participants' houses were constructed from low quality materials for the walls, roof, and floor, whilst more than 60% of the families accessed water from a public tap.
- Approximately 57% of the families had one or no books to support their child's learning in the home, and 33% of parents were not involved in their child's school learning.
- Children performed at a level between 50% and 70% of the maximum scores on reading and writing tests.

- Home environment factors explained 31% of the variance in reading and writing ability.
- Fathers' education, the quality of house wall material, availability of books for school subjects in the home, and parental involvement in the child's school learning were identified as strong predictors of reading and writing ability.

- Parental involvement was a predictor of writing ability.



Practical Implications

- The significant variables predicting reading and writing ability were fathers' education and those describing housing and the home literacy environment.
- Home environment variables accounted for almost one third (31%) of the total variance in children's ability to read and write.
- Due to overcrowded classes (up to 100 children in primary schools in some areas), teachers use a chanting-like chorusing method to teach reading and writing.
- Study results indicate that in addition to approaches based on improving the curriculum and school environment, the focus should also be on actions for improving the home environment and parental involvement in their child's school learning.

Reading Outcomes of Children

with Delayed Early Vocabulary: A Follow-up from Age 2–16

eTale 2022

This study is a long-term follow-up study to investigate whether early expressive vocabulary delay (late talking) predicts reading development in participants age 16 years and under. The sample consisted of 200 Finnish-speaking children, of whom 108 had family risk for dyslexia (FR) and 92 came from families without reading difficulties. The group with FR and expressive and receptive vocabulary delay had difficulties in reading comprehension, but not in reading fluency.

Authors: Maria Psyridou, Kenneth Eklund, Anna-Maija Poikkeus, & Minna Torppa

Source: Psyridou, M., Eklund, K., Poikkeus, A-M., & Torppa, M. (2018). Reading outcomes of children with delayed early vocabulary: A follow-up from age 2–16. *Research in Developmental Disabilities*, *78*, 114–124. DOI: 10.1016/j.ridd.2018.05.004

This study is a long-term follow-up study to investigate whether early expressive vocabulary delay (late talking) predicts reading development in participants age 16 years and under. Expressive and receptive vocabulary skills were assessed at the age of 2–2.5 years and reading skills at the age of 8–16 years. The sample consisted of 200 Finnish-

speaking children, of whom 108 had family risk for dyslexia (FR) and 92 came from families without reading difficulties. The group with FR and expressive and receptive vocabulary delay had difficulties in reading comprehension, but not in reading fluency.

- The study included five subgroups: 1) FR and no vocabulary delay; 2) FR and late talkers; 3) FR, late talkers, and co-existing receptive vocabulary delay; 4) no FR and late talkers; and 5) no FR and no vocabulary delay.
- A delay in early vocabulary can lead to a persistent deficit whereby expressive vocabulary deficit alone can be alleviated in time, whereas the combined deficit is a stronger risk marker.
- It is important to be able to predict as early as possible which children may be at risk of learning difficulties in their school years.
- Family risk for dyslexia is linked to both vocabulary and reading difficulties and may be the underlying cause for late talkers' problems in reading.

The study

This study investigated the reading development of native Finnish-speaking children with early expressive vocabulary delay to the age of 16 years with respect to both reading fluency and reading comprehension. We examined whether this relationship is different in the presence (or absence) of other co-occurring risk factors, namely family risk (FR) for dyslexia and early receptive vocabulary delay.

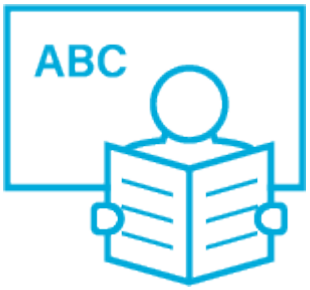
Research questions:

- *Does early expressive vocabulary delay predict difficulties in reading fluency or reading comprehension in children aged 8–16 years?*
- *Is the relationship between early expressive vocabulary delay and reading development different in the presence (and absence) of receptive vocabulary delay and family risk for dyslexia?*

Participants were 200 Finnish-speaking children, of whom 108 were placed in the FR dyslexia group and 92 were placed in the no family risk (NR) for dyslexia group.

Findings

- NR-group children had better reading fluency (they were faster readers) than the FR group children.
- The FR group children who had both expressive and receptive vocabulary delay had lower reading comprehension than other children, especially in the 9th grade.
- Both expressive and receptive vocabulary had stronger correlations with reading comprehension than reading fluency.



Implications

- Early expressive language delay predicts reading comprehension, but not reading fluency development.
- Late talking alone was not a sufficient risk index for reading comprehension difficulties for either children with FR for dyslexia or for children without such risk.
- Only the children with both expressive and receptive vocabulary delays and FR had clear difficulties in reading comprehension.
- The children who had delays in both expressive and receptive vocabulary as toddlers demonstrated persistent weaknesses in comparison to the other groups in reading comprehension measures.
- The children with both receptive and expressive vocabulary delay also had FR for dyslexia. However, because the other FR children (the group who did not have a vocabulary delay and the group who had only an expressive delay) manifested average reading comprehension, it can be assumed that it is the combined vocabulary difficulty, rather than FR per se, that underlies reading comprehension difficulties.
- The link between reading comprehension and early vocabulary could be explained by the simple view of reading model.
- In contrast to reading comprehension, reading fluency was found to be linked with FR for dyslexia and not with the presence of early expressive vocabulary delay.
- The finding of no link from late talking to reading fluency development appears to contradict the lexical restructuring hypothesis, which suggests a link between

early vocabulary and reading fluency mediated via phonological skills. The mediated impact of expressive and/or receptive vocabulary delay via phonological processing to reading skills may thus be broader and may be sustained longer among less transparent orthographies.

- In addition to expressive vocabulary delay, it is critical to recognise a delay in receptive skills as an early risk factor, as a delay only in expressive vocabulary is not informative enough to predict school age reading development.
- Children with expressive vocabulary delay (especially those with FR for dyslexia and receptive vocabulary delay as additional risk factors) should be provided extra support.

Leisure Reading (But Not Any Kind) and Reading Comprehension Support Each Other – A Longitudinal Study Across Grades 1 and 9

eTale 2022

This study examines associations between leisure reading and reading skills in data of 2,525 students followed from age 7 to 16. In grades 1-3 poorer comprehension and fluency predicted less leisure reading. In later grades more frequent leisure reading, particularly of books, predicted better reading comprehension.

Authors: Minna Torppa, Kati Vasalampi, Pekka Niemi, Marja-Kristiina Lerkkanen, Asko Tolvanen, & Anna-Maija Poikkeus

Source: Torppa, M., Vasalampi, K., Niemi, P., Lerkkanen, M-K., Tolvanen, A., & Poikkeus, A-S. (2019). Leisure reading (but not any kind) and reading comprehension support each other – A longitudinal study across grades 1 and 9. *Child Development*, epub before print, 2019. DOI: 10.1111/cdev.13241

This study examines associations between leisure reading and reading skills in data of 2,525 students followed from age 7 to 16. In grades 1-3 poorer comprehension and fluency predicted less leisure reading. In later grades more frequent leisure reading, particularly of books, predicted better reading comprehension. Negative associations were found between digital reading and reading skills.

- There is a common belief that in addition to school-related reading activities, reading for pleasure promotes reading development.
- Those who read a lot are better readers than those who read less.
- Parents and teachers would be well advised to encourage

children to become habitual readers.

What underlies the correlation between reading skills and leisure reading?

- Frequent leisure reading can support the learning of important prerequisites (such as orthographic knowledge and vocabulary) of fluency and reading comprehension.
- Frequent leisure reading can emerge as a result of developing good skills.
- The association between the amount of leisure reading and reading skills may be reciprocal.

Do genres of leisure reading produce different results?

- Fiction reading seems more strongly correlated with comprehension skills than other leisure reading genres.
- Time spent reading fragmented digital information has been found to correlate negatively with the comprehension of print reading.

The study

This study contributes to the previous literature on the role of leisure reading in reading development by applying a long-term longitudinal design, comprehensive assessment of the key measures, and a sophisticated analysis method for developmental data.

Research questions:

- *Are the development of reading skills and the amount of*

leisure reading of different genres associated at the between-person level? That is, do better readers also read more?

- *Are reading skills and leisure reading of different genres mutually predictive at the within-person level? That is, does an increase in leisure reading predict increased reading fluency or better comprehension at the subsequent time point and vice versa?*

Participants were 2,525 students born in 2000 who were studies from kindergarten to grade 9.

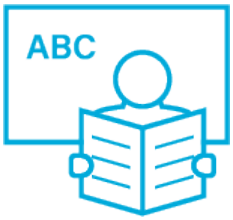
Findings

Reading fluency

- Reading fluency correlated with leisure reading, especially reading books.
- In grades 1 and 3, reading fluency positively predicted subsequent changes in leisure reading.
- In grade 7, book reading was a significant positive predictor of grade 9 changes in reading fluency, whereas grade 6 digital text reading was a significant negative predictor of grade 7 changes in reading fluency.
- Grade 6 reading fluency positively predicted magazine reading change in grade 7.
- Path estimates were quite low; therefore, results can be summarised such that in grades 6–9, fluency no longer played a major role in reading fluency development and reading activities.

Reading comprehension

- Reading comprehension correlated with leisure reading, especially reading books.
- There were reciprocal associations between reading for leisure and reading comprehension in grades 1–4.
- Reading comprehension and book reading were also reciprocally linked in grades 6–9.
- There were significantly negative predictive paths from grade 6 digital texts to grade 7 reading comprehension, as well as from reading comprehension in grade 4 to digital texts in grade 6.
- Increased leisure reading was a stronger predictor of increases in reading comprehension than the converse.



Summary

- Overall, the results suggest positive associations between leisure reading and reading competence.
- It was shown that these associations vary as a function of time, leisure reading genre, and reading competence measure.
- There was a positive association between reading comprehension and voluntary book reading.
- Digital reading demonstrated a negative association; however, it is important to note that the questions included only short texts such as social media and messaging.
- Associations between leisure reading and reading fluency were weak.
- Slow readers and poor comprehenders read all types of leisure reading genres less than fluent readers and good

comprehenders.

- The strongest positive effects were found for book reading.
- During the early grades, the predictive cross-lagged paths ran from reading fluency and comprehension to leisure reading, but not from leisure reading to reading competence.
- In the later grades, active book reading in particular was reciprocally associated with reading comprehension, but not with reading fluency.
- It therefore appears that leisure reading does not promote reading fluency; however, reading fluency can act as a constraint on leisure reading during the early school years.
- Skilled reading comprehension promoted leisure reading in grades 1–9. In later grades, an association was found to be reciprocal and the effects of leisure reading on reading comprehension were stronger than the converse.
- These findings underline the importance of leisure reading for reading comprehension development and suggest that we should pay close attention to the development of reading interest from early grades onwards.

GraphoGame Afrikaans as an Intervention Tool for Struggling Readers

eTale 2022

In this study, 77 struggling readers in Namibia were studied. Those who played GraphoGame increased their skills in letter sounds, phonological awareness, reading, and spelling to a greater extent than the control groups.

Author: Pamela J. February

Source: February, P. J. (2018). Teaching and learning to read in Afrikaans: Teacher competence and computer-assisted support. *Jyväskylä*: University of Jyväskylä, 2018, 138 (JYU Dissertations 5). http://urn.fi/URN:ISBN:978-951-39-7515-9

This study investigated the motivations and emotional and behavioural problems of struggling readers, together with the viability of using GraphoGame as a learning intervention tool. Participants were 77 learners in Namibia. Struggling readers who played GraphoGame increased their skills in letter sounds, phonological awareness, reading, and spelling to a greater extent than the control groups, whilst effect sizes were large.

- GraphoGame can play an important role in assisting children who are at risk of experiencing reading difficulties.
- GraphoGame is able to adapt to the individual learner's reading level (which is characteristic of scaffolding), whereby the learner is presented with an 80% opportunity of being correct as only 20% of the targeted skills are unknown.

What is the Strengths and Difficulties Questionnaire (SDQ)?

- This is a screening tool for social, emotional, and behavioural attitudes consisting of five scales: emotional symptoms, conduct problems, hyperactivity, peer problems, and prosocial factors.

What is intrinsic motivation?

- This refers to a combination of preferences for challenging tasks, learning determined by interest, and striving for mastery and competence.

What is the self-concept of the learner?

- This refers to the child's perception of themself in a specific domain. The academic self-concept of struggling readers is typically lower than for other domains.

What is GraphoGame?

- The game is an adaptive computer-based tool to support reading instruction.
- Letter-sounds are at the core of the training.
- The child plays the game by listening to letter sounds and words and then responds by clicking on the correct letter or word.
- The game monitors each child's progress; thus, it can ensure that the game is played at the correct literacy level for each child.

The study

The aim of this study was to investigate the effectiveness of

extended use of GraphoGame Afrikaans in intervening with learners who continue to struggle despite having had initial GraphoGame exposure in grade 1.

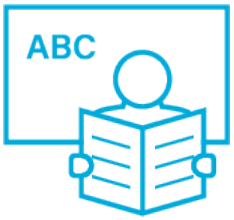
Research questions:

- *Is GraphoGame an effective intervention tool for struggling readers?*
- *What is the motivation level of struggling readers?*

Participants were 77 students in Namibia. Learners selected for the GraphoGame group were the lowest scoring 20 learners from a previous study who had failed to demonstrate substantial improvement, despite having previously played GraphoGame Afrikaans. In addition, two further control groups were included: one of 30 learners who had played GraphoMath, and another of 30 learners receiving teaching as usual.

Findings

- The mean differences between gain scores for the GraphoGame group and both control groups were significant in all assessment tests.
- Struggling readers who played GraphoGame increased their skills in letter sounds, phonological awareness, reading, and spelling more than the control groups, with large effect sizes.
- Struggling readers showed signs of hyperactivity and impulsivity. They were easily distracted, and struggled to complete assignments due to a reduced attention span.
- They did not have emotional, conduct, or peer problems.



Implications

- Playing the computer-assisted GraphoGame increased children's skills to a greater extent than regular teaching.
- The GraphoGame is an effective tool for struggling readers by contributing to improving their reading and spelling skills.
- Children with dyslexia or other reading difficulties need more time playing with the GraphoGame to improve their reading acquisition.
- The GraphoGame may be a way to provide individualised teaching to learners in class of large sizes in Namibia, thus providing support to teachers and improving children's skills.

How to teach reading

- Teacher students should learn scaffolding techniques appropriate for use in large classes, and teachers should monitor progress to ensure that students have mastered the skills.
- New teachers should have mentors for teaching reading instruction.
- Teachers' knowledge of the language should be increased.
- Teachers should direct their teaching toward the individual learner and teach within the zone of proximal development. Thus, the teacher needs to know each learner, their level of progress, and ensure regular assessment.

GraphoGame as a Reading Acquisition Tool in Namibian Classrooms

eTale 2022

In this study, 202 grade 1 students were divided to three groups: a GraphoGame group, A GraphoMath group, and a control group with teaching as usual. Those playing computer-based games (especially GraphoGame) improved their reading skills to a greater extent than those in the control group.

Author: Pamela J. February

Source: February, P. J. (2018). Teaching and learning to read in Afrikaans: Teacher competence and computer-assisted support. *Jyväskylä*: University of Jyväskylä, 2018, 138 (JYU Dissertations 5). http://urn.fi/URN:ISBN:978-951-39-7515-9

In this study, the effectiveness of a digital reading tool called GraphoGame Afrikaans that could be used as one of the solutions to poor reading results in Namibia was investigated. Participants were 202 grade 1 students divided to three groups: a GraphoGame group, a GraphoMath group, and a control group with teaching as usual. Those playing computer-based games (especially GraphoGame) improved their skills to a greater extent than those in the control group.

- Becoming a skilled reader with the ability to decode and comprehend written language is an important prerequisite for full participation in modern society.
- National and international reading assessment scores indicate that Namibia’s learners are not faring as well as expected.
- Letter knowledge and phonological awareness are strong predictors of reading and spelling skills.

What is phonological awareness?

- This refers to a child’s language sensitivity at a phonological level and their ability to discriminate and manipulate sounds in a spoken language;
- the ability to detect letter sounds; and
- phonological awareness that can predict reading and spelling skills.

What is letter knowledge?

- This refers to the ability to recognise and name the letters of the alphabet.
- Children may find upper case letters easier than lower case letters.
- Letter knowledge predicts reading and spelling skills.

What is GraphoGame?

- This is an adaptive computer-based tool to support reading and reading instruction.
- Letters and sounds are at the core of the training.
- The child plays the game by listening to letter-sounds and syllables and then responding by clicking on the correct letter or syllable.

- This is a serious, research-based learning game.

How do children become skilled decoders? Five developmental phases by Ehri 1989:

- *Pre-alphabetic phase*: children begin to participate in a literacy environment, by acquiring oral language skills, and identifying printed signs from their environment.
- *Partial-alphabetic phase*: children start attending to some letter-sound relationships to aid word recognition.
- *Full-alphabetic phase*: child can use complete connections between letters and sounds they see in words; they can also decode unfamiliar words.
- *Consolidated-alphabetic phase*: children begin to operate with multi-letter units in words, such as affixes, onsets, or syllables, whilst storing the orthography and spelling patterns of words in their memory.
- *Automatic phase*: words and text are read proficiently with high automaticity and speed.

The study

The aim of this study was to investigate the effectiveness of the GraphoGame Afrikaans game in supporting grade 1 learners' reading acquisition in a regular classroom.

Research questions:

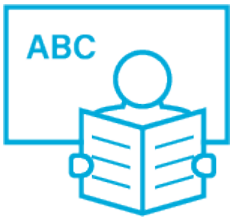
- *Is GraphoGame an effective reading acquisition tool in Namibian classrooms?*
- *Does the effectiveness of reading with a computer-*

assisted game transfer to other computer-assisted games that are not related to reading?

Participants The study included 202 grade 1 students in Namibia divided into 3 groups: one group played the GraphoGame (n = 82), a control group had class as usual (n = 40), and the third group played the GraphoMath game (n = 80), a computer-assisted mathematics game.

Findings

- Mean assessment scores for all three groups increased after the intervention, except for phonological awareness in the control group.
- Learners improved their skills in letter sounds, reading, spelling, and mathematics during the study period (September to November 2013).
- The gain scores for the GraphoGame group were higher than the two other groups, meaning that their skills improved by the greatest extent.
- There were no differences between the GraphoGame group and the GraphoMath group in terms of improvement in spelling and mathematics skills; however, the GraphoGame group did differ in terms of phonological awareness and reading. It also differed from the control group in terms of improvement in all skills.
- The GraphoMath group also had higher gain scores than the control group in all assessment tests, except for word reading.
- These results suggest that playing a computer game was beneficial to the development of these skills.



Implications Playing computer-assisted games increased children's skills more than regular teaching. This was especially evident when they played GraphoGame. Thus, GraphoGame may be a way to provide individualised teaching to learners in large sized classes in Namibia, helping support teachers in their work and improving the children's skills.

Grade 1 Teachers' Knowledge and Perceptions Regarding Reading Instruction

eTale 2022

This study found that Namibian teachers' knowledge of language and reading components was poor. Teacher training should ensure that teachers are trained adequately in how to teach reading in languages with both transparent and opaque orthographies.

Author: Pamela J. February

Source: February, P. J. (2018). Teaching and learning to read in Afrikaans: Teacher competence and computer-assisted support. *Jyväskylä:* University of Jyväskylä, 2018, 138 (JYU Dissertations 5). http://urn.fi/URN:ISBN:978-951-39-7515-9

This study explored the knowledge, perceptions, and classroom practices of teachers in Namibia in relation to teaching reading and how learners' reading acquisition is supported. Data was gathered by a self-completion survey with 132 grade 1 teachers. Teachers' knowledge of language and reading components was poor. Teacher training should ensure that teachers are trained adequately in how to teach reading in languages with both transparent and opaque orthographies.

- Becoming a skilled reader with the ability to decode and comprehend written language is an important prerequisite for full participation in modern society.
- National and international reading assessment scores indicate that Namibia's learners are not faring as well as expected.
- It is important to identify factors in the Namibian classroom that may be preventing effective reading achievement, and to seek for possible solutions to alleviate reading problems.
- There is considerable variation in teachers' depth of knowledge and skill level.
- A considerable number of teachers have not received consistently high quality training and instruction to ensure that they have sufficient knowledge and skills required to be effective teachers of reading.

How to teach reading in local languages?

- In Namibia, the phonics-based approach to reading instruction is one of the teaching methods that is emphasised.
- Teachers applying the phonemic basis of the alphabet

produce the most successful readers, especially in languages with transparent orthographies.
- Reading comprehension (especially listening comprehension) should not be neglected while focusing on word reading only, even for initial reading acquisition.
- Most teachers in Namibia do not use the methods they were taught in their basic education teachers' diploma in college.

Factors affecting good learning results

- Teachers' knowledge: teachers should have core knowledge of language constructs that are required to teach reading.
- Teachers' experience: the teachers' first five years as a teacher are most important.
- Class size: smaller class sizes enable more individualised teaching.

The study

The aim of this study was to examine Namibian teachers' knowledge, perceptions, and classroom practices related to teaching reading, and how they support learners' reading acquisition.

Research question:

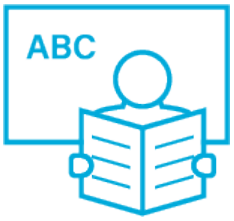
- *What are teachers' knowledge and perceptions regarding reading instruction in grade 1, and how do they support learners' reading acquisition?*

Participants and procedure A self-completion survey of 132

grade 1 teachers in Namibia was conducted.

Findings

- Whilst 91% of teachers had at least a teaching diploma, 32% claimed they did not have training in reading instruction
- Some 83% of teachers used several methods when teaching reading, with the most popular method being phonics-based (used by 90%)
- Some 92% of teachers encouraged poor readers to read by giving them simple texts to enable them to experience success and competence
- Teachers' knowledge of language and reading components was poor.
- Less than 37% of teachers had detailed knowledge of specific aspects of reading such as being able to identify syllables, morphemes, and speech sounds in words as well as demonstrating knowledge of phonics, phonemes, and diphthongs.



Implications

- Teacher training should ensure that teachers are trained to teach reading in languages with both transparent and

opaque orthographies adequately.
- Furthermore, mother-tongue instruction, higher teacher qualifications for junior primary teachers, better training in reading instruction, and better reading-resourced classrooms, are also important.

Teaching techniques

- The technique of scaffolding includes contingency (i.e. teachers support their learners based on their level of need, fading, and transfer of responsibility), whereby teachers withdraw their support gradually when their student masters the required skill.

Examining the Simple View of Reading in a Transparent Orthography: A Longitudinal Study from Kindergarten to Grade 3

eTale 2022

The main finding of the present study was that cognitive

skills predicted reading comprehension mainly indirectly via listening comprehension and reading fluency in grade 1.

Authors: Minna Torppa, George K. Georgiou, Marja-Kristiina Lerkkanen, Pekka Niemi, Anna-Maija Poikkeus, & Jari-Erik Nurmi

Source: Torppa M., Georgiou, G. K., Lerkkanen, M-K., Niemi, P., Poikkeus, A-M., & Nurmi, J-E. (2016). Examining the Simple View of Reading in a Transparent Orthography: A Longitudinal Study from Kindergarten to Grade 3. *Merrill-Palmer Quarterly*, *62*(2), 179–206. https://muse.jhu.edu/article/621824

In this study, the dynamic relationships between components of the simple view of reading (SVR) were examined in a transparent orthography, together with the predictive value of cognitive skills (phonological awareness, letter knowledge, rapid naming, and vocabulary) on SVR components. Cognitive skills predicted reading comprehension mainly indirectly via listening comprehension and reading fluency in grade 1.

- Becoming a skilled reader with the ability to decode and comprehend written language is an important prerequisite for full participation in modern society.
- According to the SVR, reading comprehension is the product of an efficient decoding ability and linguistic comprehension, which together account for a significant degree of variance in reading comprehension.
- Although decoding and reading comprehension correlate, factor analytic approaches have demonstrated that decoding and linguistic comprehension load on separate factors; thus, they form distinct constructs and have been shown to be influenced by partially independent genetic components.
- Because of the fast learning curve in reading accuracy, the examination of SVR in a transparent orthography offers an interesting point of departure for discussing the role of reading fluency, which can be a more sensitive measure of decoding than accuracy.

- In transparent orthographies, the effect of listening comprehension on reading comprehension appears to be stronger than that of decoding.

What are phonological awareness and letter knowledge?

- Difficulty with processing speech sounds (such as identifying phonemes within words) or letters hinders the development of basic decoding, requiring speech sounds to be mapped to letters, which makes sequences of grapheme-phoneme connections.

What is rapid naming?

- This requires the rapid sequential naming of familiar items, which is analogous with fluent reading.

The study

In this study, the aim was to extend previous studies by including pre-literacy skills as predictors of SVR components.

Research questions:

- *What are the longitudinal relationships between listening comprehension, reading fluency, and reading comprehension in grades 1–3?*
- *To what extent do preschool-age cognitive skills (letter knowledge, phonological awareness, rapid naming, and vocabulary) predict reading in grades 1–3?*

Participants were 1815 kindergarten-aged children and their teachers from three medium-sized towns and one municipality in

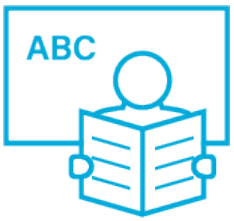
Finland. Compulsory education begins in the year of the child's seventh birthday in Finland. Approximately 98% of all Finnish 6-year-olds attend kindergarten education. Student gains in reading are encouraged by the availability of high-interest texts at multiple levels and by giving students the freedom to choose reading materials.

Findings

- Listening comprehension and reading fluency were mutually correlated and with grade 1 reading comprehension; correlation between reading fluency and reading comprehension was strong.
- Reading comprehension in grade 3 was significantly predicted by grade 2 listening comprehension and grade 1 reading comprehension, but not by grade 2 reading fluency.
- Thus, reading fluency is important at the beginning, but by grade 3, it does not have an effect on reading comprehension.
- The relationship between reading comprehension and listening comprehension was reciprocal.
- Vocabulary was the only significant kindergarten predictor of listening comprehension.
- Reading comprehension and reading fluency were predicted by all kindergarten skills.
- Kindergarten cognitive measures had indirect effects on grade 2 skills and grade 3 reading comprehension.
- Letter knowledge and vocabulary were the strongest predictors of reading comprehension, whilst letter knowledge and rapid naming were the strongest predictors

of reading fluency. Vocabulary was the only kindergarten predictor of listening comprehension.

- Thus, cognitive skills in kindergarten continue to be important predictors of reading comprehension in grade 3.



Implications

- Kindergarten-age cognitive skills predicted reading comprehension; however, their effect on reading comprehension after grade 1 was mediated by listening comprehension and reading fluency.
- The majority of children were shown to be accurate and relatively fast readers after a year of formal reading instruction because of the high transparency of Finnish orthography and systematic phonics teaching.
- Findings also underlined how short-lived the explanatory power of reading fluency is in a highly transparent orthography.
- Children who manifest problems in antecedent phonological awareness, rapid naming, and letter knowledge were at highest risk of developing reading comprehension and fluency problems.
- Furthermore, vocabulary was a highly significant predictor of later reading comprehension, although the effect was mainly mediated by listening comprehension.
- These findings support the validity of the SVR model in Finnish; that is, reading fluency and listening comprehension offered unique contributions to reading

comprehension. Thus, whilst the direct contribution of reading fluency declined, the contribution of listening comprehension increased.

- Because Finnish children acquire a sufficient level of decoding to enable comprehension very early on, the effect of reading fluency on reading comprehension diminishes early.
- A portion of children's skills in reading and listening comprehension and reading fluency can be explained by the classroom effect.

Early Cognitive Predictors of PISA Reading in Children with and without Family Risk for Dyslexia

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This study examined the language and pre-literacy skills (phonological awareness, rapid naming, and letter knowledge) during pre-school as predictors of PISA reading years later in two groups of children, one group with and one without family-risk for dyslexia. Family risk had an effect on early language

and pre-literacy skills, reading fluency, and PISA reading.

Authors: Kenneth Eklund, Minna Torppa, Sari Sulkunen, Pekka Niemi, & Timo Ahonen

Source: Eklund, K., Torppa, M., Sulkunen, S., Niemi, P., & Ahonen, T. (2018). Early Cognitive Predictors of PISA Reading in Children with and without Family Risk for Dyslexia. *Learning and Individual Differences, 64*, 94–103. DOI: 10.1016/j.lindif.2018.04.012

To identify predictors of Program for International Student Assessment (PISA) reading at age 15, this study examined the language and pre-literacy skills (phonological awareness, rapid naming, and letter knowledge) of two groups of pre-school age children, one group with (n = 88) and one without (n = 70) family-risk for dyslexia. Family risk was found to have a significant effect on early language and pre-literacy skills, reading fluency, and PISA reading. Variance in PISA reading was explained to a good extent by language skills and to a lesser extent by pre-literacy skills.

- A substantial proportion (34%–66%) of children with a family history of dyslexia have severe difficulties with reading and spelling acquisition during their first grades at school.
- For most individuals, these difficulties continue into adolescence—even in transparent orthographies.
- Word recognition and vocabulary are the basic building blocks for reading comprehension.
- Efficient decoding has generally been recognised as necessary for reading comprehension, although a subgroup of poor comprehenders without difficulties in decoding also exists, and at least average text comprehension is also possible for inaccurate or slow decoders.
- Children with family risk for dyslexia are considered a high risk for performing poorly in PISA reading.
- Boys have a higher prevalence of dyslexia than girls.

What is PISA?

- The Organisation for Economic Co-operation and Development (OECD) Program for International Student Assessment (PISA) has been conducted once every three years since 2000. It was to 'set up to measure how well young adults near the end of compulsory schooling are prepared to meet the challenges of today's knowledge societies'(OECD, 2002).
- For reading, PISA assesses skills that go beyond decoding and reading comprehension, such as reading literacy.

The study

We examined the extent to which children's performance in PISA reading could be predicted on the one hand by early language skills, and on the other hand by pre-literacy skills, such as phonological awareness, rapid naming, and letter knowledge through reading fluency at school age. The effect of family risk on these early predictors and reading measures, as well as on their associations, was examined.

Research questions:

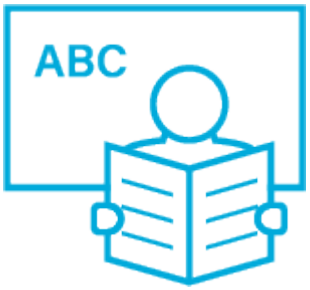
- *What is the effect of family risk for dyslexia on PISA reading and its predictors when taking into account the effect of gender?*
- *How well is PISA reading predicted by the two paths leading to reading comprehension: first language skills, and second pre-literacy skills through reading fluency at school-age?*

- *Does the same predictive model for PISA reading fit with both the family-risk and no-family-risk groups, and are the predictive paths similar for both groups?*

All 158 participants were Finnish-speaking and they were followed for ages 2-15 years.The family-risk group (n = 88) consisted of 48% boys and 52% girls, whilst the no-family-risk group (n = 70) consisted of 57% boys and 43% girls.

Findings

- The no-family-risk group outperformed the family-risk group in PISA reading, although the effect-size was small.
- Girls performed better on PISA reading than boys.
- The no-family-risk group outperformed the family-risk group in language skills, phonological awareness, rapid naming, and letter knowledge.
- Girls had better language skills than boys.
- Children in the no-family-risk group read more fluently than children with family risk.
- Cognitive skills and reading fluency were positively associated with PISA reading in both groups, although correlations between PISA reading and early cognitive skills were significantly lower in the no-family-risk group than in the family-risk group.
- Language skills before school-age explained 46% of the variance in PISA reading directly, and indirectly through pre-literary skills and reading fluency by an additional 6%.
- Pre-literacy skills explained 8% of variance in PISA reading through reading fluency.



Implications

- Children with family risk scored significantly lower than children with no family risk in all measures of language and pre-literacy skills before school age, as well as in all measures of reading fluency in grades 1-8, and PISA reading in grade 9.
- A similar model predicting PISA reading fitted the data well in both family-risk and no-family-risk groups.
- Language skills explained a good portion of the variance in PISA reading for both groups.
- Pre-literacy skills explained a significant portion of the variance in PISA reading through reading fluency in both groups, but to a lesser extent than language skills.
- Altogether, 68% of the variance in PISA reading was explained in the family-risk group in contrast to 44% in the no-family-risk group.
- There were salient differences between the family-risk and no family-risk groups in favour of the latter in all cognitive skills assessed before school age.
- The lower skill level and strong associations between the earliest measures (age 2–3.5 years) of language skills, phonological awareness, and letter knowledge to PISA reading in the family-risk group suggests that genetic vulnerability among these children is identifiable at an early stage of development.

Test research brief 2

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